



CAPE FEAR

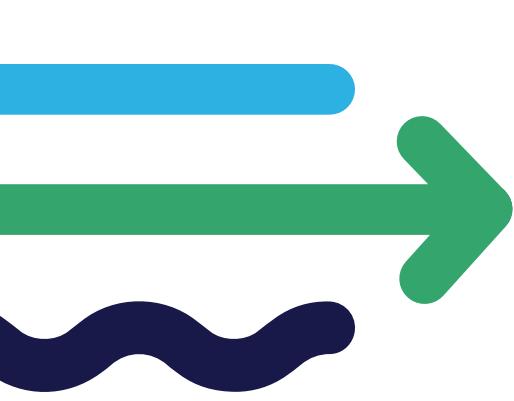
Moving Forward **2045**

METROPOLITAN TRANSPORTATION PLAN

Technical Appendices



WILMINGTON URBAN AREA MPO
ADOPTED NOVEMBER 18, 2020



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List of Acronyms

3-C.....	Continuing, Cooperative and Comprehensive Planning Process	NAA.....	Non-attainment Area
AADT.....	Annual Average Daily Traffic	NCDOT.....	North Carolina Department of Transportation
ADT.....	Annual Daily Traffic	NEPA.....	National Environmental Policy Act of 1969
CAC.....	Citizen Advisory Committee	NHS.....	National Highway System
CMAQ.....	Congestion Mitigation and Air Quality Improvement Program	RPO.....	Rural Planning Organization
CMP.....	Congestion Management Process	SAFETEA-LU....	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
CTP.....	Comprehensive Transportation Plan	SHSP.....	Strategic Highway Safety Plan
DOT.....	Department of Transportation	SIP.....	State Implementation Plan
EJ.....	Environmental Justice	SOV.....	Single-Occupancy Vehicle
EPA.....	Environmental Protection Agency	STBG-DA.....	Surface Transportation Block Grant Program-Direct Attributable
FAA.....	Federal Aviation Administration	STIP.....	Statewide Transportation Improvement Program
FAST.....	Fixing America's Surface Transportation	STRAHNET.....	Strategic Highway Network
FC.....	Functional Classification	TASA-DA.....	Transportation Alternatives Set Aside-Direct Attributable
FHWA.....	Federal Highway Administration	TCC.....	Technical Coordinating Committee
FRA.....	Federal Railroad Administration	TCM.....	Transportation Control Measure
FTA.....	Federal Transit Administration	TDM.....	Transportation Demand Management
FY.....	Fiscal Year	TEA-21.....	Transportation Equity Act for the 21st Century
GIS.....	Geographic Information Systems	TIA.....	Traffic Impact Analysis
HOV.....	High-Occupancy Vehicle	TIP.....	Transportation Improvement Program
HSIP.....	Highway Safety Improvement Program	TMA.....	Transportation Management Area
IHS.....	Interstate Highway System	TOD.....	Transit-Oriented Development
ISTEA.....	Intermodal Surface Transportation Efficiency Act of 1991	UA.....	Urbanized Area
ITS.....	Intelligent Transportation Systems	UNCW.....	University of North Carolina at Wilmington
LRTP.....	Long-Range Transportation Plan	UPWP.....	Unified Planning Work Program
MAP-21.....	Moving Ahead for Progress in the 21st Century	VMT.....	Vehicle Miles Traveled
M&O.....	Management and Operations	VPD.....	Vehicles Per Day
MPO.....	Metropolitan Planning Organization		
MTP.....	Metropolitan Transportation Plan		
MTIP.....	Metropolitan Transportation Improvement Program		

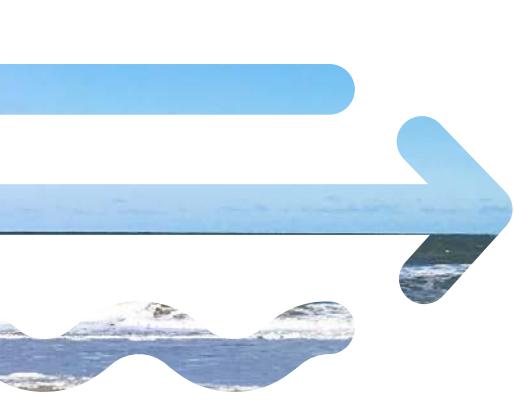


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APPENDIX A:

Background and Demographics

Background Information

The Wilmington Urban Area Metropolitan Planning Organization and the “Long Range Plan”

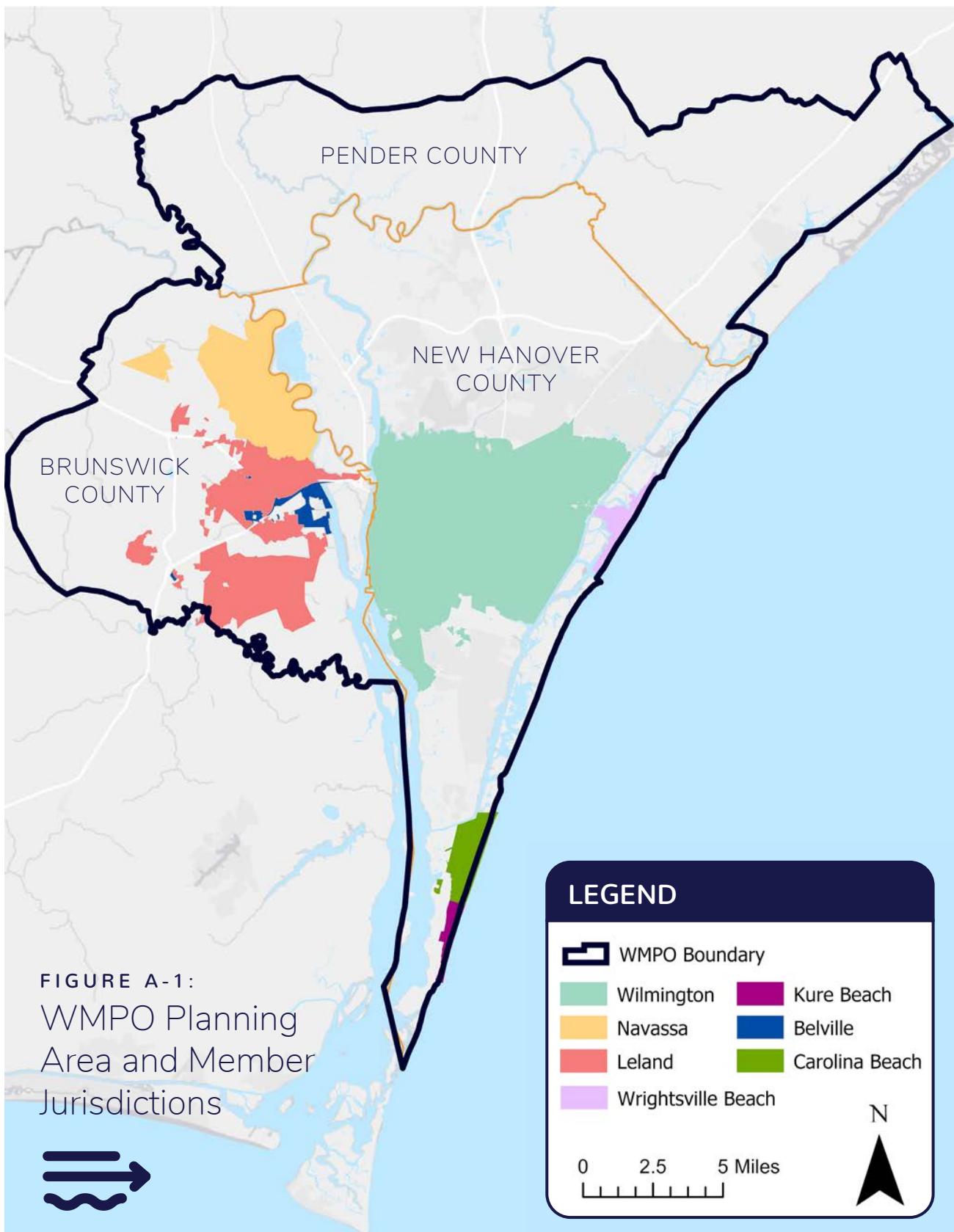
A Metropolitan Planning Organization (MPO) is a federally mandated, policy-making organization that consists of local governments and transportation authorities. Largely in response to the construction of the United States interstate system, the Federal Aid Highway Act of 1962 created the requirement for a formalized process of urban transportation planning. MPOs are established for every “urbanized area” (UZA) boundary within the United States, defined by the US Census Bureau as having 50,000 or more residents. In North Carolina, MPOs are designated by the Governor by a Memorandum of Understanding that is signed by all participating local governments. In 1978, when the Wilmington Urban Area reached a population of over 50,000, the Wilmington Urban Area Metropolitan Planning Organization (WMPO) was created. The main responsibility of the WMPO is to maintain a partnership between local governments and the state government to make decisions concerning transportation planning. Transportation plans must meet requirements that are established by federal legislation pertaining to transportation funding.

All decisions of the WMPO are made by a Transportation Advisory Committee (TAC), known locally as the WMPO Board. The 13-member Board is comprised of representatives from the WMPO’s member jurisdictions: City of Wilmington, Town of Carolina Beach, Town of Wrightsville Beach, Town of Kure Beach, New Hanover County, Town of Leland, Town of Belville, Town of Navassa, Brunswick County, and Pender County; as well as representatives from the NC Board of Transportation and the Cape Fear Public Transportation Authority (Wave Transit). The WMPO Board sets policy and provides direction for the organization. As the City of Wilmington is the host agency for the WMPO, WMPO staff are part of the City’s Planning, Development, and Transportation Department. WMPO staff work in cooperation with the state and federal government to develop several plans from which transportation needs are identified. Some of the products of the WMPO include the Unified Planning Work Program (UPWP), Transportation Improvement Program (TIP), Comprehensive Transportation Plan (CTP), Congestion Management Process (CMP), and this document: the Metropolitan Transportation Plan (MTP). The Federal Highway Act of 1973 requires MPOs to prepare an MTP to identify how the area will manage and operate a multimodal transportation system to meet the region’s economic, transportation, development, and sustainability goals for a 20-year or more

planning horizon. The previous MTP, Cape Fear Transportation 2040, which was adopted in 2015, will be replaced by this document, Cape Fear Moving Forward 2045.

The Wilmington Urban Area Planning Boundary

As previously stated, a UZA is a census-defined boundary with a population of 50,000 or more. This boundary is then adjusted by the State Department of Transportation (DOT), in coordination with local governments, to sometimes include additional territory, and is then submitted to the Federal Highway Administration (FHWA) for approval. The Wilmington Urban Area boundary encompasses 494 square miles, including the entirety of New Hanover County and portions of Brunswick and Pender Counties. A map of the WMPO planning area and member jurisdictions can be found on the opposite page.



Demographics

The US Census: Population Trends

Between 2010 and 2018, New Hanover and Pender counties were the 12th and 4th fastest growing counties in North Carolina, respectively. Brunswick County was the fastest growing county. Each grew significantly more than the State's total population increase of 8%. According to the US Census Bureau, the population of New Hanover County grew by 14.6% between 2010 and 2018, while Pender County grew by 19.1%, and Brunswick County grew by 27.3%. There are currently 280,000 people estimated to be living within the WMPO planning boundary.

The US Census: Economic Trends

The economy in the Wilmington Urban Area has also grown significantly in recent years. The largest industries in the region, in terms of number of employees, include Education and Health Services; Professional and Business Services; Public Administration; Information Services; Trade, Transportation, and Utilities; Manufacturing; and Finance. There are approximately 11,170 employer establishments in Brunswick, New Hanover, and Pender counties. Most residents of the region commute to work in a single-occupancy vehicle (SOV) with an average commute time of 24 minutes. A breakdown of Census data by county can be found below.

Census Data (by County)								
County	Median Age	Median Household Income	Household Growth	Poverty Rate	Number of Employees	Employee Growth	Median Property Value	Property Value Growth
New Hanover	38.7	\$51,457	4.39%	18	107,369	1.40%	\$225,600	4.54%
Pender	42.6	\$49,357	5.96%	15.8	24,768	4.53%	\$167,200	4.30%
Brunswick	51.9	\$51,164	3.66%	14.1	48,982	5.07%	\$194,700	2.74%

WMPO Socioeconomic Estimates and Projections

The WMPO and the North Carolina Department of Transportation (NCDOT) cooperatively maintain a regional travel demand model for the Wilmington Urban Area and routinely update population and employment data to ensure that the model accurately depicts current and anticipated socioeconomic conditions. Maintaining accurate socioeconomic data is critical to ensure that the travel demand model appropriately reflects current and future transportation network operations.

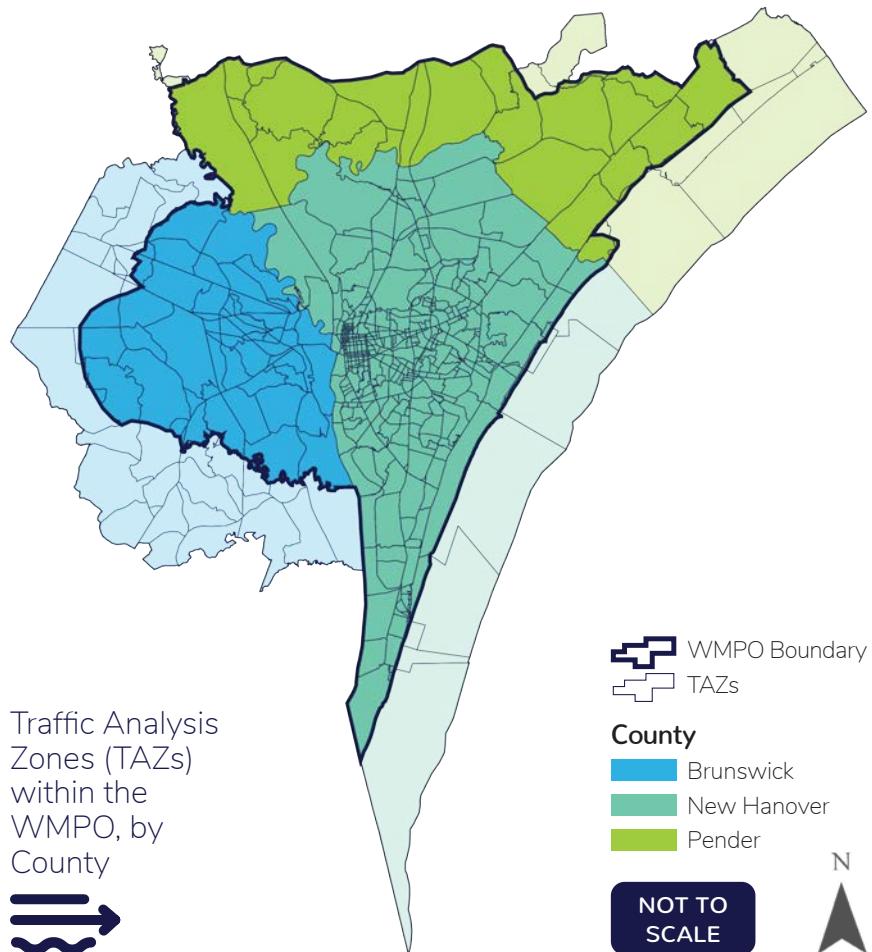
Summary of Socioeconomic Data (WMPO Planning Boundary)	Category		
	2015		2045
	Population	273,880	422,748
	Number of Households	117,813	183,209
Employment	144,808	158,681	

Methodology

GIS data was collected from Traffic Analysis Zones (TAZs) in the region. There are over 600 TAZs within the WMPO boundary. Tax parcel data from 2015 for each county was used with Base Year Socioeconomic Data. Socioeconomic data related to human activities and the spaces/structures used was also collected, including the following:

- Demographics
- Housing
- Regional migration
- Transportation
- Economics
- Retail

WMPO staff met with planning staff from each county (who were also part of the modal subcommittees) to determine growth rates for 2015-2045. The counties did not provide exact growth rates, but reported high, medium, or low growth on a TAZ level, which was then used to project future employment and population for the region.



Data Collection

The socioeconomic database for the Wilmington travel demand model was originally set to a 2010 base year. This demographic data came directly from the 2010 US Census. In order to update the model, the 2010 base year was updated to 2015. NCDOT utilized property tax records from each county between 2010 and 2015 to adjust the base year numbers.

Base Year (2015) Household Estimates

Base year household estimates were completed using 2015 property data for each of the three Wilmington Urban Area counties at the TAZ level. Census data was compared to American Community Survey (ACS) data to ensure accuracy. The household estimates are summarized in the following table:

Wilmington Travel Demand Model: 2015 Population Estimates					
Location	Population	Number of Households	Seasonal Households	Vehicles	Students
Brunswick County	36,525	14,789	568	27,608	5,123
New Hanover County	205,647	90,556	7,714	156,396	28,706
Pender County	31,708	12,468	2,958	24,048	4,617
Total Model Area	273,880	117,813	11,240	208,052	38,446

Base Year (2015) Employment Estimates

NCDOT obtained base year employment data to be used in the model from InfoUSA, an organization that specializes in the collection of employment data. The data was checked for errors by NCDOT and larger employers were contacted to ensure accuracy of the data. The employment estimates are summarized in the following table:

Wilmington Travel Demand Model: 2015 Employment Estimates						
Location	Industry	Retail	Highway Retail	Service	Office	Total
Brunswick County	2,857	1,021	1,486	2,584	1,589	9,537
New Hanover County	22,823	15,315	16,774	39,537	32,607	127,056
Pender County	2,222	868	1,347	2,138	1,640	8,215
Total Model Area	27,902	17,204	19,607	44,259	35,836	144,808

Future Year (2045) Household Projections

Household projections were completed for the 2045 horizon year. Using historical growth rates and the expertise of local planners on residential trends in the region, growth rates were established and applied to base year household estimates within each TAZ, resulting in the 2045 projections shown in the following table:

Wilmington Travel Demand Model: 2045 Population Projections					
Location	Population	Number of Households	Seasonal Households	Vehicles	Students
Brunswick County	51,403	20,874	804	38,780	7,288
New Hanover County	315,163	139,941	9,429	241,658	44,037
Pender County	56,182	22,394	4,558	43,280	7,179
Total Model Area	422,748	183,209	14,791	323,718	58,504

Future Year (2045) Employment Projections

Employment projections were also completed for the 2045 horizon year. Using historical growth rates and the expertise of local planners on industry in the region, growth rates were established and applied to base year employment estimates within each TAZ, resulting in the 2045 projections shown in the following table:

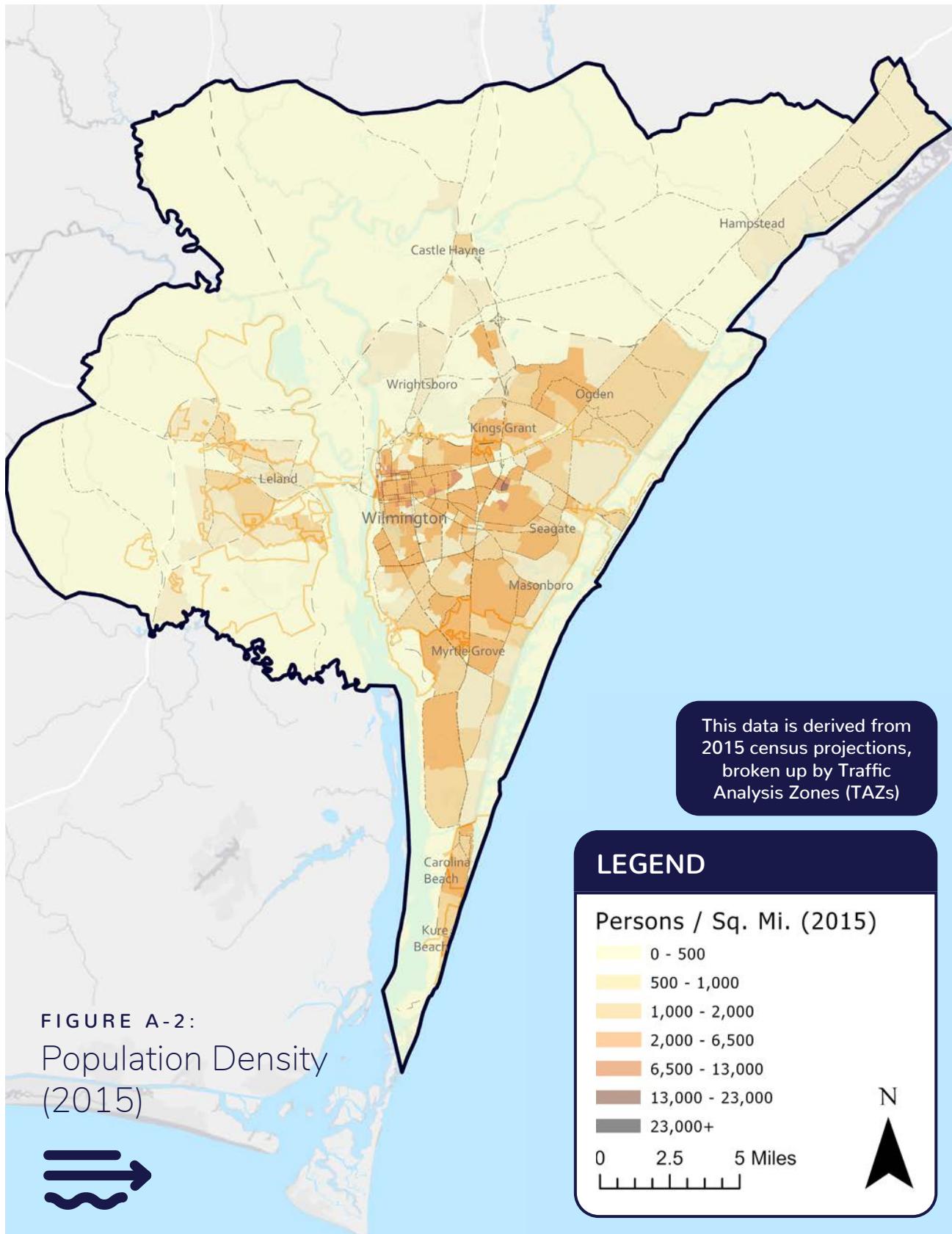
Wilmington Travel Demand Model: 2045 Employment Projections						
Location	Industry	Retail	Highway Retail	Service	Office	Total
Brunswick County	2,923	1,138	1,816	2,381	1,714	9,972
New Hanover County	27,706	19,289	18,741	37,918	39,115	142,769
Pender County	1,735	579	728	1,747	1,151	5,940
Total Model Area	32,364	21,006	21,285	42,046	41,980	158,681

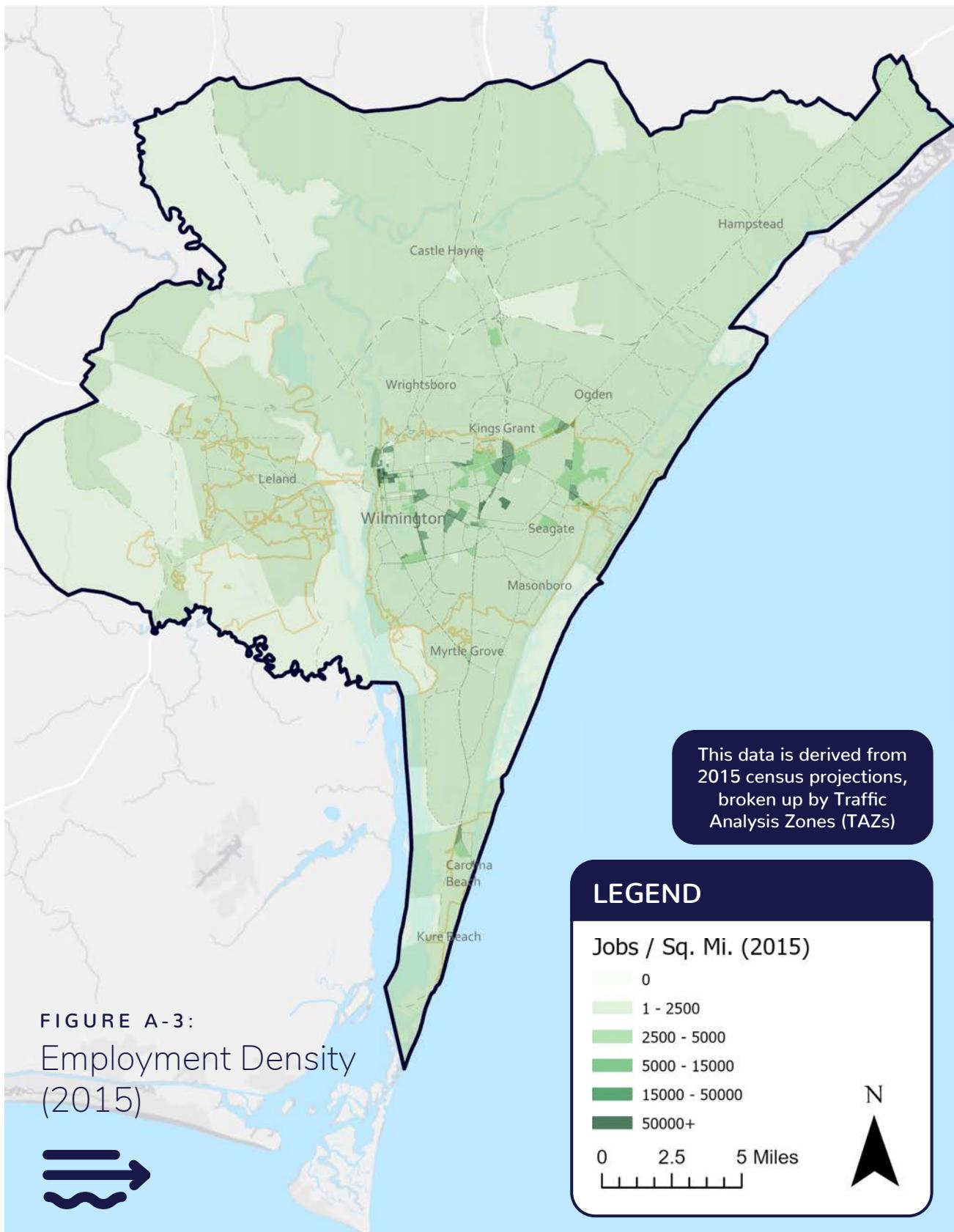
Calibration/Adoption

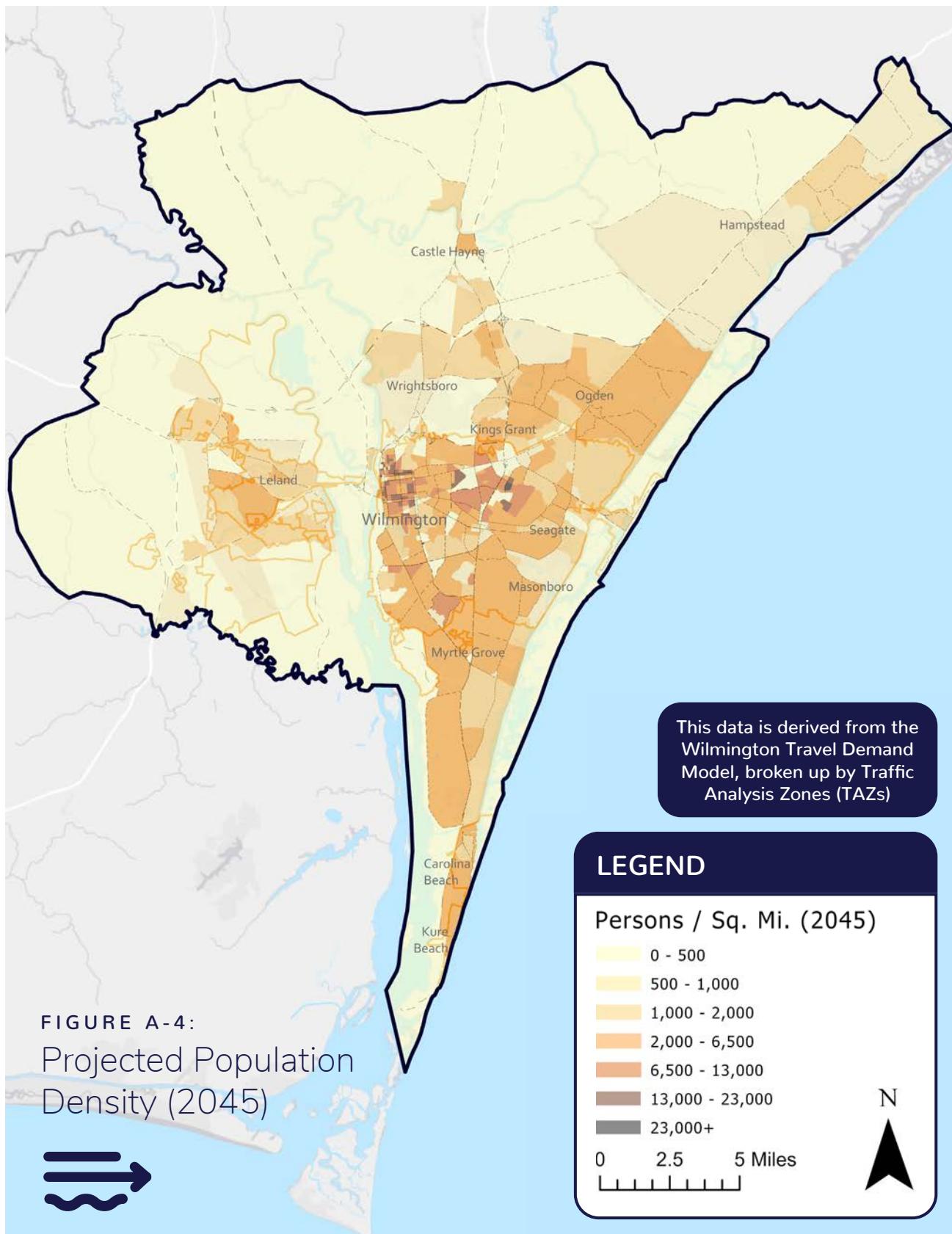
Base year estimates and projected growth rates were reviewed by the Citizens Advisory Committee (CAC) and local planners for accuracy. When estimates and growth rates were agreed upon, the numbers were adopted to be used in the travel demand model.

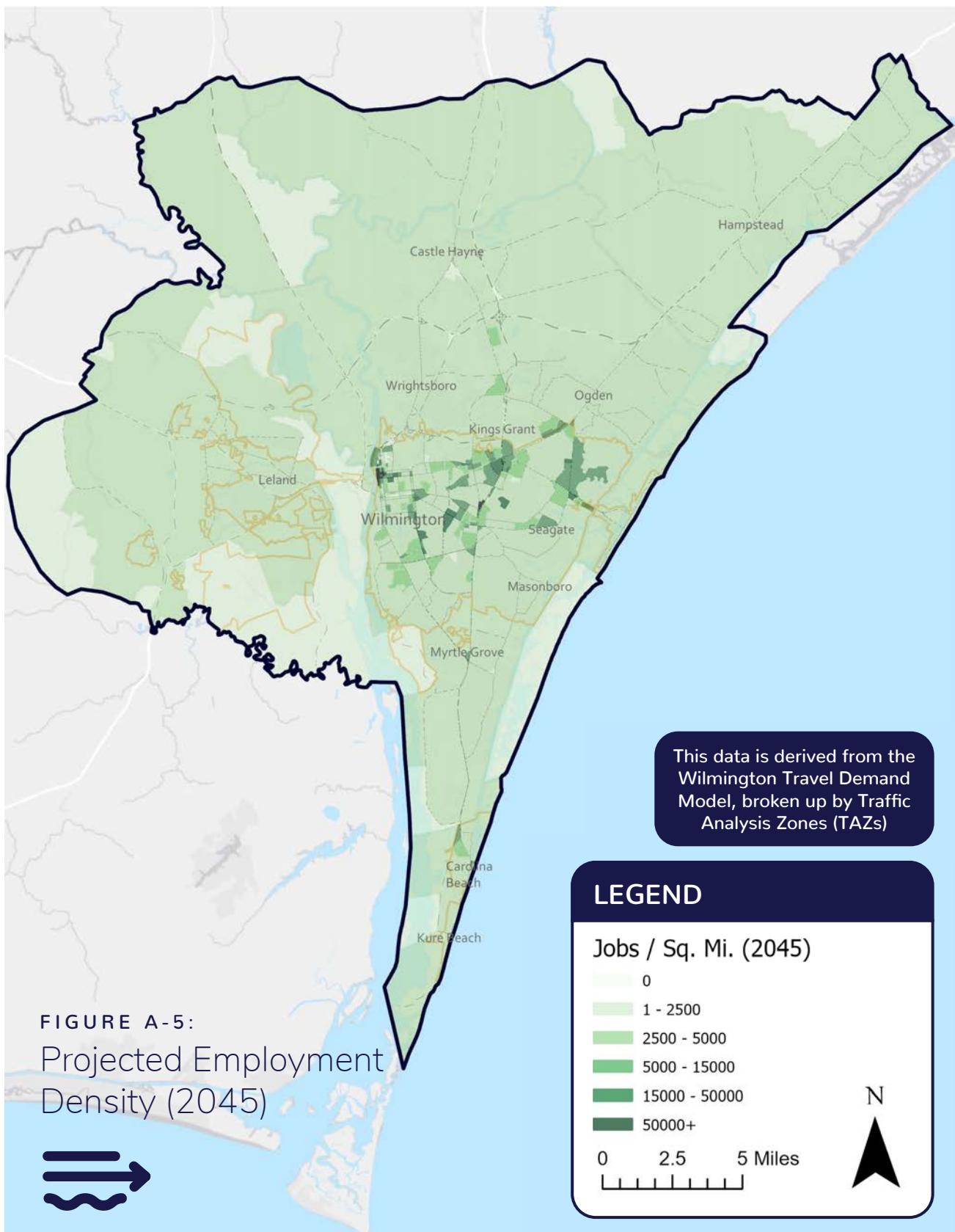
Maps

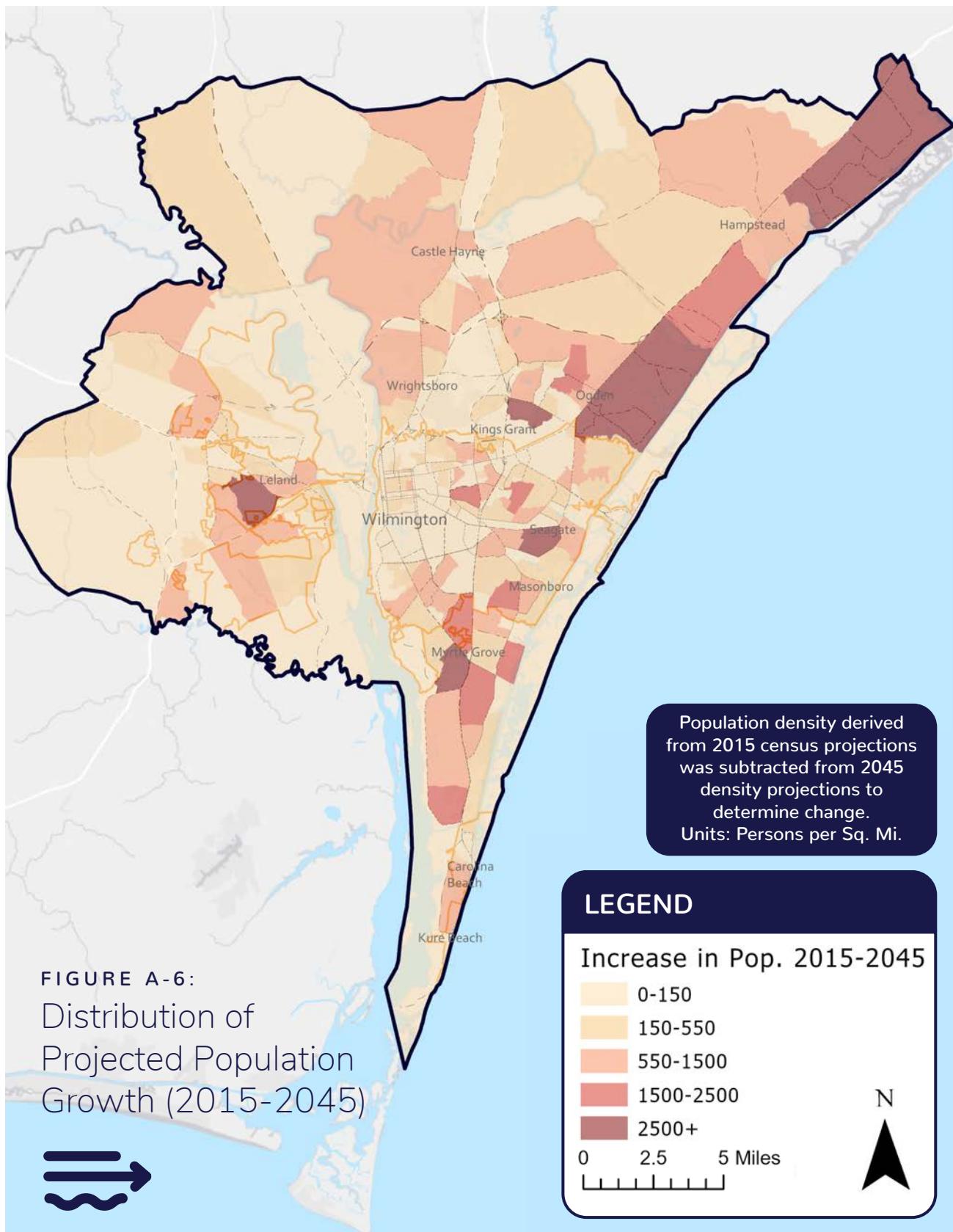
Mapping for Population Density (2015), Employment Density (2015), Projected Population Density (2045), Projected Employment Density (2045), Distribution of Projected Population Growth (2015-2045), and Distribution of Projected Employment Growth (2015-2045) can be found on the following pages.

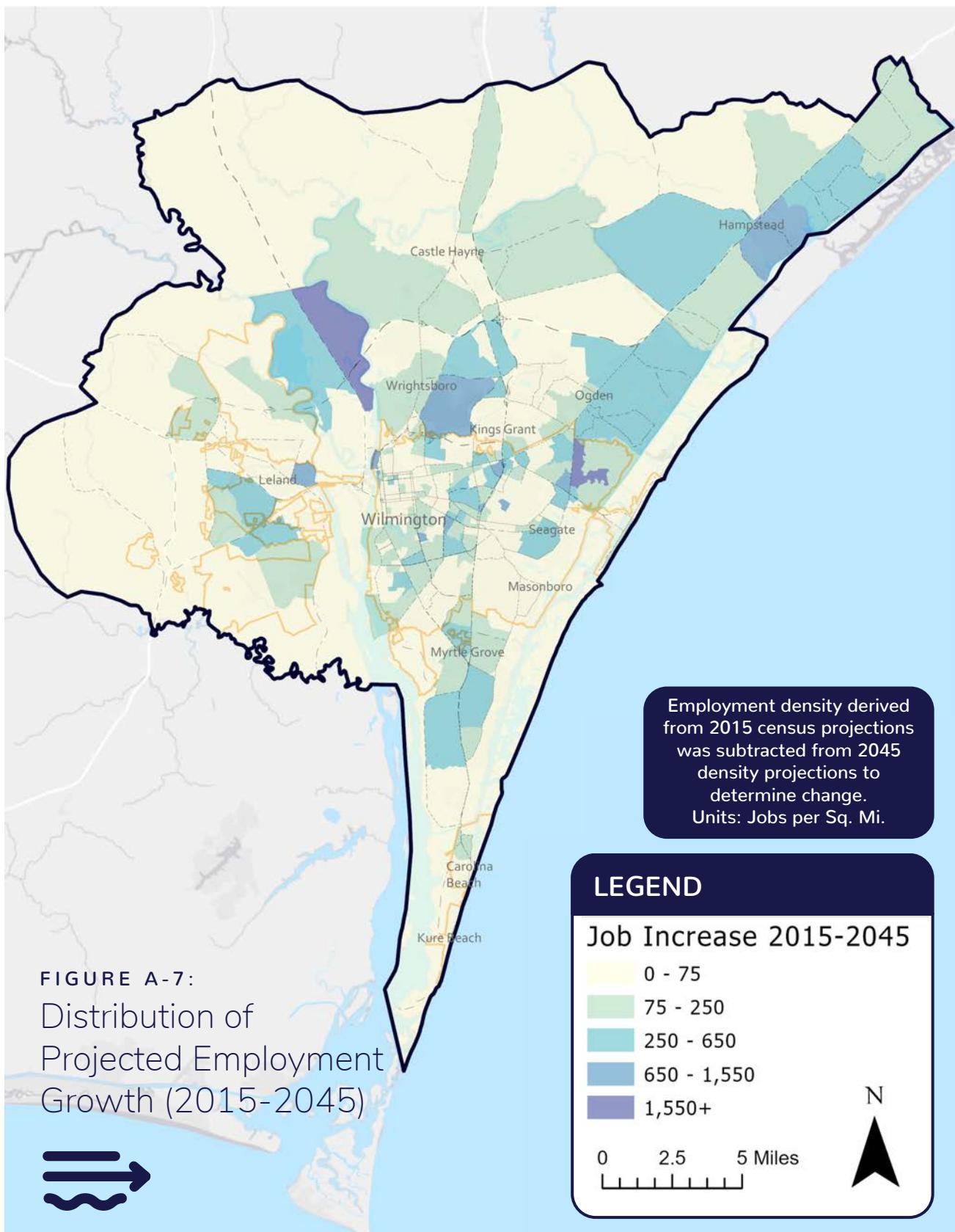












Sources:

- NCDOT: Wilmington MPO Travel Demand Model
- United States Census Bureau
<https://www.census.gov/>
 - 2010 Census
 - 2017 Census Estimates
- DataUSA
- InfoUSA



APPENDIX B:

Federal Regulations and Performance Reporting

On December 4, 2015, the Fixing America's Surface Transportation (FAST) Act was signed into law by President Barack Obama. The legislation builds upon the Moving Ahead for Progress in the 21st Century Act (MAP-21), which was enacted to improve federal surface transportation by adding provisions to address safety, multimodality, maintenance, congestion, environmental protection, and efficiency. The FAST Act funded, and continues to fund, surface transportation programs for fiscal years 2016 through 2020.

MAP-21 created regulations for both metropolitan and statewide transportation planning processes, including incorporating performance goals, measures, and targets into the process of identifying needed transportation improvements and project selection. The FAST Act both supports and enhances the MAP-21 regulations, preserving public involvement as a dominant value.

The FAST Act upholds MAP-21 requirements for a long-range plan and a short-term Transportation Improvement Program (TIP), with the long-range plans now required to include facilities that support intercity transportation, especially public transportation. The statewide and metropolitan long-range plans must outline and describe performance measures and targets that states and Metropolitan Planning Organizations (MPOs) use to assess system performance as well as progress toward achieving those targets. Additionally, the FAST Act includes new requirements for the transportation planning process to consider projects/strategies which: improve the resilience and reliability of the transportation system; reduce or mitigate stormwater impacts; and enhance travel and tourism. In order to continue the multimodal focus of the FAST Act, and to engage all sectors and users of the transportation network, MPOs are required to include public ports and private transportation providers in planning processes.

The following pages outline how the new FAST Act requirements were incorporated into the development of Cape Fear Moving Forward 2045.

Planning Factors



Code of Federal Regulations (CFR) Title 23, Section 450.306(b) states that the metropolitan transportation planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the planning factors, which now include:

- Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- Enhance travel and tourism.

Two additional planning factors were added to the eight factors for consideration under MAP-21. All ten current factors (listed below) were considered during the development of the guiding vision and goals by the Citizens Advisory Committee (CAC). A chart detailing how the plan's goals align with these federally required factors is included within the plan document. In addition to considering these planning factors while setting the goals of the plan, subject matter experts representing disaster and emergency management, floodplain administration, stormwater, visitors' bureaus, and chambers of commerce were included on the six modal subcommittees. Also, modal policies were developed to encourage further inclusion of these factors in future project scoping and design.

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of the transportation system for motorized and non-motorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- Promote efficient system management and operation;
- Emphasize the preservation of the existing transportation system;
- Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- Enhance travel and tourism.

Performance Targets



Code of Federal Regulations (CFR) Title 23, Section 450.306(d)(3) states that MPOs shall establish performance targets no later than 180 days after the relevant state or provider of public transportation establishes performance targets.

Pursuant to the Moving Ahead for Progress in the 21st Century Act (MAP-21) enacted in 2012 and the Fixing America's Surface Transportation (FAST) Act enacted in 2015, State Departments of Transportation (DOTs), Metropolitan Planning Organizations (MPOs), and public transportation providers must apply a transportation performance management approach in carrying out their federally-required transportation planning and programming activities. The process requires the establishment and use of a coordinated performance-based approach to transportation decision-making to support national goals for the federal-aid highway and public transportation programs.

On May 27, 2016, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued the Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule (The Planning Rule). This regulation implements the transportation planning and transportation performance management provisions of MAP-21 and the FAST Act.

In accordance with 23 CFR 450.324(f)(3)-(4)(i)(ii) of the Planning Rule, and the North Carolina Performance Management Agreement between the North Carolina Department of Transportation (NCDOT), the WMPO, and public transportation providers, NCDOT and each North Carolina MPO must include a description of the applicable performance measures and targets and a System Performance Report for the performance measures in their respective statewide and metropolitan transportation plans. The System Performance Report presents the condition and performance of the transportation system with respect to required performance measures and approved performance targets, and reports on progress achieved in meeting the targets in comparison with previous reports and the baseline. The Planning Rule specifies the following timeframes for when a state or MPO must include the System Performance Report:

- Highway Safety/PM1 - In any statewide or metropolitan transportation plan amended or adopted on or after May 27, 2018;
- Pavement and Bridge Condition/PM2 - In any statewide or metropolitan transportation plan amended or adopted on or after May 20, 2019;
- System Performance, Freight, and Congestion Mitigation and Air Quality/PM3 - In any statewide or metropolitan transportation plan amended or adopted on or after May 20, 2019;
- Transit Assets - In any statewide or metropolitan transportation plan amended or adopted on or after October 1, 2018;
- Transit Safety Measures - In any statewide or metropolitan transportation plan amended or adopted on or after July 20, 2021.

Per the Planning Rule and the North Carolina Performance Management Agreement, the System Performance Report for the WMPO's Metropolitan Transportation Plan (MTP) is included, herein, for the required performance measures.

The WMPO recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the WMPO planning process directly reflects the goals, objectives, performance measures, and targets as they are available and described in other State and public transportation plans and processes; specifically, the North Carolina Strategic Highway Safety Plan (SHSP), the Highway Safety Improvement Program (HSIP), the Transportation Asset Management Plan (TAMP), the North Carolina Multimodal Statewide Freight Plan, the NCDOT Group Transit Asset Management Plan, and the current 2040 North Carolina Statewide Long Range Transportation Plan (SLRTP).

- The 2040 SLRTP provides a 30-year transportation blueprint for the state. The Plan summarizes the state's highest priorities for ensuring safety and preserving the existing transportation systems and focusing on services and facilities with statewide significance. Investment strategies identified in the 2040 SLRTP are intended to meet the mobility needs, ensure safety and promote economic growth for the state, and reflect optimal performance impacts across each investment program given anticipated transportation revenues.
- The North Carolina SHSP is intended to articulate the way forward to achieve Vision Zero, where even one fatality is too many on North Carolina roads. The SHSP's vision, mission, and goals guide the development and implementation of strategies and actions to achieve Vision Zero for the MPOs and other safety partners in addressing safety and defines a framework for implementation activities to be carried out across North Carolina.
- The HSIP annual report provides for a continuous and systematic process that identifies and reviews traffic safety issues across the state to identify locations with potential for improvement. The goal of the HSIP process is to reduce the number of crashes, injuries, and fatalities by eliminating certain predominant types of crashes through the implementation of engineering solutions.
- MAP-21 requires states to develop a TAMP for all National Highway System (NHS) pavements and bridges within the state. North Carolina's TAMP includes investment strategies leading to a program of projects that would make progress toward achievement of a state's pavement and bridge condition targets.
- The North Carolina Multimodal Statewide Freight Plan defines the conditions and performance of the state freight system and identifies the policies and investments that will enhance highway freight mobility well into the future. The Plan identifies freight needs and the criteria used to determine investments in freight, and prioritizes freight investments across modes.

The sections that follow provide detail regarding the performance measures and associated targets, as well as information/discussion by the WMPO regarding how projects programmed in the organization's TIP are helping the NCDOT achieve its targets.

Highway Safety (PM1)

Effective April 14, 2016, the FHWA established five highway safety performance measures to carry out the Highway Safety Improvement Program (HSIP). The HSIP is a federal-aid funding program intended to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. These performance measures are:

1. Number of fatalities;
2. Rate of fatalities per 100 million vehicle miles traveled;
3. Number of serious injuries;
4. Rate of serious injuries per 100 million vehicle miles traveled; and
5. Number of combined non-motorized fatalities and non-motorized serious injuries.

Safety performance targets are established annually by State DOTs for each safety performance measure and reported to FHWA in the HSIP Annual Report. MPOs then establish annual targets for each measure by either agreeing to program projects that will support the statewide targets, or setting quantifiable targets for the metropolitan planning area.

Current statewide safety targets address calendar year 2020 and are based on a five-year rolling average of historical data and anticipated trends. North Carolina statewide safety performance targets for 2020 are included in Table 1, along with statewide safety performance for the two most recent reporting periods (2013-2017 and 2014-2018). The WMPO adopted/approved the North Carolina statewide safety performance targets on November 20, 2019.

Table 1. Highway Safety (PM1) System Conditions and Performance

Performance Measures	Statewide Five-Year Rolling Average 2013-2017	Statewide Five-Year Rolling Average 2014-2018	Statewide (Five-Year Rolling Average 2015-2019) NC Calendar Year 2020 Targets
Number of Fatalities	1,359.0	1,396.4	1,227.8
Rate of Fatalities per 100 Million Vehicle Miles Traveled	1.214	1.211	1.084
Number of Serious Injuries	2,860.8	3,362.6	2,812.8
Rate of Serious Injuries per 100 Million Vehicle Miles Traveled	2.524	2.886	2.462
Number of Combined Non-Motorized Fatalities and Non-Motorized Serious Injuries	431.4	494.6	426.6

As shown in Table 1, the five-year rolling average of four of the five measures, with the exception of fatality rate, increased from 2013-2017 to 2014-2018. The 2020 targets are based on a goal of reducing fatalities and serious injuries by a certain percentage by December 31, 2020.

In early 2020, FHWA completed an assessment of target achievement for NCDOT's 2018 safety targets, based on the 5-year averages for 2014-2018 for each measure. Per FHWA's PM1 rule, a state has met or made significant progress toward its safety targets when at least four of the targets have been met or the actual outcome is better than the baseline performance. Based on FHWA's review, North Carolina did not make significant progress toward achieving its safety targets. As a result, NCDOT must ensure that all HSIP safety funds are obligated, and must develop an HSIP Implementation Plan that describes actions the State will take to meet or make significant progress toward achieving its targets.

The latest safety conditions will be updated annually on a rolling 5-year average basis, and will be reflected within each subsequent System Performance Report, to track performance over time in relation to baseline conditions and established targets.

The Cape Fear Moving Forward 2045 MTP will increase the safety of the transportation system for motorized and non-motorized users as required by the Planning Rule. The plan's vision includes 'safe' as its first overarching goal, and was incorporated into the development of modal goals and objectives that formed the basis of scoring criteria and metrics for projects included within this plan. The developed metrics applied a higher point assignment to projects that improved safety within the existing transportation network. The funding and implementation of these capital projects will contribute to an overall safer multi-modal transportation system and assist in meeting safety performance targets.

Pavement and Bridge Condition (PM2)

Effective May 20, 2017, FHWA established performance measures to assess pavement condition and bridge condition for the National Highway Performance Program. This second FHWA performance measure rule (PM2) established six performance measures:

1. Percent of Interstate pavements in good condition;
2. Percent of Interstate pavements in poor condition;
3. Percent of non-Interstate National Highway System (NHS) pavements in good condition;
4. Percent of non-Interstate NHS pavements in poor condition;
5. Percent of NHS bridges by deck area classified as in good condition; and
6. Percent of NHS bridges by deck area classified as in poor condition.

Pavement Condition Measures

The pavement condition measures represent the percentage of lane-miles on the Interstate or non-Interstate NHS that are in good condition or poor condition. FHWA established five metrics to assess pavement condition: International Roughness Index (IRI), applicable to asphalt and concrete pavements; cracking percent, applicable to asphalt and concrete pavements; rutting, applicable only to asphalt pavements; faulting applicable only to certain types of concrete pavements; and Present Serviceability Rating (PSR), applicable only to roads with lower posted speeds and used in lieu of the other metrics at the option of the state. For each metric, a threshold is used to establish good, fair, or poor condition.

Pavement condition is assessed using the applicable metrics and thresholds. A pavement section is rated in good condition if two or three of the applicable metric ratings are good, and in poor condition if two or more applicable metric ratings are poor. If a state reports PSR for any pavement segments, those segments are rated according to a single PSR scale. For all pavement types, sections that are not good or poor are rated as fair.

The pavement condition measures are expressed as a percentage of all applicable roads in good or poor condition. Pavement in good condition suggests that no major investment is needed. Pavement in poor condition suggests major reconstruction investment is needed due to either ride quality or a structural deficiency.

Bridge Condition Measures

The bridge condition measures represent the percentage of bridges, by deck area, on the NHS that are in good condition or poor condition. The condition of each bridge is evaluated by assessing four bridge components: deck, superstructure, substructure, and culverts. FHWA created a metric rating threshold for each component to establish good, fair, or poor condition. Every bridge on the NHS is evaluated using these component ratings. If the lowest rating of the four metrics is greater than or equal to seven, the structure is classified as good. If the lowest rating is less than or equal to four, the structure is classified as poor. If the lowest rating is five or six, it is classified as fair.

To determine the percent of bridges in good or in poor condition, the sum of total deck area of good or poor NHS bridges is divided by the total deck area of bridges carrying the NHS. Deck area is computed using structure length and either deck width or approach roadway width. Good condition suggests that no major investment is needed. Bridges in poor condition are safe to drive on; however, they are nearing a point where substantial reconstruction or replacement is needed.

Pavement and Bridge Targets

Pavement and bridge condition performance is assessed and reported over a four-year performance period. The first performance period began on January 1, 2018, and runs through December 31, 2021. NCDOT reported baseline PM2 performance and targets to FHWA on October 1, 2018, and will report updated performance information at the midpoint and end of the performance period. The second four-year performance period will cover January 1, 2022, to December 31, 2025, with additional performance periods following every four years.

The PM2 rule requires states and MPOs to establish two-year and/or four-year performance targets for each PM2 measure. Current two-year targets represent expected pavement and bridge condition at the end of calendar year 2019, while the current four-year targets represent expected condition at the end of calendar year 2021.

States establish targets as follows:

- Percent of Interstate pavements in good and poor condition – four-year targets;
- Percent of non-Interstate NHS pavements in good and poor condition – two-year and four-year targets; and
- Percent of NHS bridges by deck area in good and poor condition – two-year and four-year targets.

MPOs establish four-year targets for each measure by either agreeing to program projects that will support the statewide targets, or setting quantifiable targets for the metropolitan planning area.

NCDOT established current statewide two-year and four-year PM2 targets on May 16, 2018. The WMPO adopted the statewide PM2 targets on June 27, 2018. Table 2 on the following page presents statewide baseline performance for each PM2 measure as well as the current two-year and four-year statewide targets established by NCDOT.

Table 2: Statewide Pavement and Bridge Condition (PM2) Performance and Targets

Performance Measures	Statewide Performance (Baseline)	2-Year Target (2019)	4-Year Target (2021)
Percent of Interstate pavements in good condition	63.6%	Not required	37.0%
Percent of Interstate pavements in poor condition	0.15%	Not required	2.2%
Percent of non-Interstate NHS pavements in good condition	36.1%	27.0%	21.0%
Percent of non-Interstate NHS pavements in poor condition	1.2%	4.2%	4.7%
Percent of NHS bridges (by deck area) in good condition	38.2%	33.0%	30.0%
Percent of NHS bridges (by deck area) in poor condition	6.6%	8.0%	9.0%

The WMPO's 2045 MTP addresses infrastructure preservation and identifies pavement and bridge infrastructure needs within the metropolitan planning area. Funding is allocated for targeted infrastructure improvements like the Cape Fear Memorial Bridge Replacement and the modernization of several regional minor arterials and major collector streets such as NC133, NC210, and SR1438 (Lanvale Road). The plan estimates projected roadway infrastructure maintenance revenues over the next 25 years and includes overarching plan goals, as well as Freight and Freight Rail and Roadway modal goals, that support the improvement of existing infrastructure quality within the region.

The WMPO recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the Cape Fear Moving Forward 2045 planning process directly reflects the goals, objectives, performance measures, and targets as they are available and described in other State and public transportation plans and processes; specifically, the Transportation Asset Management Plan (TAMP) and the current 2040 Statewide Long Range Transportation Plan (SL RTP).

- MAP-21 requires States to develop a TAMP for all NHS pavements and bridges within the state. North Carolina's TAMP includes investment strategies leading to a program of projects that would make progress toward achievement of a State's pavement and bridge condition targets.
- The 2040 SL RTP summarizes transportation deficiencies across the state and defines an investment portfolio across all modes, highway preservation, highway safety, and highway operations over the 30-year plan horizon. Investment priorities reflect optimal performance impacts across each investment program given anticipated transportation revenues.

System Performance, Freight, and Congestion Mitigation & Air Quality Improvement Program (PM3)

Effective May 20, 2017, FHWA established measures to assess performance of the NHS, freight movement on the Interstate system, and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program . This third FHWA performance measure rule (PM3) established six performance measures, described on the following page.

National Highway System (NHS) Performance:

1. Percent of person-miles on the Interstate system that are reliable;
2. Percent of person-miles on the non-Interstate NHS that are reliable;

Freight Movement on the Interstate:

3. Truck Travel Time Reliability (TTTR) Index;

Congestion Mitigation and Air Quality Improvement (CMAQ) Program:

4. Annual hours of peak hour excessive delay per capita (PHED);
5. Percent of non-single occupant vehicle travel (Non-SOV); and
6. Cumulative two-year and four-year reduction of on-road mobile source emissions for CMAQ funded projects (CMAQ Emission Reduction).

The CMAQ performance measures apply to states and MPOs with projects financed with CMAQ funds whose boundary contains any part of a nonattainment or maintenance area for ozone, carbon monoxide or particulate matter. The WMPO meets air quality standards, therefore, the CMAQ measures do not apply and are not reflected in the System Performance Report.

System Performance Measures

The two System Performance measures assess the reliability of travel times on the Interstate or non-Interstate NHS system. The performance metric used to calculate reliability is the Level of Travel Time Reliability (LOTTR). LOTTR is defined as the ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) over all applicable roads during four time periods (AM peak, mid-day, PM peak, and weekends) that cover the hours of 6 AM to 8 PM each day.

The LOTTR ratio is calculated for each segment of applicable roadway, essentially comparing the segment with itself. A segment is deemed to be reliable if its LOTTR is less than 1.5 during all four time periods. If one or more time periods has a LOTTR of 1.5 or above, that segment is unreliable.

The measures are expressed as the percent of person-miles traveled on the Interstate or non- Interstate NHS system that are reliable. Person-miles take into account the number of people traveling in buses, cars, and trucks over these roadway segments. To determine total person miles traveled, the vehicle miles traveled (VMT) on each segment is multiplied by average vehicle occupancy. To calculate the percent of person miles traveled that are reliable, the sum of the number of reliable person miles traveled is divided by the sum of total person miles traveled.

Freight Movement Performance Measure

The Freight Movement performance measure assesses reliability for trucks traveling on the Interstate. A TTTR ratio is generated by dividing the 95th percentile truck travel time by a normal travel time (50th percentile) for each segment of the Interstate system over five time periods throughout weekdays and weekends (AM peak, mid-day, PM peak, weekend, and overnight) that cover all hours of the day. For each segment, the highest

TTTR value among the five time periods is multiplied by the length of the segment. The sum of all length-weighted segments is then divided by the total length of Interstate to generate the TTTR Index.

PM3 Performance Targets

Performance for the PM3 measures is assessed and reported over a four-year performance period. The first performance period began on January 1, 2018, and will end on December 31, 2021.

The PM3 rule requires State DOTs and MPOs to establish two-year and/or four-year performance targets for each PM3 measure. The current two-year and four-year targets represent expected performance at the end of calendar years 2019 and 2021, respectively.

States establish targets as follows:

- Percent of person-miles on the Interstate system that are reliable – two-year and four-year targets;
- Percent of person-miles on the non-Interstate NHS that are reliable – four-year targets; and
- Truck Travel Time Reliability (TTTR) – two-year and four-year targets.

MPOs establish four-year targets for the System Performance and Freight Movement measures. MPOs establish targets by either agreeing to program projects that will support the statewide targets, or setting quantifiable targets for the MPO's planning area that differ from the state targets.

NCDOT established statewide PM3 targets on May 16, 2018. The WMPO adopted the statewide PM3 targets on June 27, 2019. Table 3 presents statewide baseline performance for each PM3 measure as well as the current two-year and four-year statewide targets established by NCDOT.

Table 3: System Performance/Freight Movement (PM3) Performance and Targets			
Performance Measures	Statewide Performance (Baseline)	2-Year Target (2019)	4-Year Target (2021)
Percent of person-miles on the Interstate system that are reliable	88.1%	80.0%	75.0%
Percent of person-miles on the non-Interstate NHS that are reliable	88.4%	Not required	70.0%
Truck Travel Time Reliability (TTTR) Index	1.39	1.65	1.70

The WMPO's 2045 MTP addresses reliability, freight movement, and congestion, as well as identifies needs for each of these issues within the metropolitan planning area and allocates funding for targeted improvements. A major consideration and subsequent goal of the Roadway Element of the plan is efficiency. Infrastructure investments were evaluated based on the reduction in VMT or travel time. This goal subsequently influenced the development of roadway policies supporting future investments supporting travel time reliability.

The three goals of the Freight and Freight Rail Element of Cape Fear Moving Forward 2045 are regional economic vitality and innovation; transportation network efficiency and safety; and supply chain resilience

and reliability. These goals and their objectives shaped the metrics utilized to evaluate freight supporting investments, as well as the development of regional freight policies. These investments and policies will support the WMPO and NCDOT in achieving the adopted Freight Movement performance target.

The WMPO recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the Cape Fear Moving Forward 2045 planning process directly reflects the goals, objectives, performance measures, and targets as they are available and described in other State and public transportation plans and processes; specifically, the North Carolina Multimodal Statewide Freight Plan and the current 2040 North Carolina Statewide Transportation Plan (SL RTP).

- The North Carolina Multimodal Statewide Freight Plan defines the conditions and performance of the state freight system and identifies the policies and investments that will enhance highway freight mobility well into the future. The plan identifies freight needs and the criteria used to determine investments in freight, and prioritizes freight investments across modes.
- The SL RTP summarizes transportation deficiencies across the state and defines an investment portfolio across highway and transit capacity, highway preservation, highway safety, and highway operations over the 25-year plan horizon. Investment priorities reflect optimal performance impacts across each investment program given anticipated transportation revenues.

Coordination between Metropolitan Planning Organizations, States, and Public Transportation Providers regarding Performance Targets



Code of Federal Regulations (CFR) Title 23, Section 450.314(h) states that MPOs, states, and public transportation providers shall agree upon provisions for developing and sharing information regarding the data, selection, collection, reporting, and progress of performance targets.

The WMPO will continue to work with NCDOT and Wave Transit to share and report information regarding the collection, recording, and progress of targets.

Involving Interested Parties in the Metropolitan Transportation Planning Process



Code of Federal Regulations (CFR) Title 23, Section 450.316(a) states that MPOs shall develop and use a documented participation plan in order to involve the public and incorporate public ports and private providers of transportation such as intercity bus operators and employer-based commuter programs.

The WMPO's adopted Public Participation Plan (PPP) was approved by the WMPO Board on January 25, 2017. This plan, and additional measures, were used to fulfill the public participation portion of this plan's development. The WMPO created six modal subcommittees comprised of subject matter experts to develop project lists and policies. Representatives from the North Carolina Port of Wilmington and intercity bus operators (Greyhound) were included on the modal subcommittees. The commuting programs were incorporated into the Transportation Demand Management (TDM) strategies outlined in Appendix M.

Coordination with Other Planning Agencies during the Development of the Metropolitan Transportation Plan



Code of Federal Regulations (CFR) Title 23, Section 450.316(b) states that MPOs should consult with other planning agencies and additional representatives of tourism and the reduction of impacts from natural disasters in the area when developing the MTP.

Subject matter experts represented on the six modal subcommittees included planning representatives from Wilmington International Airport (ILM); the Cape Fear Public Transportation Authority (Wave Transit); the North Carolina Port of Wilmington; representatives of the Visitors Bureaus of Pender, New Hanover, and Brunswick counties; floodplain administrators and emergency management coordinators; and the Planning Directors (or their designees) of New Hanover, Pender, and Brunswick counties. Additionally, the WMPO's Technical Coordinating Committee (TCC), which is comprised of planning and operations staff from the organization's member jurisdictions, planning partners, and NCDOT's Transportation Planning Division, assisted in the development of this plan.

The Congestion Management Process in Transportation Management Areas



Code of Federal Regulations (CFR) Title 23, Section 450.322 states that the transportation planning process in a Transportation Management Area (TMA) shall address congestion management through the MPO's Congestion Management Process (CMP) and appropriate Transportation Demand Management (TDM) strategies.

- Consider all forms of demand/congestion management including (but not limited to): intercity bus service, employer-based programs, carpool, vanpool, transit benefits, parking cash-out, telework, and job access projects.

Please refer to Appendix K, Roadway Element, for information on the WMPO's CMP and Appendix M, Transportation Demand Management Element, for the WMPO's TDM strategies.

Consideration of Facilities Serving National or Regional Transportation Functions



Code of Federal Regulations (CFR) Title 23, Section 450.324(f)(2) states that the Metropolitan Transportation Plan (MTP) shall include the consideration of intercity bus service.

A representative of intercity bus service in the region (Greyhound) was included in the Public Transportation Modal Subcommittee. Provisions and policies supporting this service were considered during the development of this plan.

Performance Measures and Performance Targets in the Metropolitan Transportation Plan



Code of Federal Regulations (CFR) Title 23, Sections 450.324(f)(3) and 450.324(f)(4) state that the MTP shall include the following in regards to the MPO's performance measures and performance targets.

- A description of the performance measures and targets used in assessing the performance of the transportation system; and
- A system performance report evaluating the condition and performance of the transportation system with respect to the performance targets, including progress achieved by the MPO to reach performance targets.

The WMPO's adopted performance measures and targets are documented in this appendix. The WMPO will continue to work with NCDOT to coordinate reporting measures and progress in order to develop a system performance report.

Optional Scenario Planning



Code of Federal Regulations (CFR) Title 23, Section 450.324(f)(4)(ii) states that the MPO may voluntarily elect to conduct scenario planning.

The WMPO has not elected to conduct scenario planning for the development of this plan.

Sources:

- United States Code of Federal Regulations, Title 23: Highways, Part 450: Planning Assistance and Standards:
 - 23 CFR § 450.306(b)
 - 23 CFR § 450.306(d)(3)
 - 23 CFR § 450.314
 - 23 CFR § 450.316(a)
 - 23 CFR § 450.316(b)
 - 23 CFR § 450.322
 - 23 CFR § 450.324(f)(2)
 - 23 CFR § 450.324(f)(3)
 - 23 CFR § 450.324(f)(4)
 - 23 CFR Part 490, Subpart B, C, D, E, F, G, and H
- https://safety.fhwa.dot.gov/hsip/spm/state_safety_targets/



Photo Credit: NCDOT

APPENDIX C:

Future Innovative Technologies

The incorporation of innovative technology when addressing transportation needs in the region will become increasingly important and is already beginning to take place. From preemptive signal timings to cameras on major corridors, the City of Wilmington has already begun to embrace the role of technology in creating the most efficient transportation system possible. The WMPO hopes to identify technologies that can be adopted in the region including Intelligent Transportation Systems (ITS), future public transportation technology, drones, and autonomous vehicles.

Intelligent Transportation System Signs, Signals, and Data Collection

ITS applies information and communication technologies to the field of transportation through infrastructure, vehicles, user interaction, traffic management, and mobility management as well as interfaces for other modes. ITS involves collecting data and then either analyzing or communicating the data in order to improve the safety and efficiency of a transportation network.

Intelligent Transportation System Data Collection

An ITS collects data, which is then analyzed and communicated. The two most popular forms of data collection include floating car data/floating cellular data and sensing technologies, while new data from the location records of smartphones and navigation devices in connected vehicles is becoming increasingly available. As data collection technology continues to advance, reliable broadband service will be critical. In addition to accommodating the collection of large amounts of system data, broadband service will support economic growth by providing rural and often impoverished areas with reliable, high speed internet access. In 2012, President Barack Obama signed an Executive Order intended to provide assistance to states and tribal lands in the implementation of broadband technology in federally owned or assisted lands and facilities. This Executive Order allows the Federal Highway Administration (FHWA) to offer guidance and best practices to assist states with the implementation of broadband services. The order does not, however, require states to implement broadband services. In order to support future transportation within the region, and the projects contained within this plan, the WMPO recommends the consideration and implementation, when applicable, of broadband services during the design and construction of transportation improvement projects.

Floating Car Data/Floating Cellular Data

The prevalence of technology in vehicles has allowed for data collection with greater sample sizes and coverage. Through cellular triangulation, GPS in cars, and smartphones, data can be collected remotely from a large sample size. The benefits of cellular data collection, as opposed to Bluetooth detection systems, is that this collection method does not require infrastructure to sense vehicles. Additionally, data can be collected in all weather conditions and cellular data has greater coverage. The drawbacks of using cellular data is that the data is typically owned by a private entity, such as a cellphone company. Generally, this data can only be attained and understood by working with a consultant that has relationships with these entities and the software tools to analyze the raw data. The federal government has recently introduced the National Performance Management Research Data Set (NPMRDS), which offers floating cellular data nationwide for major roadways. This dataset is being utilized in the development of the WMPO's Congestion Management Process (CMP) 2020 Biennial Report.

Another method that the WMPO has historically utilized for calculating average travel time and delays for the CMP Biennial Report is floating car studies. Floating car studies involve the use of a handheld GPS and travel by vehicle along a corridor during peak travel hours. The GPS device provides positioning and a time stamp, which are used to determine average speeds and delays. This method of data collection is both time consuming for staff and expensive. Additionally, this method provides only a snapshot of a corridor as opposed to cellular data, which monitors a corridor continuously.

Sensing Technologies

Another alternative for data collection is integrating sensing technologies into the transportation infrastructure network. The collected data is then owned by the municipality or government entity that maintains the infrastructure. Common data collection methods that use sensing technologies include inductive loops installed in the roadway, video vehicle detection, and, more recently, Bluetooth detection. The use of Bluetooth detection has increased in recent years due to the ease of installation and setup. These systems do not have to be installed within the roadway like inductive loops and more accurately measure trips than cameras. The primary benefit of using sensing technologies for data collection is that all of the data is owned by the entity that collects it and can be used for real-time updates. Drawbacks of these systems include high initial costs related to detection infrastructure and data sample size, which is limited to where the infrastructure is installed. Another method, which has been utilized by the WMPO, is the purchasing and placement of movable camera counters in the field. The recordings can then be counted by WMPO staff or by a counting service for a fee.

Location-based Services Apps and Connected Vehicles

Two increasingly available sources of data are location-based apps and connected vehicles. This data, created when a smartphone user allows an application to access his or her location, or when a driver enables a vehicle's navigation system, is considered to be 'opt-in' and essentially provides trillions of location points over time. This data is given context through layering with other data sources such as parcel land records and existing transportation infrastructure. Numerous platforms are emerging, such as Streetlight Data and City Lab, which provide a dashboard for determining numerous metrics within an existing multimodal transportation system. Some of these metrics include, but are not limited to, vehicular origins and destinations; top routes used by all users of the transportation system; average annual daily traffic; demographics of the transportation system user; and the average speed, duration, and length of trips of a user.

Intelligent Transportation System Applications

Once data has been collected, ITS allows for a wide range of opportunities to improve the transportation system. Examples of ways ITS can be implemented to benefit users include:

Analysis

Analysis of this data can be used to optimize traffic signals to move traffic in a more efficient manner. Every two years, the WMPO is required to update its CMP, which identifies the performance of key corridors. Historically, in-house floating car studies have been used to do this analysis but these studies are limited because they only represent a snapshot in time of our transportation network. In the future, the WMPO will begin to utilize NPMRDS and StreetLight Data to provide a more detailed analysis of corridors and make capital improvement recommendations.

Communication with Transportation Network Users

Real-time traffic data collected in an ITS can be communicated to users of the system. According to FHWA, more than half of all congestion in a system can be attributed to non-recurring events such as work zones, weather, special events, and incidents. Communicating these non-recurring events to system users will modify travel expectations and help drivers make better decisions on the road, whether it be taking an alternative route or rescheduling an event.

Emergency Vehicle Notification

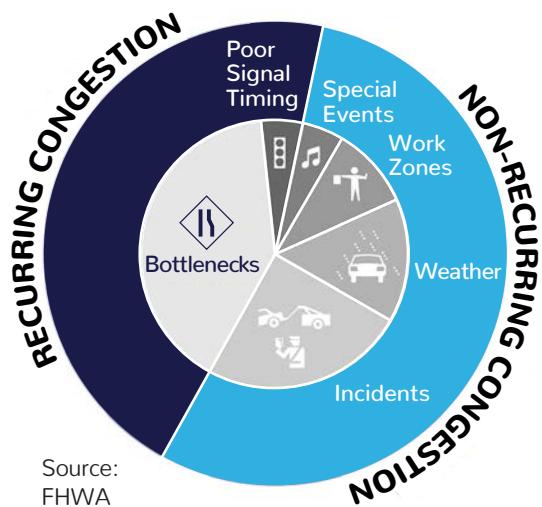
An ITS can be designed to help improve response times of emergency vehicles through GPS location services and signal preemption. Technology is being introduced that will help first responders identify where emergency calls have originated, improving the location identification of incidents. Signal preemption can be used to give priority to emergency vehicles in signal timings, thus allowing for further reduction in response times.

Road Enforcement

Many sensing technologies that are implemented to collect data can be also used for road enforcement purposes. These include speed cameras, red light cameras, and cameras used to enforce High-Occupancy Vehicle (HOV) or bus lanes. Additionally, ITS is beginning to incorporate smart parking with flexible payment options and better enforcement.

Dynamic Speed Limits and Signals

Similar to signal preemption, dynamic speed limits and signals can use real-time data to optimize speed and signal performance. For example, if the system detects unusually high traffic on a certain road, it can prioritize the signal for that road to reduce wait times and avoid signal failure.



Future Public Transportation Technology

In regions like Wilmington, public transportation will have to adopt new technology in order to stay relevant and remain a competitive mode of transportation. Public transportation is currently not the preferred method of travel within the Wilmington Urban Area, capturing only a small share of all trips. Technology could help Wave Transit become more competitive through improved accommodations and performance.

Connectivity

The ubiquity of smartphones and internet access has opened many doors to improving how people interact with public transportation.

Wi-Fi

Offering Wi-Fi on buses can incentivize the use of public transportation as an efficient mode of travel where you can relax, watching shows, listening to music, or reading or sending emails on your devices. Offering internet on buses could also facilitate alternative fare payment options.

Flexible Fare Collection

Wave has recently introduced the use of credit card payments for fare; however, passes can only be purchased this way in a few select locations. By offering online payment and potentially a card system, Wave could remove this barrier to entry for people with smartphones. There is still concern about requiring cash payment options for people who may not have internet access or bank accounts, but these concerns should lessen as technology becomes more widely available.

Microtransit

Technology can also offer productivity improvements, particularly to coverage model transit systems. Microtransit and demand response transit have been introduced in less dense areas to serve as more efficient and convenient transit options. In these locations, where trip numbers are low, a fixed route bus can be inefficient and slow. Smartphones and internet access could allow users to request trips and drivers to respond to multiple requests through a generated route. However, microtransit has yet to offer a significant cost savings compared to traditional fixed route services. This is due to the fact that the labor and operating costs of a smaller bus versus a larger bus are similar. Additionally, the utilization of a smaller bus limits the potential capacity for ridership, and less ridership equates to less revenue. Microtransit will likely become more effective and utilized with the advancement of autonomous vehicles.

Automation

In addition to revolutionizing personal vehicle travel, autonomous vehicles will have significant impacts on transit. The introduction of autonomous vehicles specifically as public transportation could cause a paradigm shift in the idea of car ownership.

Light Rail and Bus Rapid Transit

Light rail and bus rapid transit (BRT) are two popular types of public transportation with dedicated right-of-way and preemptive signalization. While the Wilmington Urban Area is not yet ready for the full introduction of these modes, certain aspects, such as signal preemption, pull out lanes for buses, and alternative fare payment methods, can begin to be implemented.

Drones

Drones currently serve a purpose in photography, data collection, agriculture, film, building inspections, search and rescue, and wildlife management. Current Federal Aviation Administration (FAA) regulations prohibit the use of commercial drones from flying over people and operating in the dark.

DOT Drone Use

According to a 2016 survey conducted by the American Association of State Highway and Transportation Officials (AASHTO), 33 state Departments of Transportation (DOTs) have or are exploring, researching, or testing unmanned aerial vehicles (UAVs), commonly referred to as drones. It was found that the use of drones for data collection and inspection resulted in safer, faster, and better results. Drones, which can go places that are dangerous for humans and eliminate the need for lane closures when working near roadways, are proving to be a valuable asset to DOTs around the nation and will continue to improve safety and efficiency in data collection.

Drones as Transportation

Drones could play a much bigger role in the transportation industry than simply collecting data. Companies are beginning to incorporate drones into their delivery systems. For example, Amazon has introduced Prime Air with successful trials. There are many companies trying to break into the passenger drone market, but there is yet to be widespread acceptance for the system. In both the freight and passenger drone models, there is restrictive legislation in regards to where drones can be flown. As drone technology becomes safer and more economically feasible, legislation will play a major role in its implementation.

Regulation

As drones become more prevalent, keeping the airspace safe and organized will become increasingly important. Regulation is continually evolving to meet the needs of technology and drone users.



Above: An air taxi, or autonomous aerial vehicle, on display at the 2020 NC Transportation Summit. This air taxi completed the first North American test flight in January 2020, which took place in Raleigh. Air taxis are already in use in Europe, Asia, and the Middle East.

Drones are currently registered under the following four classes:

1. Recreational Flyers and Modeler Community-Based Organizations
2. Certificated Remote Pilots including Commercial Operators
3. Public Safety and Government Users
4. Educational Users

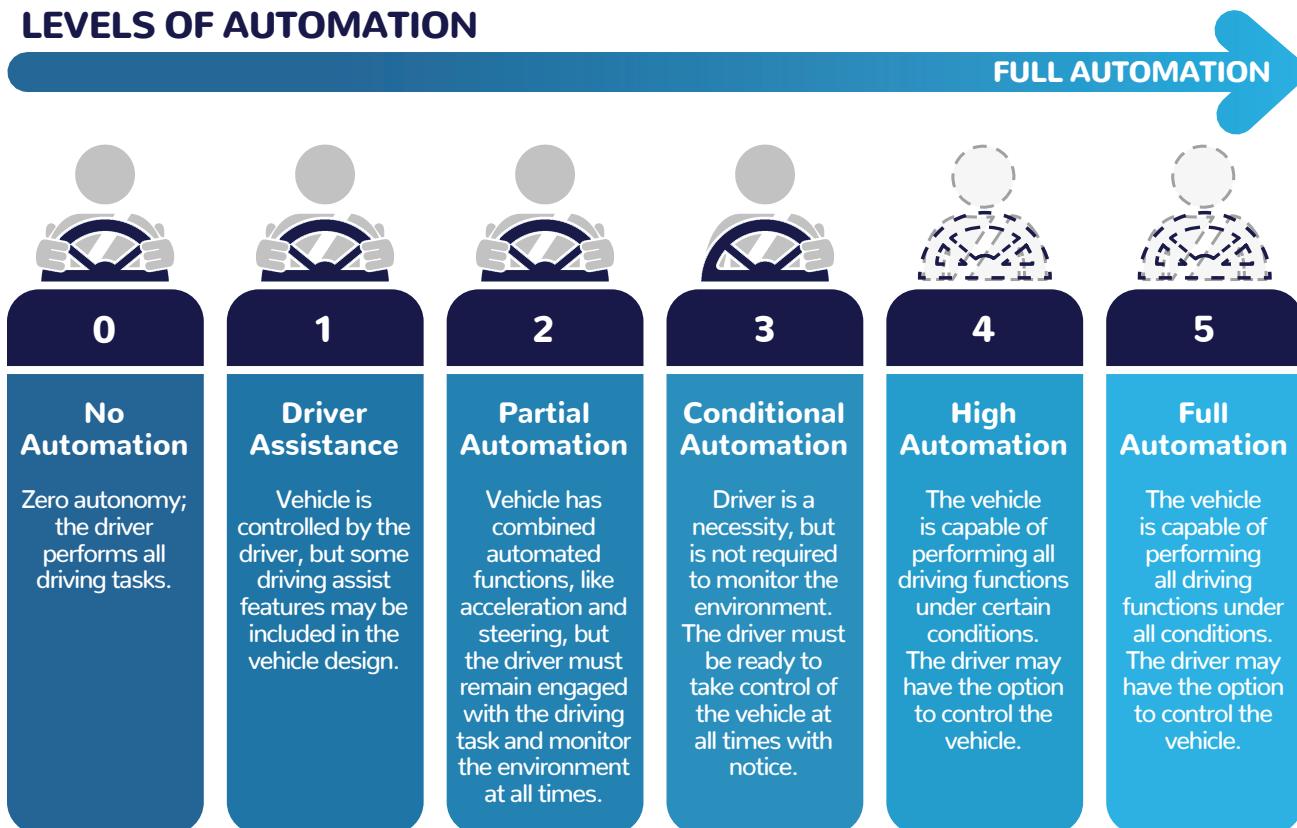
Autonomous/Connected Vehicles

With advancements in technology, there is excitement around the introduction of autonomous vehicles to our transportation system. Autonomy is being introduced to some extent today as features in new cars and will continue to advance over the life of this plan. Autonomous vehicles will allow a greater number of people to travel more places in a more efficient manner—a concept that has led to the idea of transportation as a service, which could potentially eliminate the necessity of owning a car, leading to decreased car ownership.

Levels of Automation

There are five levels of automation ranging from Level 0 to Level 5. Currently, many vehicles offer partial automation (Level 2), through dynamic cruise control as well as lane departure and parking assist features.

LEVELS OF AUTOMATION



Source: Society of Automotive Engineers (SAE) Automation Levels, <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety>

Three Eras of Automation

There are expected to be roughly three eras of automation, which are:

- Driver Assistance Era (Now-2025)
- Limited Autonomy Era (2025-2045)
- Full Autonomy Era (2045+)

Autonomous vehicles are already being introduced in locations such as college campuses, ports, and warehouses. These locations are ideal because they offer a more controlled environment to which autonomous technology can more easily adapt. North Carolina State University has recently introduced a Connected Autonomous Shuttle Supporting Innovation (CASSI), which will navigate their Centennial Campus, providing trips for students. The vehicle is currently being tested, and a 6-month pilot program launched in February 2020. Additionally, the freight industry has been a leader in driving further development of autonomous vehicles. Volvo is currently operating a pilot program in Sweden using a fully electric autonomous vehicle, Vera, to haul cargo containers in the Port of Gothenburg. These vehicles are designed to utilize a repetitive, pre-defined route.

Fully autonomous vehicles for public use will likely be first introduced on highways and interstates and then move to increasingly complex local streets. Highways offer controlled access with less decision making factors involving signals, pedestrians, people making turns, etc.

Benefits of Automation

Safety: Ninety-four percent of serious crashes are due to human error. Autonomous vehicles that are connected and communicating with one another would be less likely to be involved in a crash.

Economic and Societal Benefits: Eliminating the majority of crashes could reduce the economic and societal cost of lost workplace productivity as well as loss of life and decreased quality of life injuries.

Efficiency and Convenience: Autonomous vehicles could contribute to smoother traffic flow and reduced congestion.

Mobility: Autonomous vehicles could provide mobility to millions of people without access to a vehicle.

Additional Considerations

Parking: Less parking may be needed with autonomous vehicles. Minimum parking requirements for developments may be able to be reduced or even eliminated, leading to more peripheral development.



Above: A CASSI vehicle on display at the 2020 NC Transportation Summit in Raleigh

Congestion: Smoother traffic flow and opportunities for seniors and the disabled could generate more trips, placing even more vehicles on the road.

Urban Sprawl: Time savings and the ability to do other activities while traveling could encourage populations to move farther from places of employment.

Challenges

There are currently two major challenges in the future of autonomous vehicles:

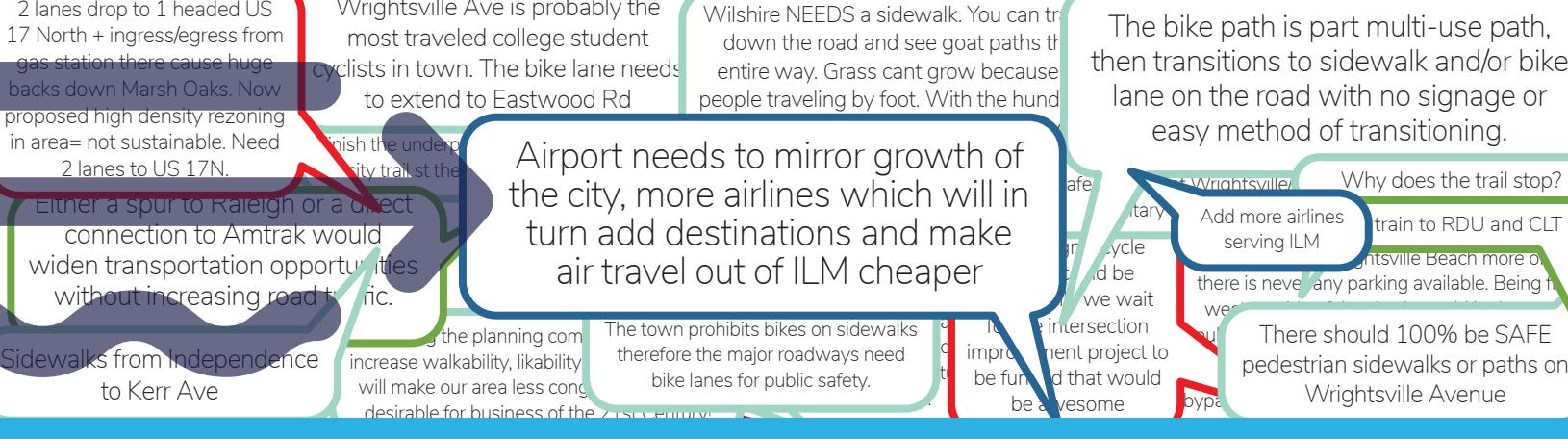
Technology: Currently Level 4 vehicles test poorly in construction zones, downtown areas, and inclement weather. The technology must advance before being introduced to the public in order for autonomous vehicles to become widely accepted.

Laws: Nationally, states are working on preempting cities and local jurisdictions, ensuring they cannot pass laws about the management of their roads. Autonomous vehicles will always stop for pedestrians, so there may be a push for increased separation between pedestrian facilities and roadways in order to keep traffic moving.

Sources:

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<https://www.fhwa.dot.gov/policy/otps/workplan.cfm#exe>

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APPENDIX D:

Public Involvement Element

Cape Fear Moving Forward 2045 Citizens Advisory Committee

Formation

The WMPO Board, which acts as the governing board of the WMPO, recognized a need for a separate committee devoted to guiding the development of the region's metropolitan transportation plan (MTP). In light of this, the Board appointed a Citizens Advisory Committee (CAC) to ensure that the MTP would be developed with robust public input and would meet the vision of the citizens of the region.

The CAC was comprised of individuals appointed by each of the WMPO's 13 board members. The CAC members who guided the development of Cape Fear Moving Forward 2045 are listed below, along with the jurisdictions they were appointed to represent:

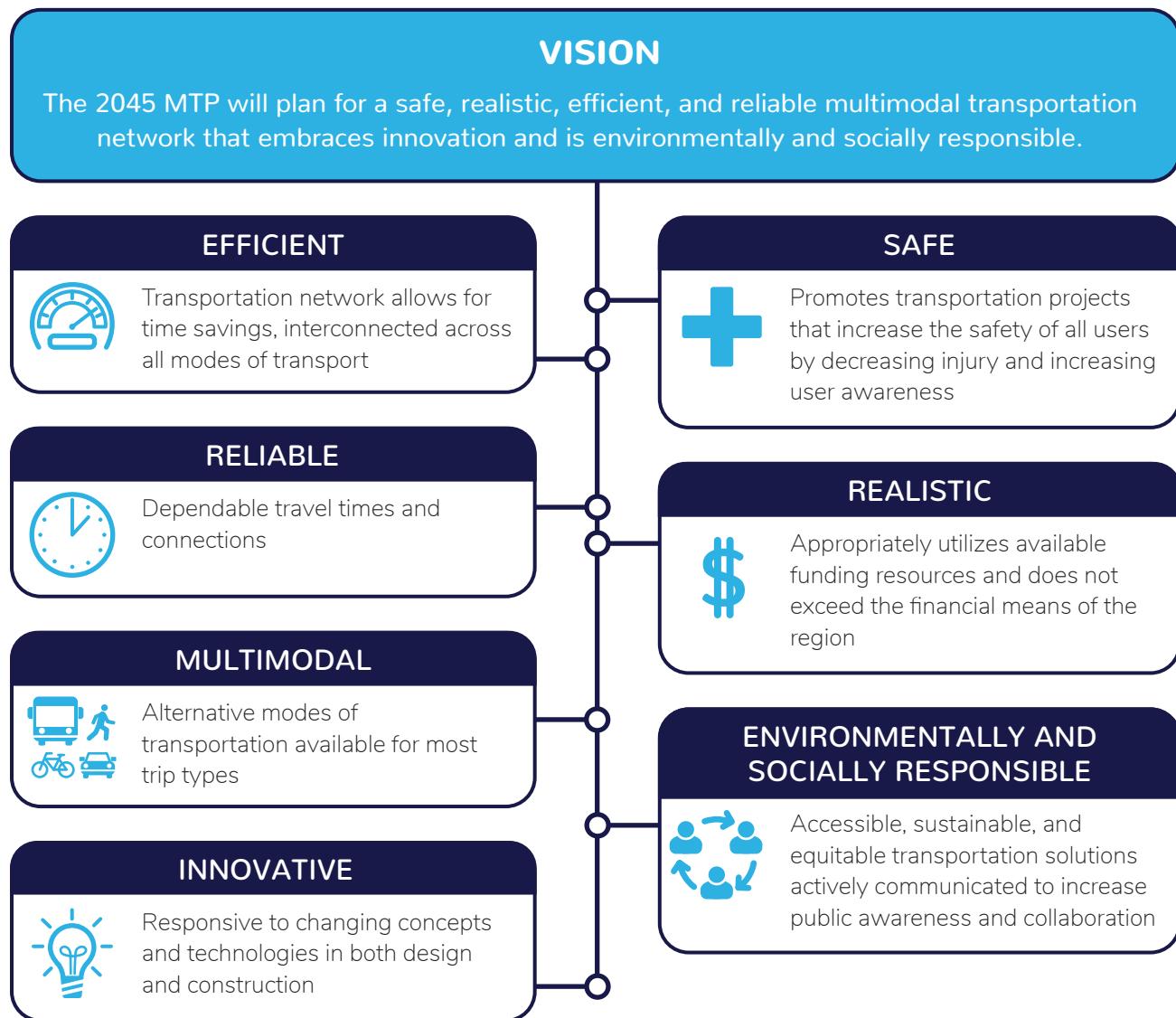
- Laura Padgett, Chairwoman, City of Wilmington
- John Cawthorne, Vice-Chairman, Town of Kure Beach
- Web Bostic, New Hanover County
- Sallie Rochelle, Pender County
- David Hollis, Brunswick County
- Jason Windham, City of Wilmington
- Neal Andrew, NC Board of Transportation
- Harold King, Town of Wrightsville Beach
- Patrick Boykin, Town of Carolina Beach
- Brayton Willis, Town of Leland
- Stuart Smith, Town of Belville
- Valorie Hatten, Town of Navassa
- Vanessa Lacer, Cape Fear Public Transportation Authority

The CAC worked collaboratively in order to address the future transportation needs of the region as a whole. Meeting monthly for the better part of two years, the CAC provided guidance and direction to WMPO staff on the development of the plan. WMPO staff ensured that all Federal Highway Administration (FHWA)

requirements for MTPs were met, while working with the CAC to ensure the plan appropriately and responsibly addressed the transportation needs of the region.

Vision Statement and Goals

The committee developed a regional vision and goals that would be used to evaluate policy alternatives and new transportation projects during the development of the plan. This vision, and goals, are listed below:



Public Outreach Strategy

Public participation was a critical component in the development of this plan. The WMPO's Public Participation Plan (PPP) outlines the public involvement program for the development of the MTP. This program includes a variety of tools and methods of distributing information to the public. The PPP underscores the importance

of public participation in all stages of the transportation planning process. The methods contained within the policy are designed to ensure the priorities of the public are included in transportation decisions. One goal of the public involvement process was to reach underserved populations. Research was done to identify barriers to receiving feedback and steps were taken to remove these barriers.

Public Outreach Phase I

WMPO staff began working with the CAC to develop an initial public outreach strategy in early 2018. The strategy included two primary tools to solicit citizen participation and feedback: (1) a 17-question survey about transportation issues and services in the region and (2) an online interactive mapping tool that allowed the user to provide feedback associated with a geographic location. The strategy also included efforts to publicize these tools through various mechanisms such as public events and social media.

These tools were officially launched for public input at a kick-off event held in April 2018 at the New Hanover County Northeast Public Library. Thirty-five members of the public attended the event and were given the opportunity to provide feedback through the interactive map and survey. During the event, remarks were given by representatives from FHWA, the WMPO Board, and the CAC. All spoke to the importance of public participation in the development of the MTP.

The kick-off event initiated additional outreach efforts by the WMPO, which continued through July 31, 2018. WMPO staff participated in numerous public events and media interviews; made presentations to the governing boards of each member jurisdiction as well as the Cape Fear Public Transportation Authority (Wave Transit); and engaged in several press and social media campaigns. These efforts to solicit feedback from the citizens of the region are further outlined in the following section.

Methods of Outreach

Internet Outreach

The Internet is a powerful tool for public outreach and has many benefits. Receiving feedback through the Internet allowed a wider variety of participants to complete the survey and interact with the interactive map. This included the younger population, which uses the Internet as their main source for news, and those who were working during the time of the public meetings.

Cape Fear Moving Forward 2045 Website

A website for the plan, capefearmovingforward2045.org, was created to serve as a one-stop shop for the public to access the interactive map and survey; review the plan; and find a calendar of upcoming outreach events as well as contacts at the WMPO for more information. Additionally, the WMPO's member jurisdictions provided information and a link to the plan's website on their own organizations' websites.

Email Campaigns

Email campaigns, utilizing Constant Contact, throughout the outreach period directed citizens to the plan's website to utilize the interactive map and take the survey. Two emails were sent to approximately 13,500

recipients during the four-month outreach period. The WMPO maintains an email contact list of community leaders within identified underserved communities, and this list was also notified of the outreach opportunities for all citizens of the region. Additionally, two emails were sent to students and faculty of both the University of North Carolina at Wilmington (UNCW) and Cape Fear Community College (CFCC).

Social Media Campaign

The WMPO also engaged in an extensive social media campaign. Six memes, designed to draw attention to the website, were created by WMPO staff. These memes were posted as advertisements on Facebook and Instagram, specifically targeting residents of the Wilmington region. The WMPO also used its Facebook, Twitter, and Instagram accounts to further push and remind social media followers of the ongoing efforts.

Events and Public Presentations

As previously discussed, the WMPO held a kick-off, open house style event to begin public outreach for the plan's development. At the event, laptops and iPads linked to the plan's website were made available to the public, as well as hard copies of the transportation survey (in both English and Spanish) and physical maps, on which project comments and suggestions could be made by citizens. This strategy was intended to provide an opportunity for participation to residents who may not have had the resources available to provide input otherwise. In addition to brochures, promotional posters, and the survey being provided in Spanish, the Cape Fear Moving Forward 2045 website could be translated into 104 languages.

In this effort to provide in-person opportunities to the public, five additional regional open houses were held on the following dates at the locations listed below:

- Tuesday, May 1, 2018 at Carolina Beach Town Hall
- Tuesday, May 8, 2018 at Leland Town Hall
- Thursday, May 10, 2018 at the Hampstead Annex
- Monday, May 14, 2018 at the New Hanover County Senior Center
- Wednesday, May 16, 2018 at Wilmington City Hall

These locations were selected to offer an opportunity to provide input to all residents living in all areas within the WMPO planning boundary. Each location (with the exception of the Hampstead Annex) was accessible by fixed route transit service.

In addition to the regional open houses, WMPO staff also participated in the following in-person events and activities:

Presentations

Presentations were made to the governing boards of all member jurisdictions and Wave Transit in May of 2018. During these presentations, WMPO staff provided updates on the ongoing outreach efforts, highlighting the importance of the public's participation in the plan and suggesting ways to promote these efforts.

Farmers Markets

The WMPO participated in six (6) farmers markets in Hampstead, Wrightsville Beach, Carolina Beach, and the City of Wilmington. Staff set up a booth at each market and supplied paper copies of the survey, handed out brochures directing people to the plan's website, and eagerly engaged the public, answering questions and providing additional details about the plan and its development.

Other In-person Events

WMPO staff also engaged citizens at a senior resource fair held at the New Hanover County Senior Center on May 30th, 2018 and set up an information table at New Hanover Regional Medical Center on June 26th, 2018. Paper copies of the survey, access to the interactive map via tablet, and informational brochures were made available at these events.

Media Engagement

To alert citizens of the region about ongoing outreach efforts, the WMPO sent two press releases and published public meeting notices in the Star News (per the WMPO's PPP Policy). Additionally, the following news sources ran articles and op-ed pieces about the efforts and the plan's importance:

- Lumina News (4/26, 7/5)
- Wilmington Journal (4/26, 7/5)
- Pender-Topsail Post & Voice (4/26, 7/12)
- Brunswick Beacon (4/26, 7/12)
- Star News (4/29, 7/15)
- Island Gazette (4/25, 7/11)
- WECT(7/17)

WMPO staff also participated in the following on-air television and radio interviews:

- WECT In-Person Interview (shown on TV and posted on the website and WMPO social media pages)
- WHQR Radio Interview

Visual Promotions

Promotional posters that included the plan's website and a QR code were distributed and hung for advertisement to the general public in the following locations:

- All Town Halls/County Buildings within the WMPO planning boundary
- All New Hanover County Libraries
- Town of Leland Library
- UNCW Campus
- CFCC Campus
- Employment Security Commission
- New Hanover County Social Services
- Wilmington VA Medical Center

Informational brochures were also made available at these locations.

Billboard advertisements ran on digital billboards throughout the region during the four-month period. The WMPO also worked with planning partner Wave Transit to place informational placards on every bus in service, and exterior advertisements on two fixed route buses.

Response

During the first phase of public outreach, from March 30, 2018 to July 31, 2018, the interactive map received 5,117 responses split between the six modes of transportation. The response type was broken down as follows:

- 1,905 “hits” (15.49 per day)
- 563 comments
- 4,554 votes

There were 2,287 surveys completed during this time, bringing the total number of citizen responses for this phase to 7,404.

Public Outreach Phase II

The WMPO released a draft of Cape Fear Moving Forward 2045 on February 26, 2020. On this date, staff presented the draft plan to the WMPO Board and the Board approved the opening of a 30-day public comment period.

The draft plan was given a prominent page on the WMPO’s website and shared by the WMPO’s social media accounts. In addition to sending a press release directing recipients to the digital version of the draft plan on the website, hard copies were made available for viewing at the WMPO office, WMPO member jurisdictions’ planning departments, and area libraries.

Public comments on the draft were accepted by mail and email. To offer additional, and in-person opportunities to comment, five regional open houses were scheduled for March of 2020 and advertised in a second press release as well as on the WMPO’s website and social media accounts. Two open houses were held in early March, with the remaining three cancelled as a result of the Coronavirus Disease 2019 (COVID-19) pandemic. The open houses that occurred, or were planned to occur, were as follows:

- Wednesday, March 4, 2020 at the Hampstead Annex
- Tuesday, March 10, 2020 at Leland Town Hall
- Tuesday, March 17, 2020 at Carolina Beach Town Hall*
- Thursday, March 19, 2020 at the New Hanover County Senior Center*
- Thursday, March 26, 2020 at Wilmington City Hall*

*cancelled due to COVID-19

In order to offset the open house cancellations, the WMPO extended the 30-day public comment period, which was originally scheduled to close on March 27, 2020, through May 15, 2020, for a total duration of 79 days. WMPO staff also held three virtual open houses on the following dates:

- Monday, July 6, 2020, 5:00pm-7:00pm
- Tuesday, July 7, 2020, 5:00pm-7:00pm
- Wednesday, July 8, 2020, 5:00pm-7:00pm

WMPO staff addressed each comment received and determined which comments warranted changes to the draft plan. If a change was not determined to be needed, an explanation was provided. All of the comments and responses are included as Exhibit H, which can be found on page 97.

The WMPO reached out to several planning partners and agencies to solicit feedback on specific portions of the draft plan, or on the plan as a whole. These agencies include:

- FHWA
- NCDOT, Division 3, Environmental Program
- US Army Corps of Engineers (USACE)
- North Carolina Department of Environmental Quality (NCDEQ)

Other comments received by mail or email or in-person at an open house were provided by:

- Citizens (from Wilmington and Leland)
- Citizens representing the following groups:
 - Cape Fear Moving Forward 2045 CAC
 - WMPO Bicycle and Pedestrian Committee (BPAC)
 - Cape Fear Cyclists
 - Terry Benjey Bicycle Foundation
- Port of Wilmington
- Wave Transit
- New Hanover County Planning Department
- Town of Leland
- WMPO Technical Coordinating Committee (TCC)
- WMPO Staff

In total, 87 comments were received during the second phase of public outreach. Including an additional 26 internal comments suggesting minor formatting, grammatical, and typographical changes, 113 unique comments were addressed by WMPO staff.

Exhibits

A complete list of exhibits contained within this Appendix can be found on the following page.

Exhibit	Title	Page Number
A	Cape Fear Moving Forward 2045 Brochure (English)	47
B	Cape Fear Moving Forward 2045 Brochure (Spanish)	49
C	Cape Fear Moving Forward 2045 Public Survey (English)	51
D	Cape Fear Moving Forward 2045 Public Survey (Spanish)	53
E	Cape Fear Moving Forward 2045 Public Survey Results	55
F	Cape Fear Moving Forward 2045 Interactive Map Interface	69
G	Cape Fear Moving Forward 2045 Interactive Map and Survey Comments	73
H	Cape Fear Moving Forward 2045 Phase II Public Comments and WMPO Staff Responses	97
I	WMPO Public Participation Plan (PPP)	125

Exhibit A: Cape Fear Moving Forward 2045 Brochure (English)

What is the Wilmington Urban Area MPO?

The Wilmington Urban Area MPO (WMPO) is the Metropolitan Planning Organization for our region. MPO's are federally-funded organizations charged with coordinating and planning transportation projects in urbanized areas with more than 50,000 residents. Nationwide there are more than 340 MPO's. The WMPO is one of 17 MPO's in North Carolina.

About Cape Fear Moving Forward 2045:

Cape Fear Moving Forward 2045 is a federally mandated assessment of the current and future transportation needs of people and goods within the Wilmington MPO area. Cape Fear Moving Forward 2045 will create a long range transportation plan with recommendations for how those needs should be addressed over the next 25 years. The plan will establish the goals and objectives for the improvement of mobility within the WMPO planning area and make specific recommendations for transportation projects and funding sources. The plan will consider all modes of transportation which include roadway, public transport, aviation, bicycle and pedestrian, ferry, and freight.

The Cape Fear region is an ever growing and changing area, both demographically and economically. To accommodate these continuing changes in our region and to meet federal requirements, the WMPO will regularly update the plan to maintain its consistency with the area's needs.

Get Involved!

Comment on our map!
goo.gl/oQY1w

Take our survey!
goo.gl/WuwITv
Tambien disponible en espanol

Stay Informed!

Visit our website!
www.CapeFearMovingForward2045.org

Follow us!
Twitter - @wilmingtonmpo
Facebook - Wilmington Urban Area MPO

**CAPE FEAR
Moving Forward **2045****
METROPOLITAN TRANSPORTATION PLAN



Learn More
About the future
of our region's
transportation
network



FRONT

Plan Development Schedule

Initial Public Outreach Efforts	April – July 2018
Public Comment Review & Analysis	August – September 2018
Develop Project Lists	October – December 2018
Prioritize Projects and Draft Plan	January – December 2019
Public Hearings and Plan Approval Process	January – November 2020

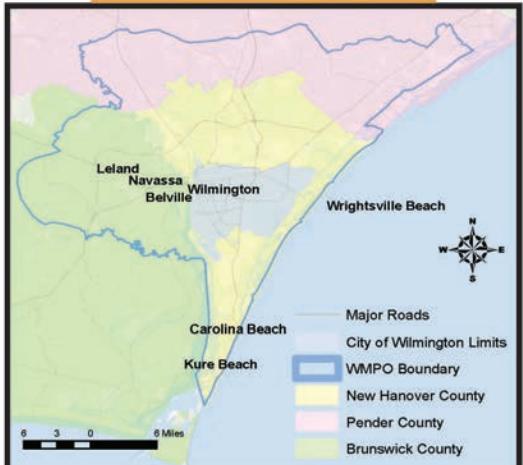
Projects supported by the current plan, Cape Fear Transportation 2040:

- The Hampstead Bypass
- US 17 Median projects
- Median projects
- US 74/US 76 Causeway widening
- Island Greenway in Carolina Beach
- Kerr Ave widening and intersection improvements
- Park Avenue Multi-Use Path
- Military Cutoff Road extension

Our Vision:

Cape Fear Moving Forward 2045 will plan a safe, realistic, efficient, and reliable multimodal transportation network that embraces innovation and is environmentally and socially responsible.

Our Planning Area



The WMPO boundary consists of twelve member governmental agencies:

- New Hanover County
- City of Wilmington
- Town of Wrightsville Beach
- Town of Carolina Beach
- Brunswick County
- Cape Fear Public Transportation Authority
- North Carolina Board of Transportation
- Town of Belville
- Town of Leland
- Town of Navassa
- Pender County
- Town of Kure Beach

BACK

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Exhibit B: Cape Fear Moving Forward 2045 Brochure (Spanish)

¿Qué es el MPO del área urbana de Wilmington?

El MPO del Área Urbana de Wilmington (WMPO) es la Organización de Planificación Metropolitana de nuestra región. Las MPO son organizaciones federales y sociales encargadas de coordinar y planificar proyectos de transporte en áreas urbanas con más de 50,000 residentes. En todo el país hay más de 340 MPO. El WMPO es uno de los 17 MPO en Carolina del Norte.

Acerca de Cape Fear Moving Forward 2045:

Cape Fear Moving Forward 2045 es una evaluación federalmente ordenada de las necesidades actuales y futuras de transporte de personas y bienes dentro del área del MPO de Wilmington. CapeFear Moving Forward 2045 creará un plan de transporte a largo plazo con recomendaciones sobre cómo deben abordarse esas necesidades en los próximos 25 años. El plan establecerá las metas y objetivos para la mejora de la movilidad dentro del área de planificación de WMPO y hará recomendaciones específicas para proyectos de transporte y fuentes de financiación. El plan considerará todos los modos de transporte que incluyen vías de ferrocarril, transporte público, aviación, bicicleta y peatones, ferrys y mercancías.

La región de Cape Fear es un área en constante crecimiento y cambio, tanto demográficamente como económicamente. Para acomodar estos cambios continuos en nuestra región y cumplir con los requisitos federales, la WMPO actualizará periódicamente el plan para mantener su consistencia con las necesidades del área.

¡Involúcrese!

¡Comente en nuestro mapa!
goo.gl/loQY1w

¡Tome nuestra encuesta!
goo.gl/WuwfTv
También disponible en español

¡Manténgase informado!

¡Visite nuestro sitio web!
www.CapeFearMovingForward2045.org

¡Síganos!
Twitter - @wilmingtonmopo
Facebook - Wilmington Urban Area MPO

CAPE FEAR
Moving Forward 2045 METROPOLITAN TRANSPORTATION PLAN

Conozca más sobre el futuro de la red de transporte de nuestra región

FRONT

Plan de desarrollo del plan

Efectos iniciales de alcance público	April - Julio 2016
Revisión y análisis de comentarios públicos	Agosto - Septiembre de 2016
Detallar el detalle de proyectos	Octubre - Diciembre 2016
Proyectar proyectos y horizonte del plan	Enero - Diciembre 2019
Autorevisión pública y proceso de actualización del plan	Enero - Noviembre de 2020

Proyectos apoyados por el plan actual, Cape Fear Transportation 2040:

- The Hampstead Derivación
- US 17 proyectos medianos
- Proyectos medianos
- US 74/US 76 Ampliación de la calzada
- Camino verde de la isla en en Carolina Beach
- Kerr Ave ensanchamiento e intersección mejoras
- Park Ruta de uso múltiple de la avenida
- Military Cutoff Extensión de carretera

Nuestra visión:

Cape Fear Moving Forward 2045 planificará una red de transporte multimodal segura, realista, eficiente y confiable que abraza la innovación y sea ambiental y socialmente responsable.

Nuestro área de planificación

Legend

- WMPO Boundary
- State Roads
- City of Wilmington
- Brunswick County
- New Hanover County
- Pender County

El área WMPO incluye doce agencias gubernamentales miembros:

- New Hanover County
- City of Wilmington
- Town of Wrightsville Beach
- Town of Carolina Beach
- Brunswick County
- Cape Fear Public Transportation Authority
- North Carolina Board of Transportation
- Town of Belville
- Town of Leland
- Town of Navassa
- Pender County
- Town of Kure Beach

BACK

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Exhibit C: Cape Fear Moving Forward 2045 Public Survey (English)



The Wilmington Urban Area Metropolitan Planning Organization (WMPO) is conducting a 17-question survey about transportation issues and services in the Wilmington area. The results will be used to identify travel needs and develop recommendations to make it easier to travel around the region (Your answers will be completely confidential). Thank you and please visit the website, CapeFearMovingforward2045.org.

Please mail or drop-off completed surveys to: City of WMPO Transportation Planning, 305 Chestnut Street, 4th Floor, P.O. Box 1810, Wilmington, NC 28402-1810			
1. When deciding where to live, how important is it to have different transportation options?		6. In the FUTURE, to get to WORK/SCHOOL, I would prefer to: (Choose one option for each row)	
<input type="checkbox"/> Not important	<input type="checkbox"/> Somewhat Important	<input type="checkbox"/> More often	<input type="checkbox"/> Less often
<input type="checkbox"/> Important	<input type="checkbox"/> Very Important	<input type="checkbox"/> The same amount	
2. The percentage of trips I CURRENTLY make to WORK/SCHOOL: (Choose one option for each row)			
0% 1-25% 26-50% +50%			
Driving a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In a carpool/vanpool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using public transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By bicycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The percentage of trips I CURRENTLY make to RUN ERRANDS: (Choose one option for each row)			
0% 1-25% 26-50% +50%			
Driving a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In a carpool/vanpool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using public transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By bicycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. My children currently use the following transportation options to get to school and activities: (Select all that apply)			
<input type="checkbox"/> Private Vehicle	<input type="checkbox"/> Carpool/vanpool	<input type="checkbox"/> Walk	
<input type="checkbox"/> School Bus	<input type="checkbox"/> Public Transit	<input type="checkbox"/> Bike	<input type="checkbox"/> N/A
5. If it were safe and convenient I would let my children use the following more often (Select all that apply)			
<input type="checkbox"/> Carpool/vanpool	<input type="checkbox"/> Walk	<input type="checkbox"/> School Bus	
<input type="checkbox"/> Public Transit	<input type="checkbox"/> Bike	<input type="checkbox"/> N/A	
8. I would take the bus more often if the following factors were present: (Choose 3)			
<input type="checkbox"/> Park and Ride was available <input type="checkbox"/> Better access to bus stops (sidewalks, etc.) <input type="checkbox"/> More frequent bus service <input type="checkbox"/> Express routes along major roads <input type="checkbox"/> Amenities (benches, shelters, etc.) <input type="checkbox"/> Nothing will result in me riding the bus <input type="checkbox"/> Other _____			
9. I would carpool/vanpool more often if the following factors were present: (Choose 3)			
<input type="checkbox"/> Information about others participating <input type="checkbox"/> Park and Ride lots <input type="checkbox"/> Priority parking for carpools/vanpools <input type="checkbox"/> Free emergency rides <input type="checkbox"/> Special traffic lanes for car/vanpools <input type="checkbox"/> Nothing will result in my car/vanpooling <input type="checkbox"/> Other _____			

10. I would bicycle more often if the following factors were present: (Choose 3)

- More off-road multi-use paths
- More on-road bicycle lanes
- More information about bike routes
- Showers and changing rooms at work
- Bike share/bike rental
- Nothing will result in me riding a bike
- I already bicycle as often as possible
- Other _____

11. I would walk more often if the following factors were present: (Choose 3)

- More sidewalks and multi-use paths
- Safe intersection crossings
- Safe connections from homes to stores, offices, etc.
- Information about walking routes
- Showers and changing rooms at work
- Nothing will result in me walking
- I already walk as often as possible
- Other _____

12. We should invest transportation dollars in: (Choose 3)

- Bicycle/pedestrian facilities
- Bicycle/pedestrian safety efforts
- Public transportation
- Improving existing roads—quality
- Improving existing roads—safety
- Building new roads
- Beautifying roads
- Park and Ride lots

13. How should we prioritize funding in the event of declining federal funds and rising maintenance costs? (Select all that apply)

- Invest in more cost-effective alternative transportation
- Focus on preserving the current system (prioritize maintenance over expansion)
- Pursue new local sources of funding
- Other: _____

14. Rank your travel priorities from 1 (most important) to 7 (least important)

- | | |
|---------------------------|------------------|
| ____ Safety | ____ Travel time |
| ____ Convenience | ____ Cost |
| ____ Health Benefits | ____ Comfort |
| ____ Environmental impact | |

15. In traveling to work: (Select 1)

- I would rather pay a toll to avoid traffic and experience a faster trip
- I would rather not pay a toll even if I have to sit in traffic and experience a slower trip
- It depends on my time/schedule/finances

16. I support these revenue sources the most: (Choose 3)

- | | |
|--|---|
| <input type="checkbox"/> Higher gas tax | <input type="checkbox"/> Higher sales tax |
| <input type="checkbox"/> Higher property tax | <input type="checkbox"/> Tolls |
| <input type="checkbox"/> User fees | |
| <input type="checkbox"/> Impact fees on new development | |
| <input type="checkbox"/> Higher vehicle registration fees | |
| <input type="checkbox"/> Mileage fee for use of roadway | |
| <input type="checkbox"/> None of the above—existing facilities have excess capacity and can accommodate population and industry growth | |

17. List your ideas for specific NEW transportation projects in the Cape Fear area (e.g. add two lanes to Smith Road between Street A and Street B)

Thank you for participating in our survey. Scan the QR code to add your comments on the online public input map.



The following questions are voluntary. Responses are gathered to help determine the types of populations we have reached with our survey. This section is not required to process your survey results.

Home Zip Code: _____

Work Zip Code: _____

Gender: Female MaleAge Group: Under 18 18-29 30-39 40-49 50-64 Over 64

What is your race?

- | | |
|--|--|
| <input type="checkbox"/> White | <input type="checkbox"/> Native Hawaiian or other Pacific Islander |
| <input type="checkbox"/> Black/ African American | <input type="checkbox"/> American Indian/ Alaska Native |
| <input type="checkbox"/> Multiple Races | <input type="checkbox"/> Other: _____ |

Approximate Annual Household Income

- | | |
|---|---|
| <input type="checkbox"/> \$0—\$25,000 | <input type="checkbox"/> I am a resident of the area |
| <input type="checkbox"/> \$25,000—\$50,000 | <input type="checkbox"/> I am a tourist visiting the area |
| <input type="checkbox"/> \$50,999—\$75,000 | <input type="checkbox"/> I am a part-time resident |
| <input type="checkbox"/> \$75,999—\$100,000 | <input type="checkbox"/> I am a student |
| <input type="checkbox"/> Over \$100,000 | <input type="checkbox"/> I do not live here but I work here |

Check all that apply:

Exhibit D: Cape Fear Moving Forward 2045 Public Survey (Spanish)



La Organización Metropolitana de la Ciudad de Wilmington (WMPO) está conduciendo una encuesta de 17-preguntas sobre cuestiones de transporte y servicios en el área de Wilmington. Los resultados se utilizarán para identificar las necesidades de los residentes y empleados en sus viajes y desarrollar nuevos servicios para viajar con mayor facilidad en la región. Sus respuestas serán completamente confidenciales. Favor de visitar nuestro sitio web, CapeFearMovingforward2045.org.

Favor de enviar la encuesta finalizada por correo o llevarla a la oficina: WMPO Transportation Planning, 305 Chestnut Street, 4th Floor, P.O. Box 1810, Wilmington, NC 28402-1810							
1. Al decidir dónde vivir, ¿qué tan importante es tener diferentes opciones de transporte?				6. En el FUTURO, para ir al TRABAJO/a la ESCUELA yo preferiría: (Escoger una opción por fila)			
<input type="checkbox"/> No importante <input type="checkbox"/> Algo importante		<input type="checkbox"/> Importante <input type="checkbox"/> Muy importante		<input type="checkbox"/> Con más frecuencia		<input type="checkbox"/> Con menos frecuencia	
<input type="checkbox"/> Manejar un vehículo privado		<input type="checkbox"/> Compartir un vehículo (carro/furgoneta) con otras personas		<input type="checkbox"/> Usar el transporte público		<input type="checkbox"/> Ir en bicicleta	
<input type="checkbox"/> Caminar							
2. El porcentaje de viajes que actualmente realizo para el trabajo/la escuela: (Escoger una opción por fila)				7. En el FUTURO para hacer MANDADOS, yo preferiría: (Escoger una opción por fila)			
0% 1-25% 26-50% +50%		<input type="checkbox"/> Con más frecuencia				<input type="checkbox"/> Con menos frecuencia	
En un vehículo privado		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Compartiendo vehículo con otras personas		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Usando transporte público		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
En bicicleta		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Caminando		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
3. El porcentaje de viajes que ACTUALMENTE realizo para hacer MANDADOS: (Escoger una opción por fila)				8. Yo tomaría el autobús más seguido si los siguientes factores estuvieran presentes: (Escoger 3 opciones)			
0% 1-25% 26-50% +50%		<input type="checkbox"/> Park and Ride (Estacionar y montarse en el autobús) estuviese disponible				<input type="checkbox"/> Acceso a las paradas de autobuses (aceras/banquetas, etc.)	
En un vehículo privado		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> Servicio de autobuses más frecuente			
Compartiendo vehículo con otras personas		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> Rutas exprés por las carreteras principales			
Usando transporte público		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> Más instalaciones (bancos, paradas, etc.)			
En bicicleta		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> Nada me va hacer tomar el autobús			
Caminando		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> Otro _____			
4. Mis hijos actualmente usan los siguientes tipos de transporte para ir a la escuela y a otras actividades: (Escoger todas las que apliquen)				9. Yo compartiría el vehículo/furgoneta con más personas si los siguientes factores estuvieran presentes: (Escoger 3)			
<input type="checkbox"/> Vehículo privado		<input type="checkbox"/> Compartiendo vehículo con otras personas		<input type="checkbox"/> Información sobre otros participantes			
<input type="checkbox"/> Caminando		<input type="checkbox"/> Bicicleta		<input type="checkbox"/> Park and Ride (Estacionamientos para dejar el vehículo y montarse en el autobús)			
<input type="checkbox"/> Autobús escolar		<input type="checkbox"/> Usar el transporte público		<input type="checkbox"/> Estacionamientos con prioridad para los que comparten vehículo y viajan con otras personas			
<input type="checkbox"/> No aplica				<input type="checkbox"/> Viajes gratuito para emergencias			
5. Si fuese seguro y conveniente, yo animaría a mis hijos a usar los siguientes medios de transporte: (Escoger los que apliquen)				<input type="checkbox"/> Carriles especiales para las personas que comparten vehículo y viajan juntas			
<input type="checkbox"/> Compartiendo un vehículo (carro/furgoneta) con otras personas		<input type="checkbox"/> Caminando		<input type="checkbox"/> Nada va a hacer que comparta y viaje con otras personas			
<input type="checkbox"/> Autobús escolar		<input type="checkbox"/> Usar el transporte público		<input type="checkbox"/> Otro _____			
<input type="checkbox"/> Bicicleta		<input type="checkbox"/> No aplica					

10. Montaría en bicicleta con más frecuencia si los siguientes factores estuvieran presentes: (Escoger 3)

- Más caminos fuera de la calle
- Más carriles- bicicleta en la calle
- Más información disponible sobre las rutas para bicicletas
- Duchas y vestuarios en el trabajo
- Programas para alquilar/compartir bicicletas
- Ya monto mi bicicleta todo lo que puedo
- Nada hará que monte en bicicleta
- Otra razón _____

11. Caminaría con más frecuencia si los siguientes factores estuvieran presentes: (Escoger 3)

- Más aceras y caminos de múltiple uso
- Pasos de peatones más seguros en las intersecciones
- Conexiones seguras desde el vecindario al trabajo, tiendas, etc.
- Información sobre los caminos peatonales
- Duchas y vestuarios en el trabajo
- Ya camino todo lo que puedo
- Nada hará que camine
- Otra razón _____

12. Debemos invertir los dólares destinados al transporte en: (Escoger 3)

- Instalaciones para bicicletas/peatones
- Esfuerzos sobre seguridad para bicicletas/peatones
- Transporte público
- Mejor las carreteras existentes – calidad
- Mejorar las carreteras existentes – seguridad
- Construir nuevas carreteras
- Embellecer las carreteras
- Estacionamientos de "Park and Ride" (estacionar y montar en el autobús)"

13. ¿Cómo deberíamos priorizar el financiamiento en caso de que disminuyan los fondos federales y aumenten los costos de mantenimiento? (marque todo lo que corresponda)

- Invertir en un transporte alternativo más rentable
- Centrarse en preservar el sistema actual (priorizar el mantenimiento sobre la expansión)
- Buscar nuevas fuentes locales de financiación
- Otro: _____

Gracias por participar en nuestra encuesta de Transporte de Cape Fear 2045. Las siguientes preguntas son voluntarias. Las respuestas se analizarán para determinar a qué sectores de la población hemos alcanzado con nuestra encuesta. Esta sección no se requiere para procesar sus respuestas. Gracias.

Código postal de su casa: _____ Código postal de trabajo: _____ Sexo: Mujer Hombre

Grupo de edad: Menores de 18 18-29 30-39 40-49 50-64 Más que 64

¿Cuál es su raza?

- Blanco Nativo de Hawái o de las Islas del Pacífico
- Negro o Afro-Americano Americano Nativo o Native American
- Americano Nativo de Alaska
- Razas múltiples Otra: _____

¿Cuál es su ingreso promedio de su hogar anual?

- \$0—\$25,000
- \$25,000—\$50,000
- \$50,999—\$75,000
- \$75,999—\$100,000
- Más de \$100,000

Elija todo lo que corresponda:

- Vivo en el área
- Soy turista visitando el área
- Soy un residente que no resido todo el tiempo aquí
- Soy estudiante
- No vivo aquí pero trabajo aquí

**14. Mis tres (3) prioridades más importantes son:**

- | | |
|--|---|
| <input type="checkbox"/> Seguridad | <input type="checkbox"/> Duración del viaje |
| <input type="checkbox"/> Ventajas | <input type="checkbox"/> Costo |
| <input type="checkbox"/> Beneficios de la salud | <input type="checkbox"/> Comodidad |
| <input type="checkbox"/> Impacto al medio ambiente | |

15. En viajar al trabajo: (Escoger 1)

- Prefiero pagar un peaje para evitar el tráfico y experimentar un viaje más rápido
- Prefiero no pagar un peaje incluso si tengo que sentarme en el tráfico y experimentar un viaje más lento
- Depende de mi tiempo / horario / finanzas

16. Apoyo estos impuestos más: (Escoger 3)

- Impuesto más alto de gasolina
- Peajes
- Tarifas para el usuario
- Tarifas de impacto en nuevos desarrollos
- Impuestos más altos para el registro vehicular
- Impuesto para el uso de las carreteras
- Impuestos añadidos más altos
- Impuestos sobre propiedad más altos
- Nada de lo mencionado – Las instalaciones existentes ya tienen un exceso en la capacidad y pueden acomodar el aumento de la población y de la industria.

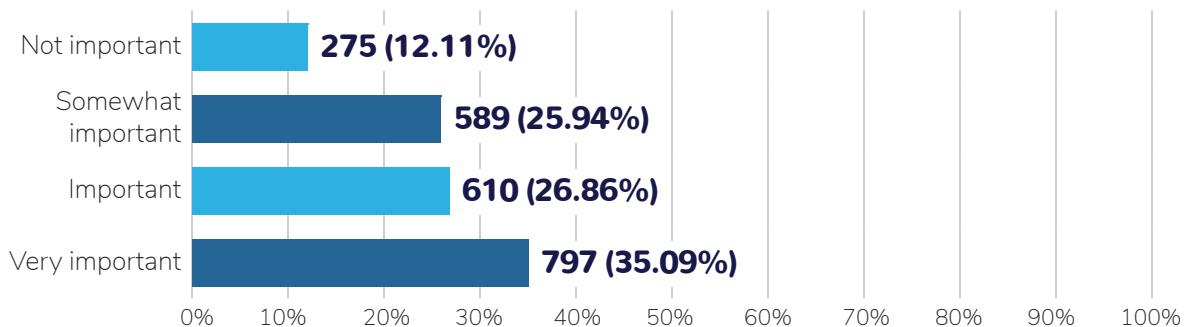
17. Describa sus ideas para NUEVOS proyectos de transporte específicos para el área de Cape Fear. (por ejemplo – añadir dos carriles a Smith Road entre la Calle A y la Calle B)

Gracias por participar en nuestra encuesta.
Escanee el código QR para agregar sus comentarios en el mapa de entrada público en línea.

Exhibit E: Cape Fear Moving Forward 2045 Public Survey Results

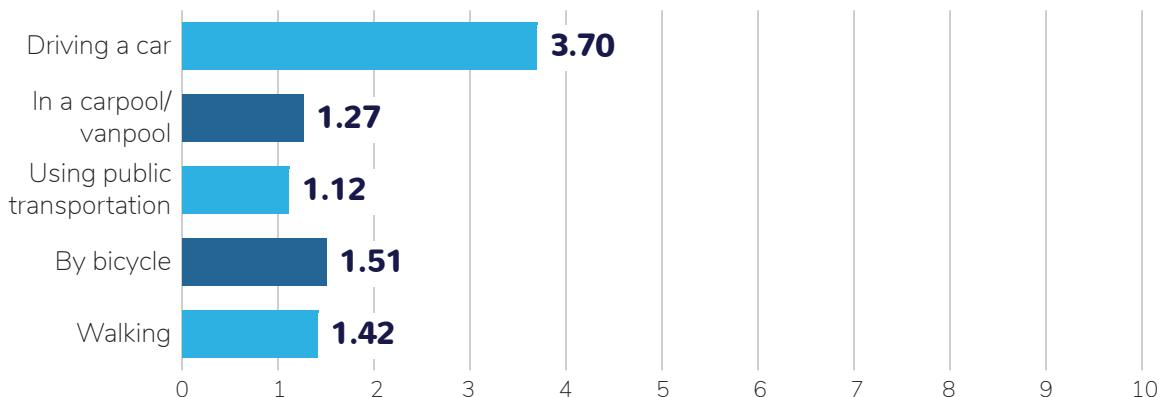
Q1: When deciding where to live, how important is it to have different transportation options?

Answered: 2,271 / Skipped: 15



Q2: The percentage of trips I CURRENTLY make to WORK/SCHOOL: (Choose one option for each row) If this question does not apply to you, please leave it blank and continue to the next question.

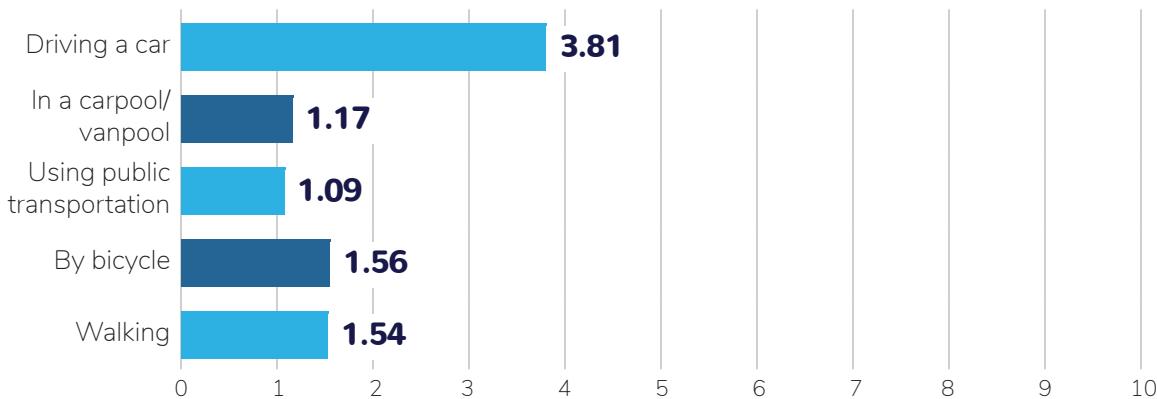
Answered: 2,094 / Skipped: 192



	0%	1% - 25%	26% - 50%	50%+	TOTAL	WEIGHTED AVERAGE
Driving a car	5.43% 111	4.11% 84	5.92% 121	84.54% 1,728	2,044	3.70
In a carpool/vanpool	80.74% 1,249	13.45% 208	3.75% 58	2.07% 32	1,547	1.27
Using public transportation	91.83% 1,462	5.34% 85	1.57% 25	1.26% 20	1,592	1.12
By bicycle	65.27% 1,094	23.33% 391	6.44% 108	4.95% 83	1,676	1.51
Walking	68.98% 1,141	23.04% 381	4.84% 80	3.14% 52	1,654	1.42

Q3: The percentage of trips I CURRENTLY make to RUN ERRANDS: (Choose one option for each row)

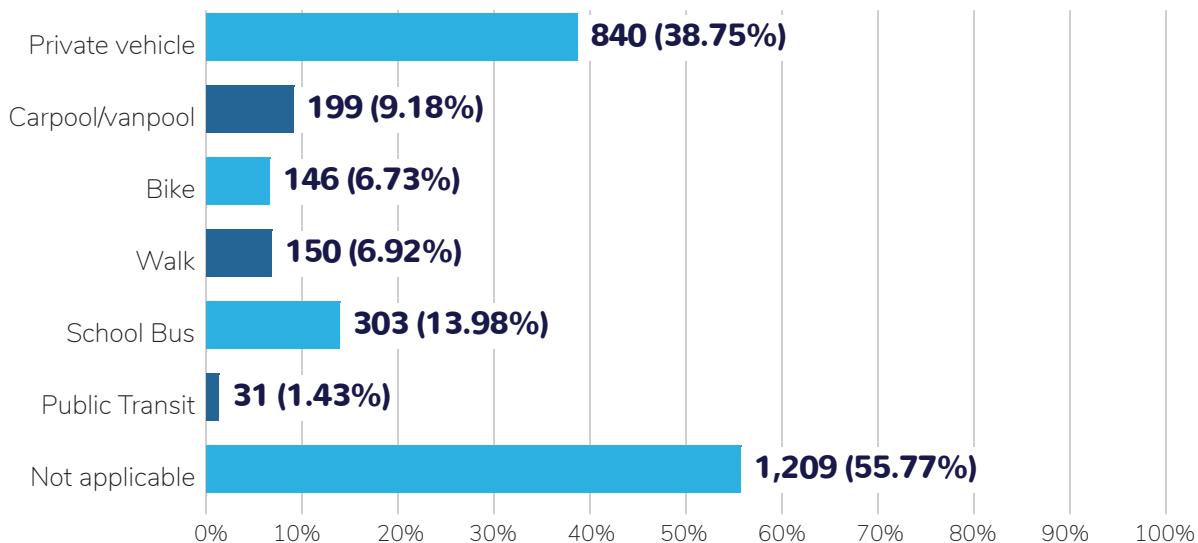
Answered: 2,274 / Skipped: 12



	0%	1% - 25%	26% - 50%	50%+	TOTAL	WEIGHTED AVERAGE
Driving a car	0.98% 22	3.29% 74	9.25% 208	86.48% 1,945	2,249	3.81
In a carpool/vanpool	87.52% 1,381	9.25% 146	2.41% 38	0.82% 13	1,578	1.17
Using public transportation	94.08% 1,525	3.76% 61	1.05% 17	1.11% 18	1,621	1.09
By bicycle	59.23% 1,049	29.31% 519	7.91% 140	3.56% 63	1,771	1.56
Walking	54.77% 965	38.08% 671	5.39% 95	1.76% 31	1,762	1.54

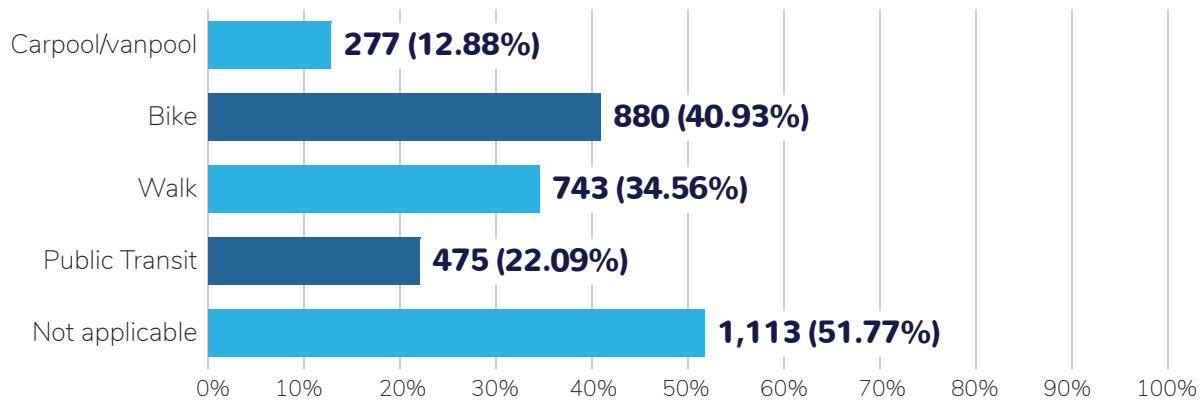
Q4: My children currently use the following transportation options to get to school and activities: (Select all that apply)

Answered: 2,168 / Skipped: 118



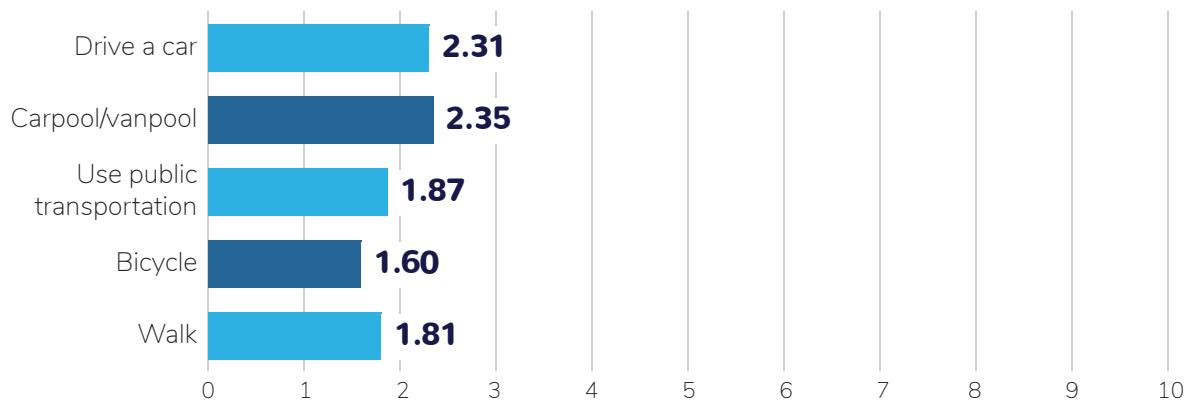
Q5: If it were safe and convenient I would let my children use the following more often:
(Select all that apply)

Answered: 2,150 / Skipped: 136



Q6: In the FUTURE, to get to WORK/SCHOOL, I would prefer to: (Choose one option for each row)

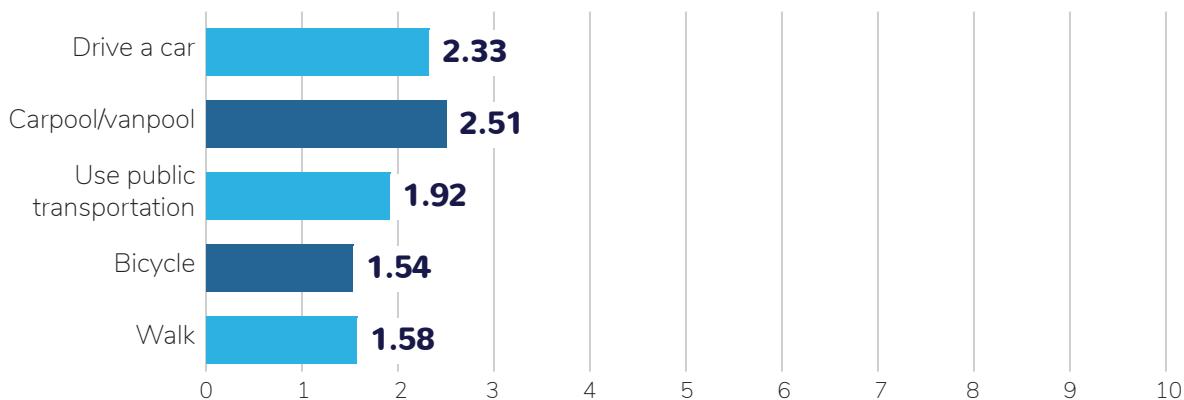
Answered: 1,984 / Skipped: 302



	MORE OFTEN	LESS OFTEN	THE SAME AMOUNT	TOTAL	WEIGHTED AVERAGE
Drive a car	4.52% 82	59.72% 1,084	35.76% 649	1,815	2.31
Carpool/vanpool	24.20% 349	16.50% 238	59.29% 855	1,442	2.35
Use public transportation	51.81% 828	9.82% 157	38.36% 613	1,598	1.87
Bicycle	66.79% 1,126	6.23% 105	26.99% 455	1,686	1.60
Walk	55.99% 902	7.39% 119	36.62% 590	1,611	1.81

Q7: In the FUTURE, to RUN ERRANDS, I would prefer to: (Choose one option for each row)

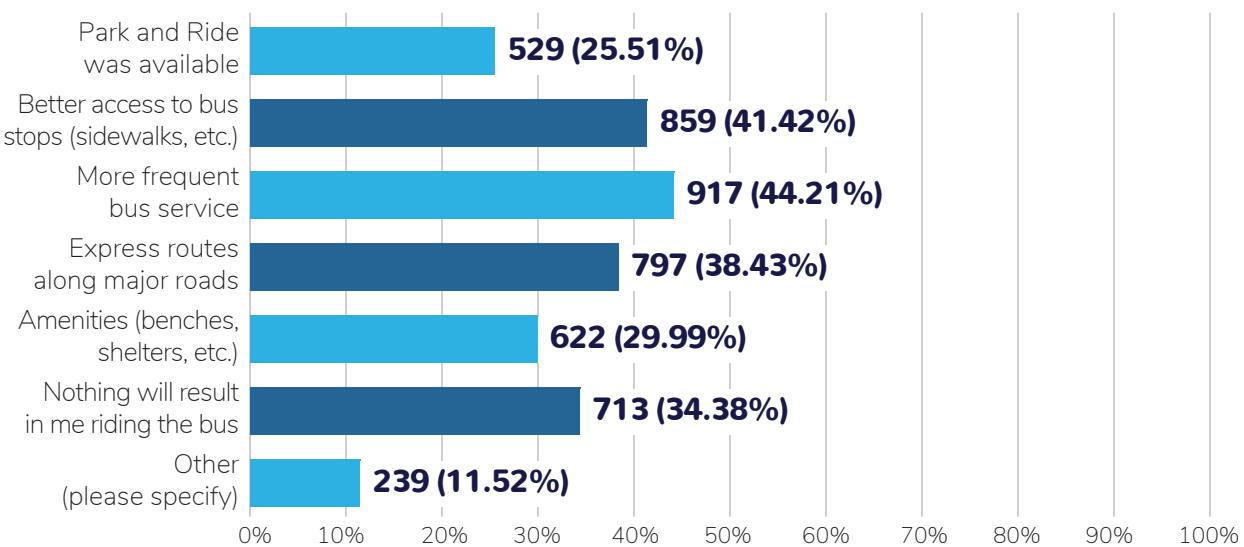
Answered: 2,111 / Skipped: 175



	MORE OFTEN	LESS OFTEN	THE SAME AMOUNT	TOTAL	WEIGHTED AVERAGE
Drive a car	5.15% 99	56.56% 1,087	38.29% 736	1,922	2.33
Carpool/vanpool	14.31% 208	19.94% 290	65.75% 956	1,454	2.51
Use public transportation	48.76% 803	10.87% 179	40.38% 665	1,647	1.92
Bicycle	69.85% 1,244	6.29% 112	23.86% 425	1,781	1.54
Walk	67.89% 1,188	6.17% 108	25.94% 454	1,750	1.58

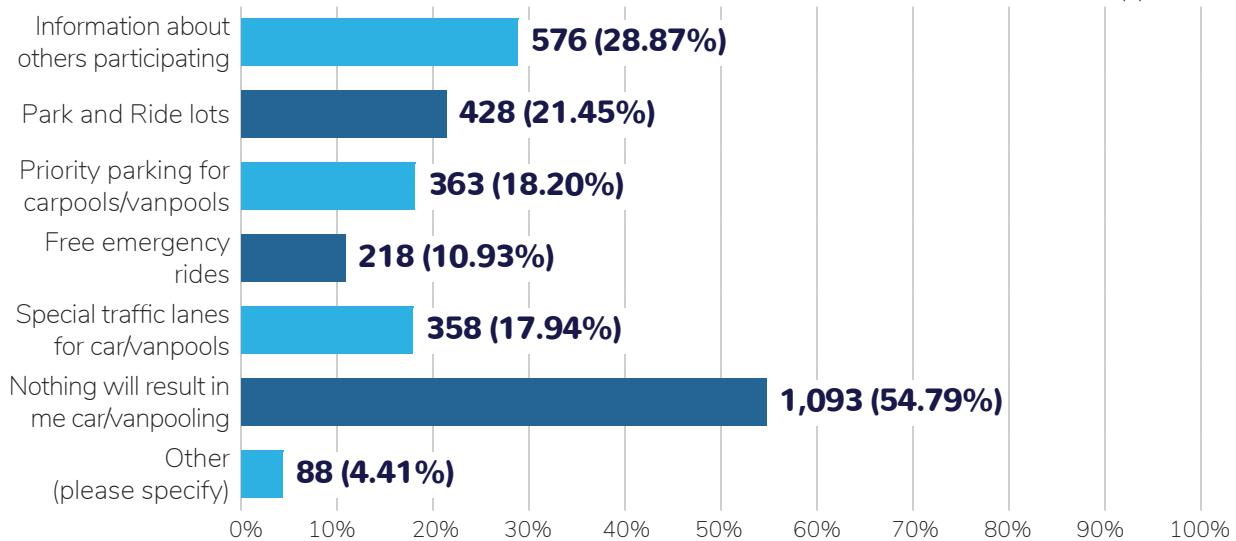
Q8: I would take the bus more often if the following factors were present: (Choose 3)

Answered: 2,074 / Skipped: 212



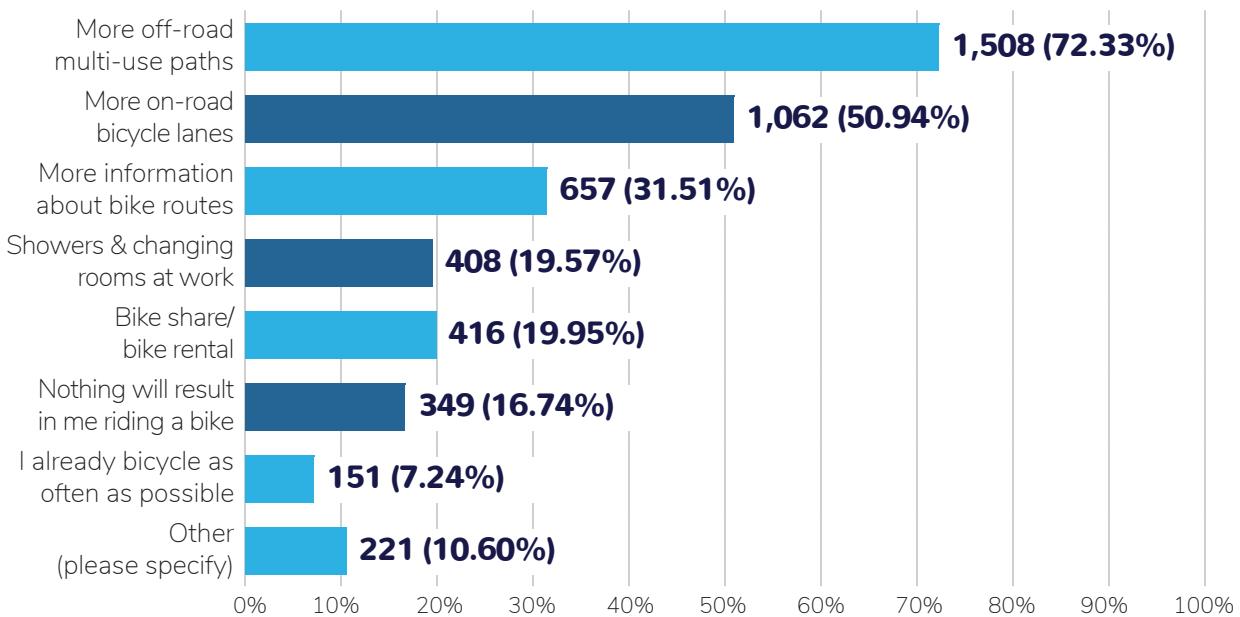
Q9: I would carpool/vanpool more often if the following factors were present: (Choose 3)

Answered: 1,995 / Skipped: 291



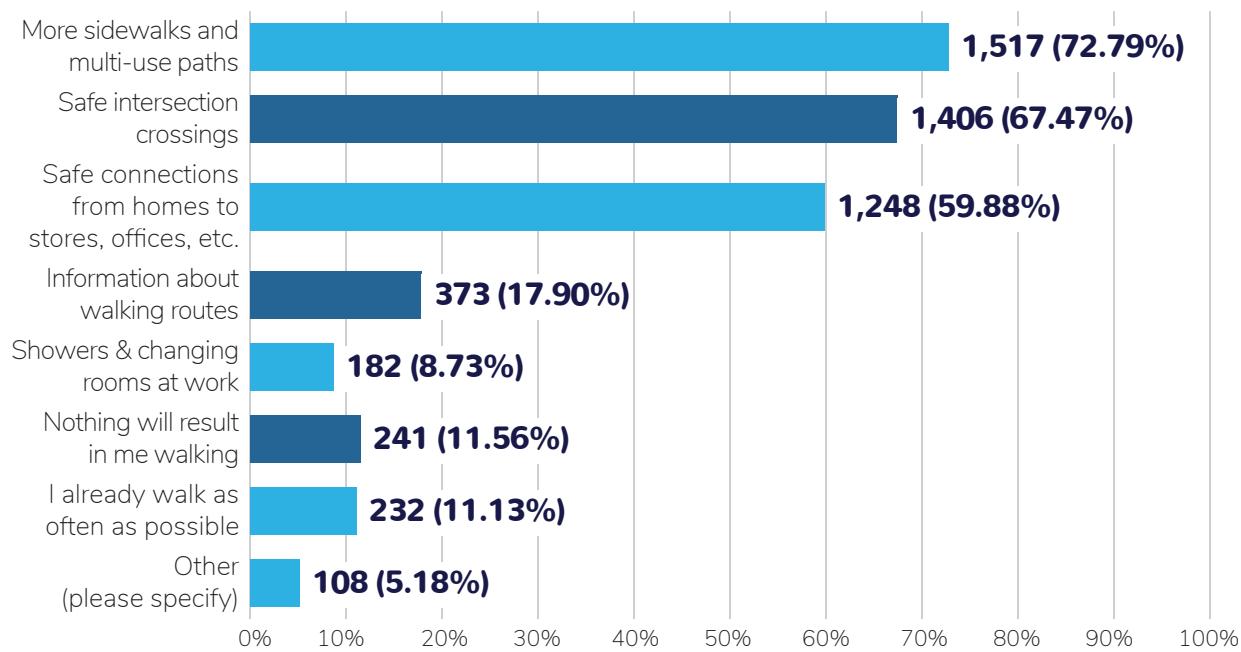
Q10: I would bicycle more often if the following factors were present: (Choose 3)

Answered: 2,085 / Skipped: 201



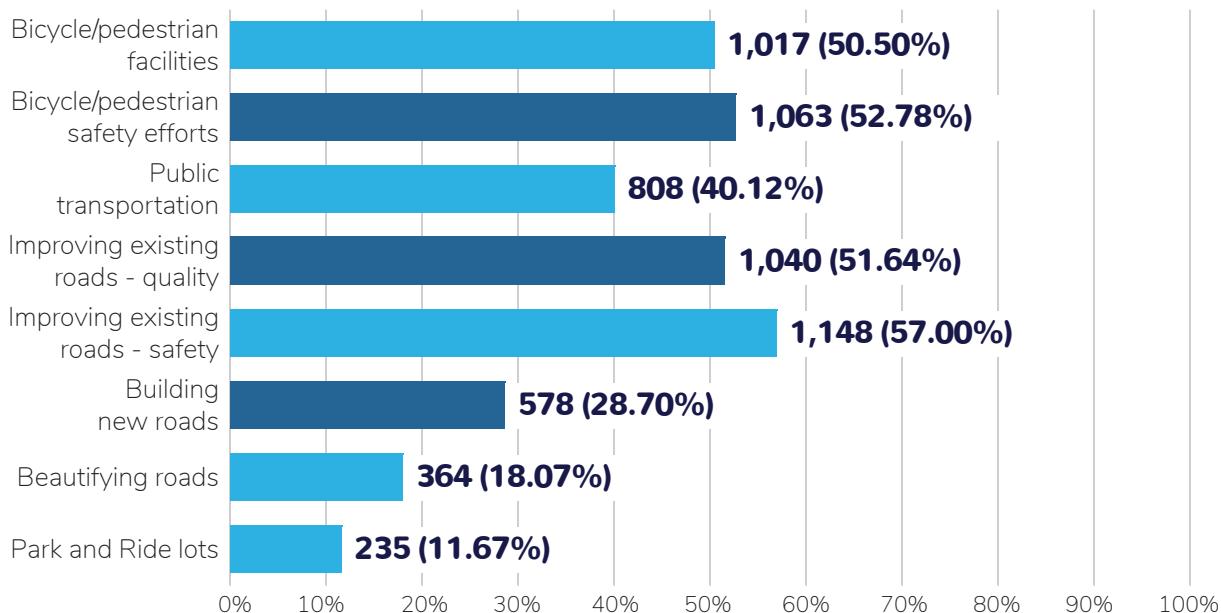
Q11: I would walk more often if the following factors were present: (Choose 3)

Answered: 2,084 / Skipped: 202



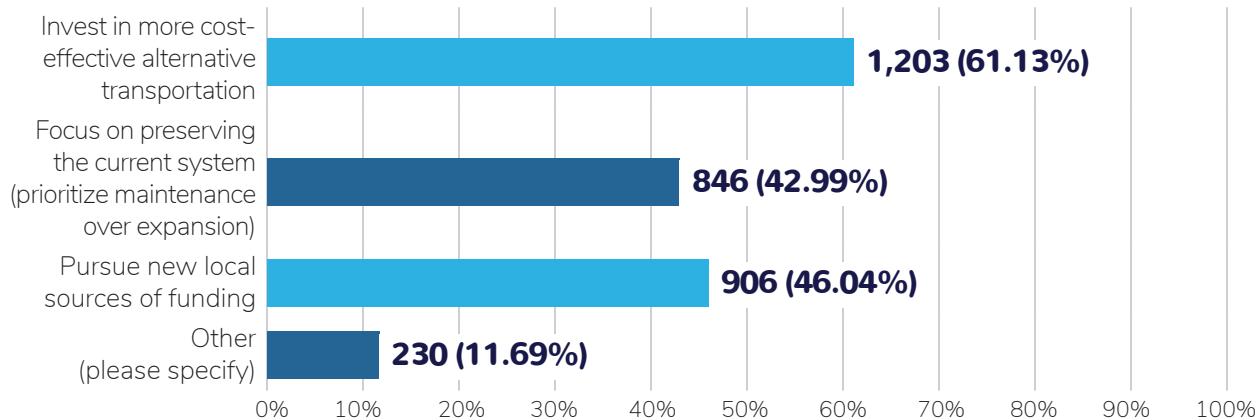
Q12: We should invest transportation dollars in: (Choose 3)

Answered: 2,014 / Skipped: 272



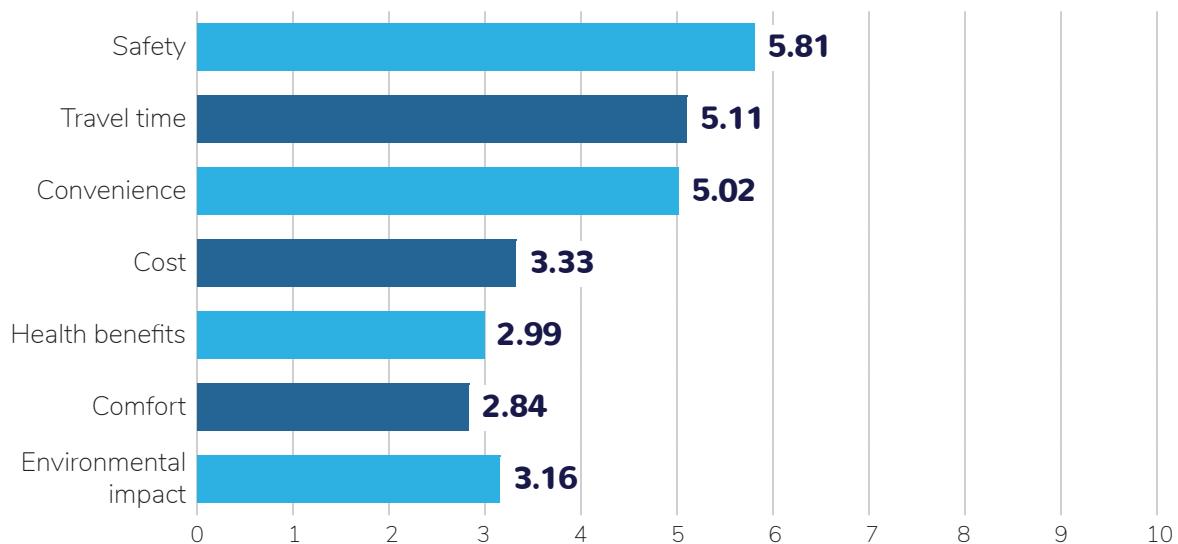
Q13: How should we prioritize funding in the event of declining federal funds and rising maintenance costs? (Select all that apply)

Answered: 1,968 / Skipped: 318



Q14: Rank your travel priorities from 1 (most important) to 7 (least important)

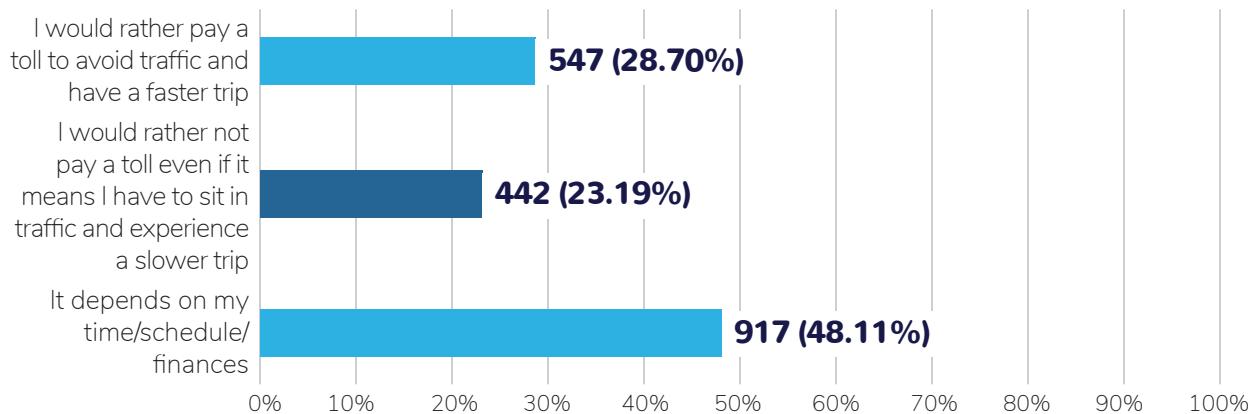
Answered: 1,988 / Skipped: 298



	1	2	3	4	5	6	7	TOTAL	SCORE
Safety	52.24% 993	16.20% 308	12.84% 244	7.52% 143	4.63% 88	3.00% 57	3.58% 68	1,901	5.81
Travel time	19.85% 372	31.70% 594	19.42% 364	11.10% 208	8.11% 152	5.82% 109	4.00% 75	1,874	5.11
Convenience	16.47% 313	25.21% 479	27.26% 518	14.89% 283	9.21% 175	4.74% 90	2.21% 42	1,900	5.02
Cost	3.74% 71	7.33% 139	13.19% 250	23.26% 441	17.83% 338	16.14% 306	18.51% 351	1,896	3.33
Health benefits	3.19% 60	7.01% 132	9.30% 175	13.07% 246	20.46% 385	27.05% 509	19.93% 375	1,882	2.99
Comfort	1.63% 31	4.62% 88	8.51% 162	16.18% 308	21.64% 412	25.21% 480	22.22% 423	1,904	2.84
Environmental impact	6.20% 120	9.34% 181	10.58% 205	13.47% 261	16.73% 324	16.16% 313	27.52% 533	1,937	3.16

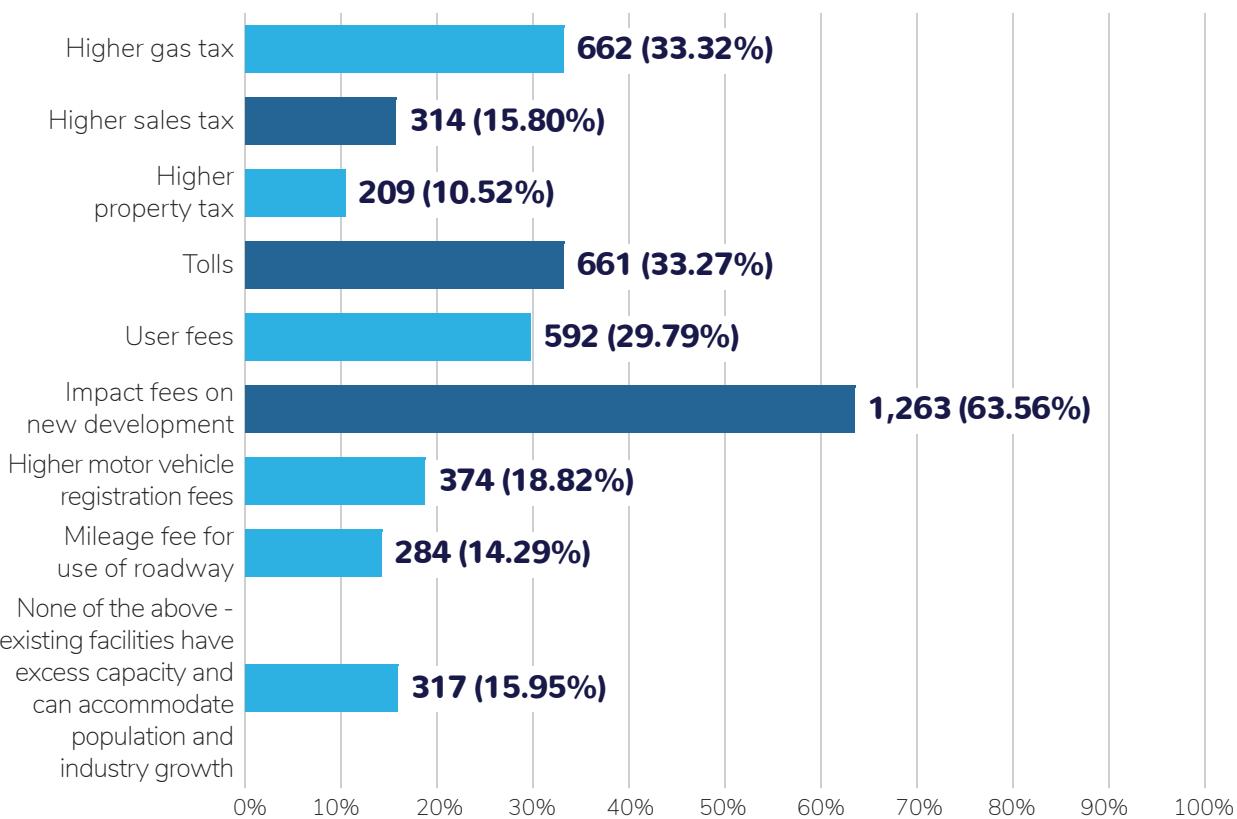
Q15: In traveling to work:

Answered: 1,906 / Skipped: 380



Q16: I support these revenue sources the most: (Choose 3)

Answered: 1,987 / Skipped: 299



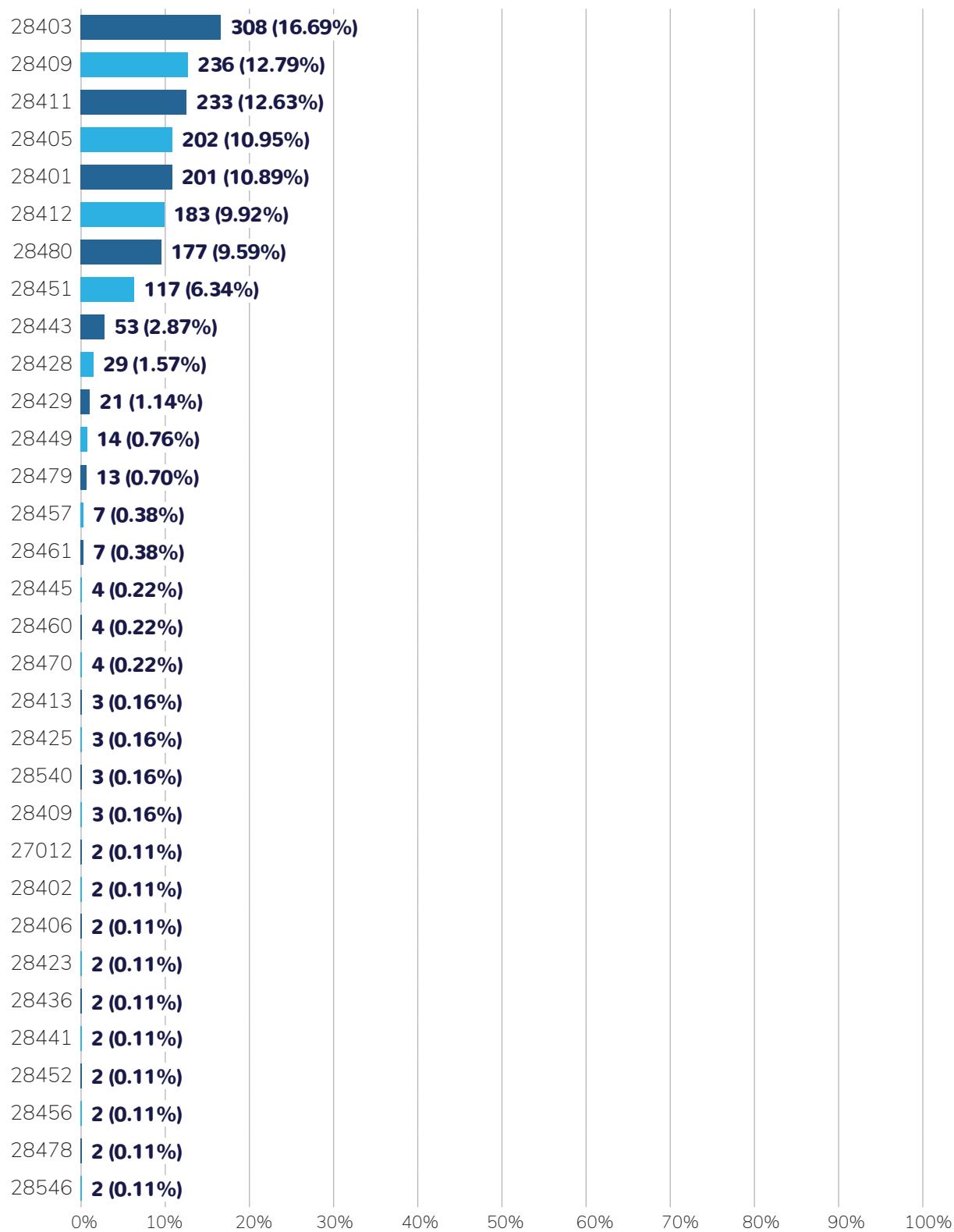
Q17: List your ideas for specific NEW transportation projects in the Cape Fear area (e.g. add two lanes to Smith Road between Street A and Street B)

Answered: 1,168 / Skipped: 1,118

Responses to this question are included in Exhibit G, Cape Fear Moving Forward 2045 Interactive Map and Survey Comments.

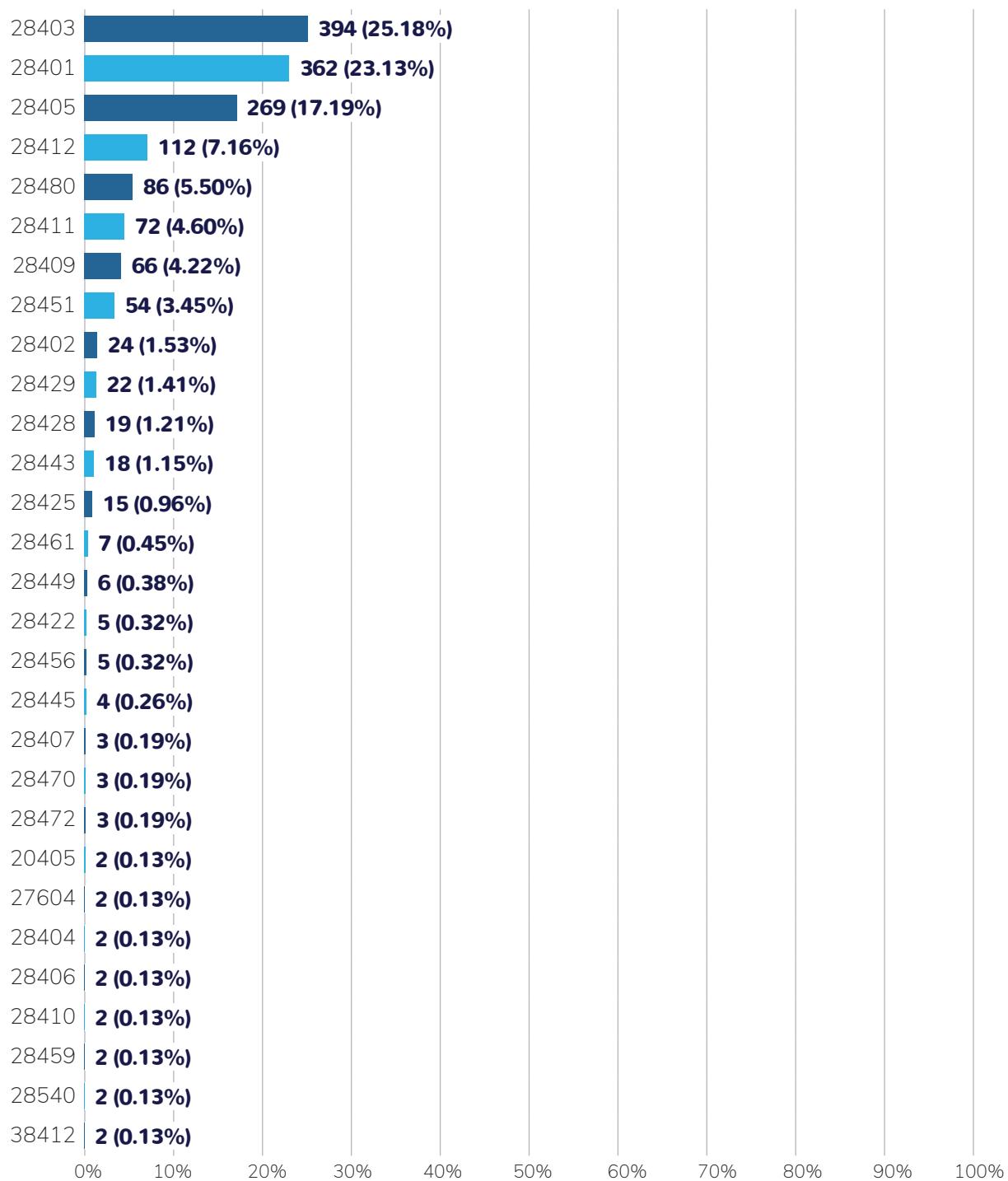
Q18: Home Zip Code

Answered (Complete): 1,845 / Answered (Incomplete): 41 / Skipped: 400



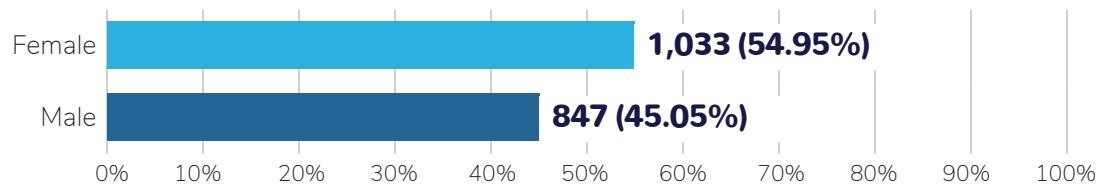
Q19: Work or School Zip Code

Answered (Complete): 1,565 / Answered (Incomplete): 83 / Skipped: 638



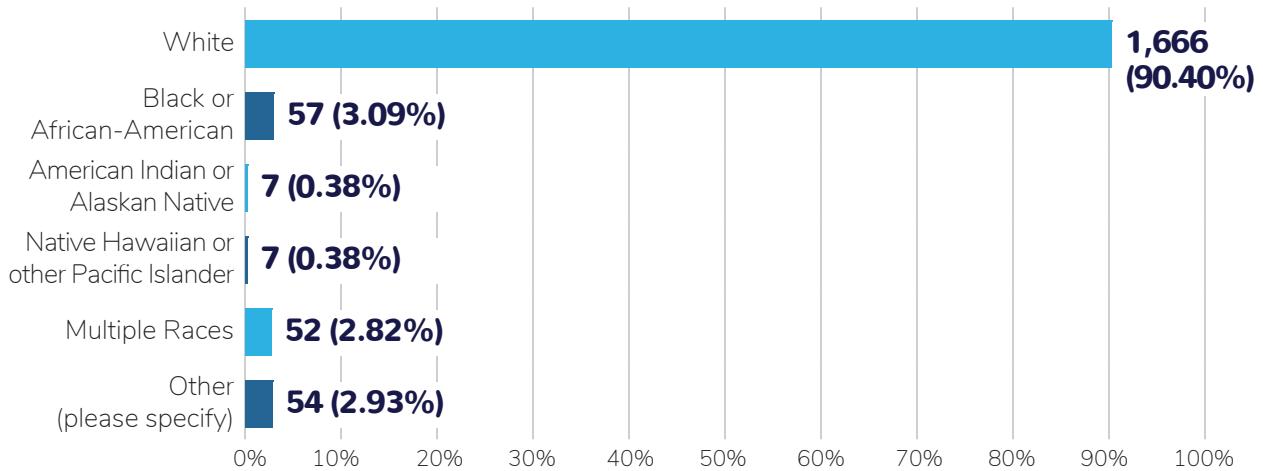
Q20: Gender

Answered: 1,880 / Skipped: 406



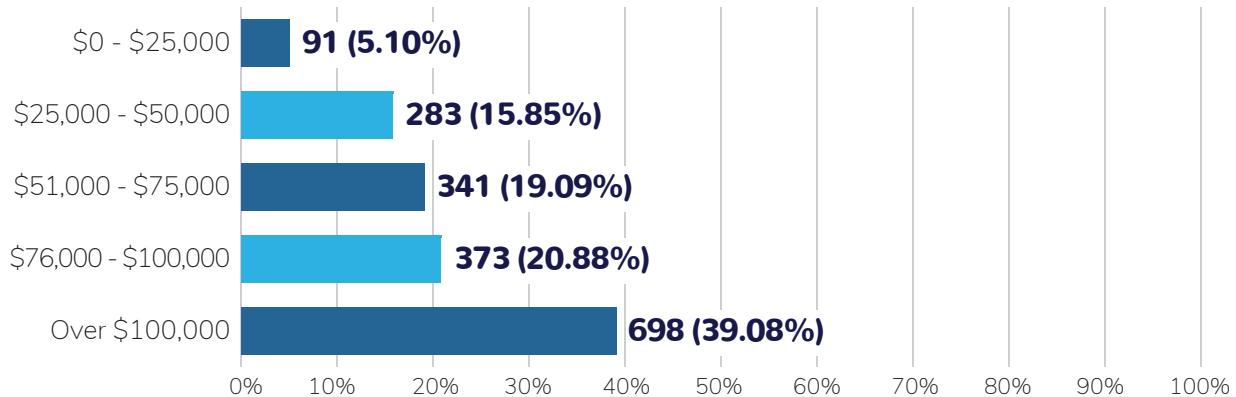
Q21: What is your race?

Answered: 1,843 / Skipped: 443



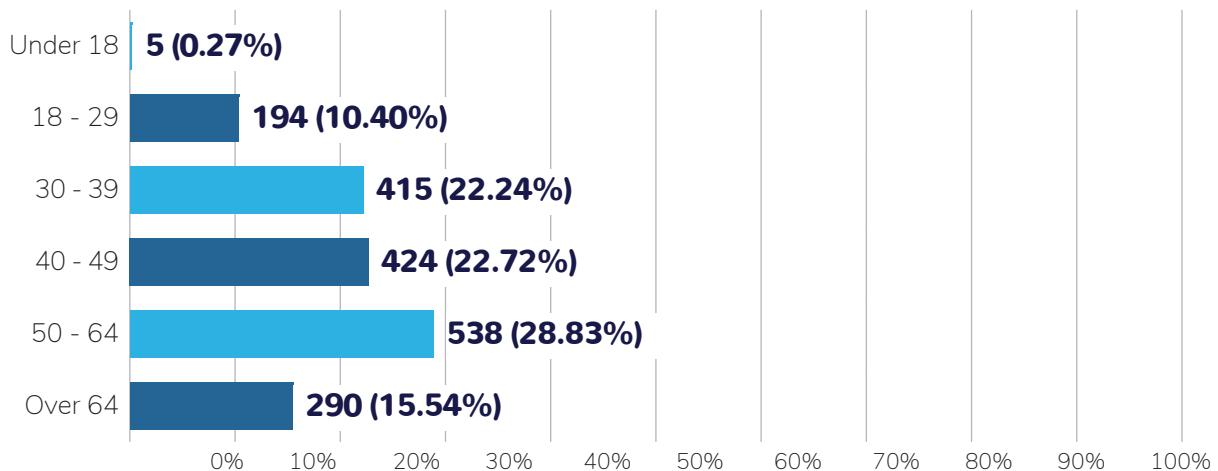
Q22: What is your approximate average annual household income?

Answered: 1,786 / Skipped: 500



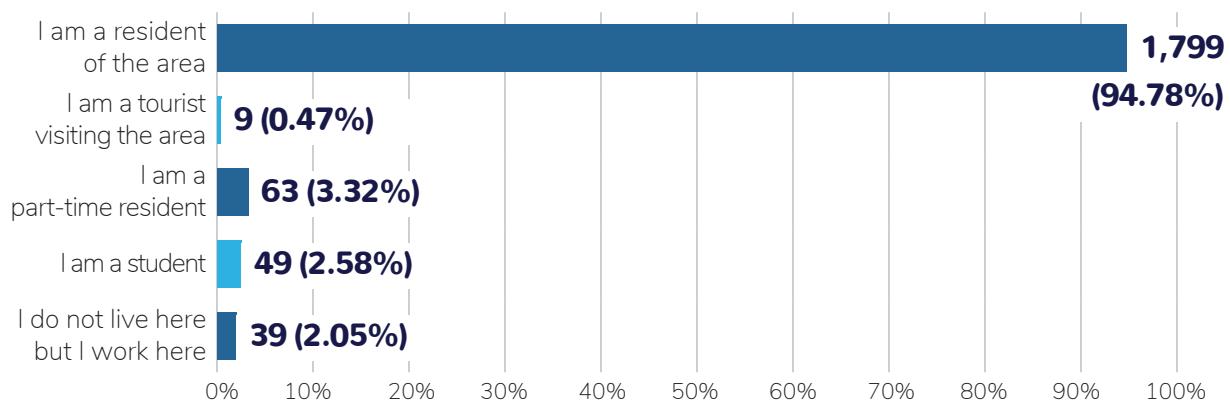
Q23: Age Group:

Answered: 1,866 / Skipped: 420



Q24: Check all that apply:

Answered: 1,898 / Skipped: 388

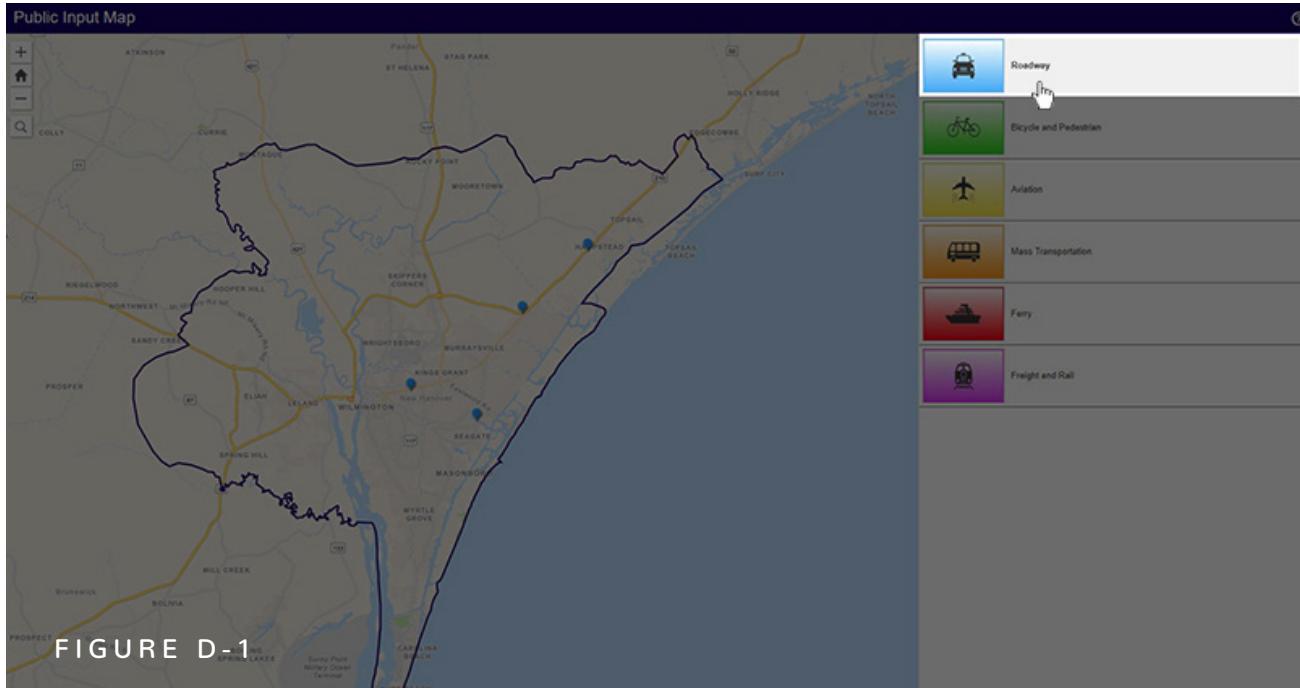


Q25: If you would like to sign-up to receive future WMPO communications, please include your email address.

Answered: 445 / Skipped: 1,841

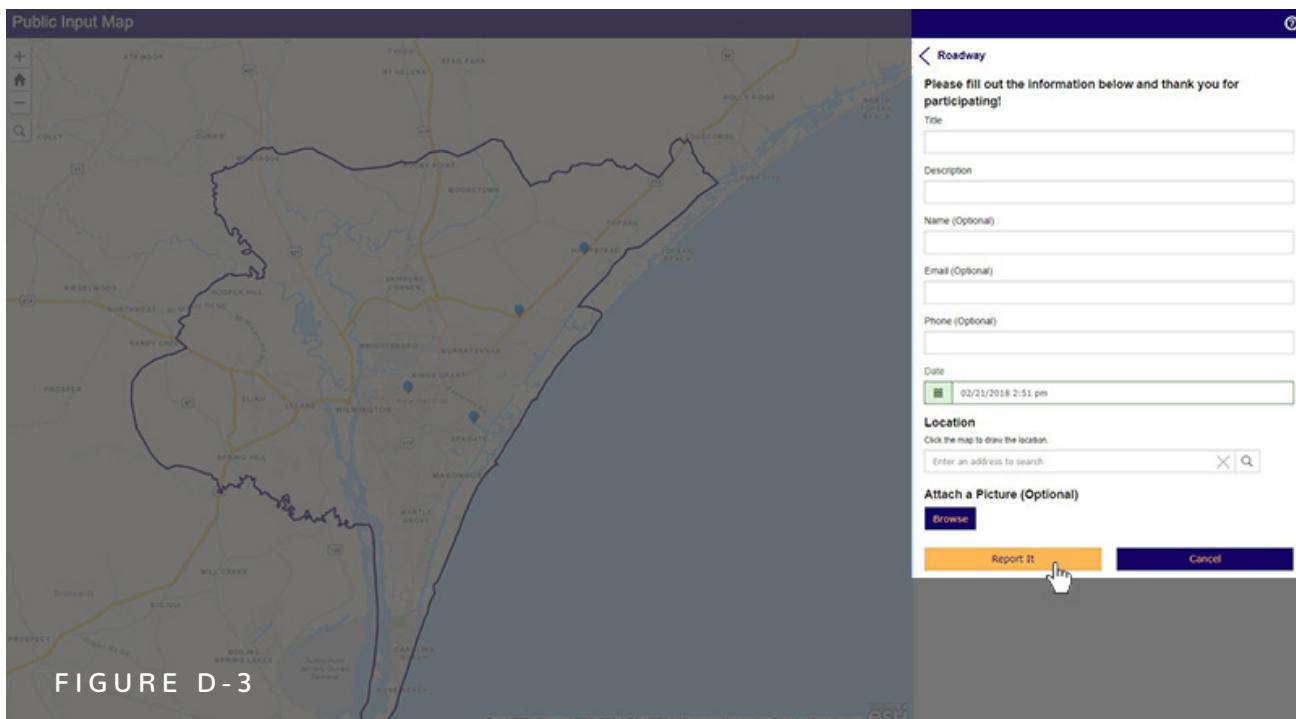
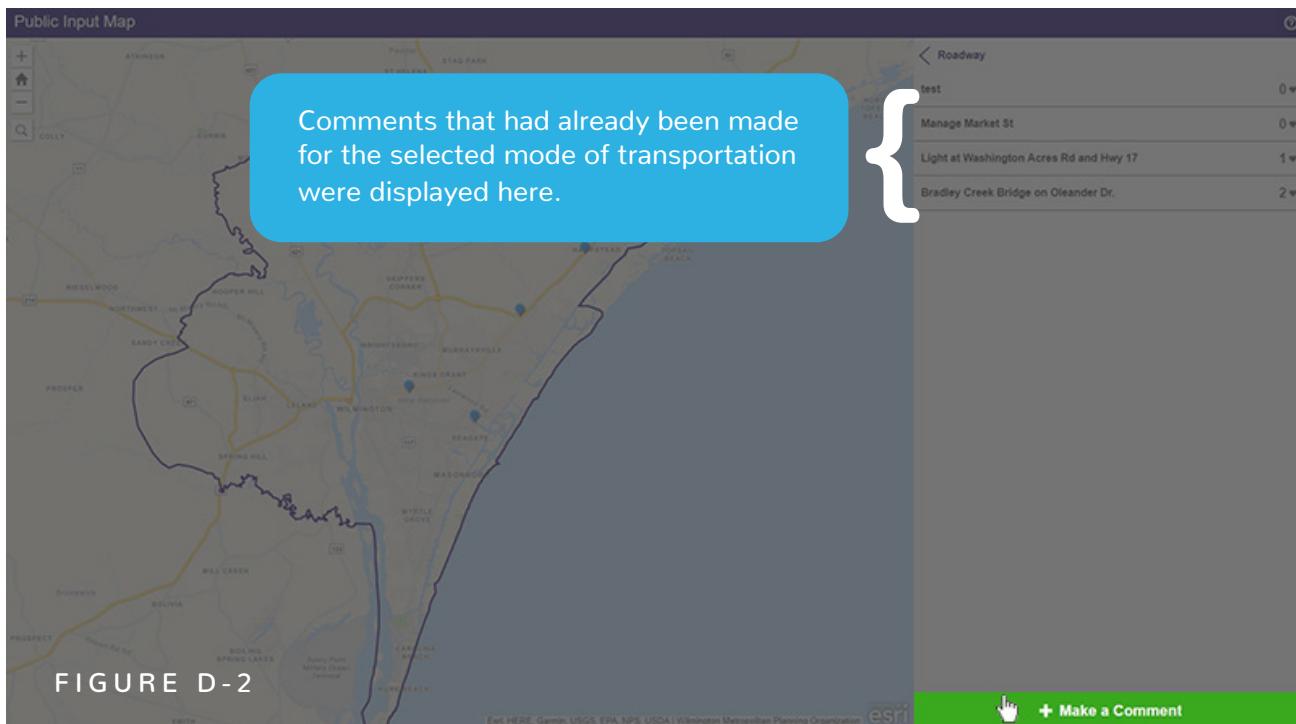
Responses omitted for privacy purposes.

Exhibit F: Cape Fear Moving Forward 2045 Interactive Map Interface

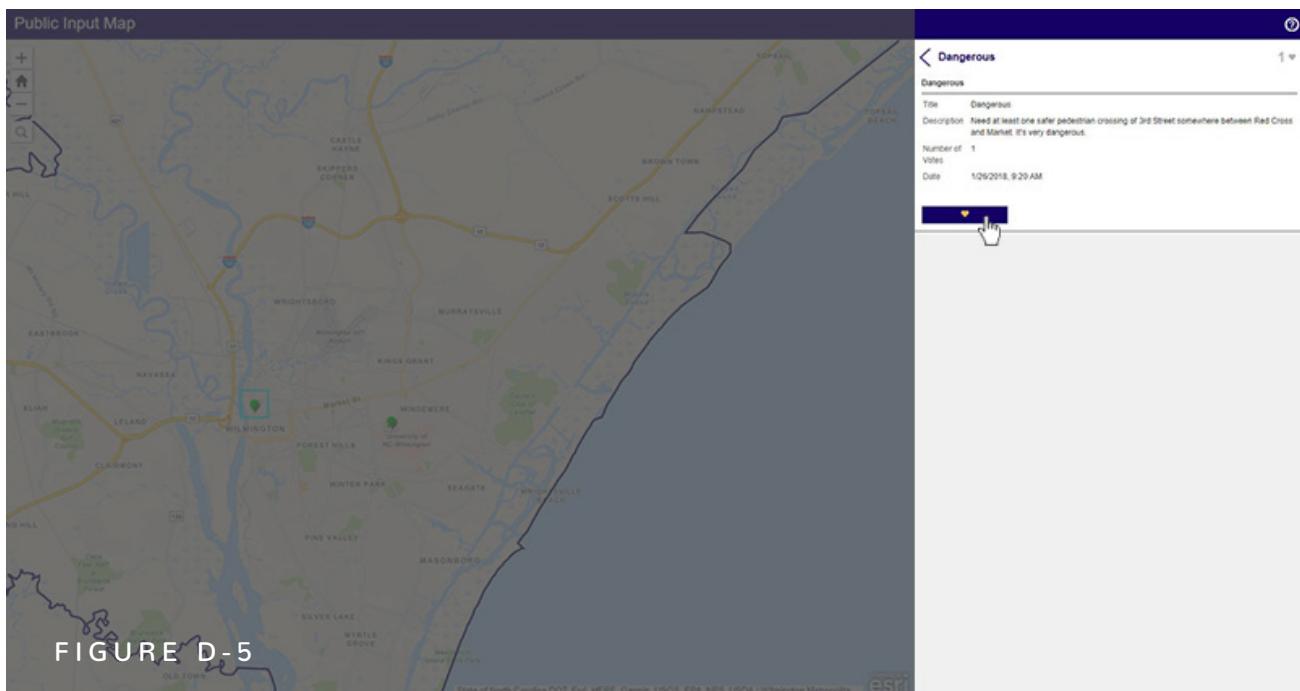
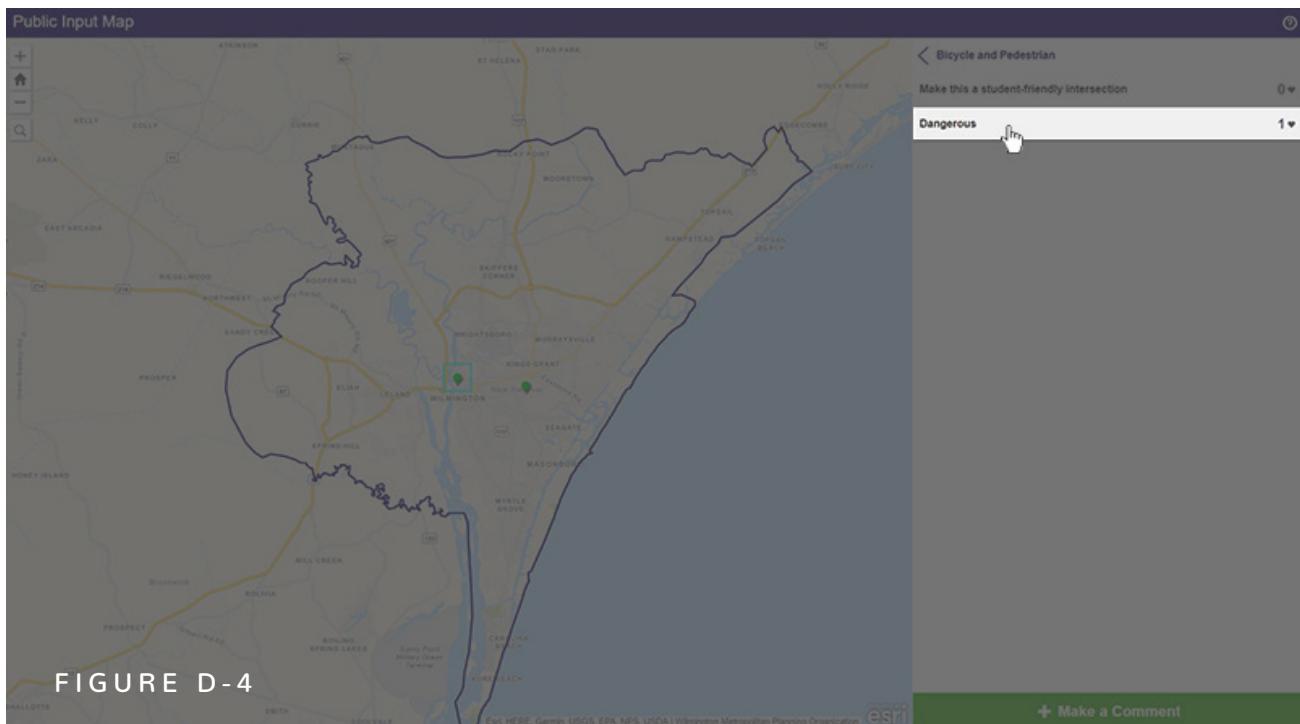


First, users would select one of the six modes of transportation:

1. Roadway
2. Bicycle and Pedestrian
3. Aviation
4. Mass Transportation
5. Ferry
6. Freight and Rail



To make a new comment, users would select “Make a Comment” (Figure D-2), fill in the form (Figure D-3), and select “Report It” (Figure D-3).



To vote for a comment that had already been made, users would select the comment (Figure D-4) and then select the “”button (Figure D-5).

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Exhibit G: Cape Fear Moving Forward 2045 Interactive Map and Survey Comments

The following are comments made on the Cape Fear Moving Forward 2045 interactive map between March 30, 2018 and July 31, 2018. The number of votes a comment received is shown in parentheses immediately following the comment. Open-ended responses from various Cape Fear Moving Forward 2045 survey questions have also been included in this list.

- Airport needs to mirror growth of the city, more airlines which will in turn add destinations and make air travel out of ILM cheaper (81)
- The bike path is part multi-use path, then transitions to sidewalk and/or bike lane on the road with no signage or easy method of transitioning. (62)
- Either a spur to Raleigh or a direct connection to Amtrak would widen transportation opportunities without increasing road traffic. (54)
- Sidewalks from Independence to Kerr Ave (50)
- Wrightsville Ave is probably the most traveled college student cyclists in town. The bike lane needs to extend to Eastwood Rd (48)
- There should 100% be SAFE pedestrian sidewalks or paths on Wrightsville Avenue (46)
- Wilshire NEEDS a sidewalk. You can travel down the road and see goat paths the entire way. Grass cant grow because of people traveling by foot. With the hundreds of residents that walk along this road weekly it needs to have a sidewalk. (41)
- Why does the trail stop? (40)
- 2 lanes drop to 1 headed US 17 North + ingress/egress from gas station there cause huge backs down Marsh Oaks. Now proposed high density rezoning in area= not sustainable. Need 2 lanes to US 17N. (39)
- Probably one of the worse intersections in the city for wait time in all directions. If a re-evaluation/ improvement of traffic signal cycle timing could be done while we wait for the intersection improvement project to be funded that would be awesome. (38)
- Anything the planning committee can do to increase walkability, likability and public transit will make our area less congested and more desirable for business of the 21st Century! (35)
- Unsafe crossing at Wrightsville/Military Cutoff (35)
- Finish the underpass for the cross city trail st the drawbridge. (35)
- Causeway Drive has sufficient width for a 4' wide bike lane on both sides. The town prohibits bikes on sidewalks therefore the major roadways need bike lanes for public safety. (35)
- MagLev train to RDU and CLT (35)
- There is not a bike path/sidewalk or crosswalk to access the cross city trail from the mall area. This would be a great way to encourage people to use alternative transportation to shopping venues. It is hard to access the mall by foot/bike from Independence. (34)
- Add more airlines servicing ILM (33)
- Crossing Wrightsville Ave at this location is very risky. Would love to see a safer method for crossing the road. (33)

- Many people use Greenville Loop as a bike route to get to and from the Mayfaire area for work. Due to the lack of bike lanes on Oleander approaching Mayfaire, crossing Oleander on Greenville loop to approach via Wrightsville/Rogersville is the safest method. But the Greenville Loop/Oleander intersection is very pedestrian/bike unfriendly, requiring risky lane splitting on a bike, or a dangerous unprotected crossing on foot. Please add a pedestrian crossing to this intersection (33)
- The planned bypass will dump traffic into this intersection but not add lanes. This is going to cause a huge bottleneck and it's awful as it is today. (33)
- Unsafe gap in cycling paths (33)
- Beach buses wrightsville (33)
- There is no bike lane from the intersection of Eastwood/Military Cutoff to Drysdale/Military Cutoff, but the bike map show one. This is confusing for bikers and there should be a lane there. This is also where the Northeast Library is located. It would be helpful for people to be able to access this public building by bike. (32)
- Pedestrians often cross between sections of green space, yet cars routinely speed through this corridor and do not respect crosswalk (32)
- The sidewalks on these roads go back and forth from one side of the street to the other. Should be constant on both sides (31)
- Tighten turn radii, Add Crosswalks (30)
- I want to visit Wrightsville Beach more often but there is never any parking available. Being from the western side of the city, it would be better to take public transportation to save on parking spaces and traffic to and from the beach. (30)
- I think a light rail system from ILM to either downtown or one of the beaches would not only alleviate traffic but be super convenient. (30)
- Continue rapidly pursuing Cape Fear Crossing (30)
- Add pedestrian bridges over College Rd at UNCW and at Hugh MacRae Park. (29)
- There should be safe bicycle and pedestrian travel all up and down Kerr. People walk and bike down it all the time but the bike lanes are not nearly wide enough. Just make one of the bike lanes a path available for pedestrian and bike use (28)
- Extend the existing path from military cutoff up market. Possibly add decorative short metal fence along side. This will give more access to residents in the upper New Hanover county area and connect existing pathways. (27)
- Add a multi-use path for bike/ped on Wrightsville Ave (27)
- Bike lanes are needed on Causeway Drive in Wrightsville Beach. (27)
- Unsafe travel between 17th and Forest Hills drive (27)
- Put a greenway and park in the abandoned rail corridor (26)
- The bike lanes should continue along the bottom route to Monkey Junction. (26)
- A pedestrian - bicycle bridge needs to be built over College in front of UNCW before someone gets killed. (26)
- This is right at the edge of UNCW. Extend the curb, slow the traffic, widen the crosswalk, and connect a path to nearby shopping. (25)
- More people could access Wilmington area by train (25)
- Bike path system connecting Hampstead south to Wilmington and north to Surf city - both for job access (24)

- Please consider the attached non-motorized crossing solution for the Bradley Creek bridge to be included in the 2045 Transportation Plan. This connection would substantially improve non-motorized connectivity between residential neighborhoods and retail/recreation areas in the City. (24)
- 2014 transportation bond passed (23)
- Move the guard rail over to the edge of the walkway so two people can pass each other. Too narrow now! (23)
- Lack of signage or signals for this designated bike route encourage risky cycling behavior. This is also misleading and dangerous for tourists who are out to explore the area by bike, and have no knowledge of other viable routes. (23)
- Reduce to 2 lanes with a median or center turn lane. (23)
- Bike lane here is an extremely dangerous merge with traffic coming off of the bridge, and disappears for a section, forcing cyclists to merge with traffic, much of which is large trucks, coming from the right side on the off-ramp. (22)
- There should be crosswalks and walk signals from Mayfaire to the Forum so that one does not have to get in their car and create more traffic to visit the shops in the opposite shopping centers. (22)
- Bike lanes should continue from river road down independence (22)
- Connect these two great paths with a short cross walk on Wrightsville Ave and up Oak Crest Dr (22)
- Implement traffic calming measures from 2008 neighborhood traffic calming plans (22)
- Particularly heinous congestion (22)
- Particularly heinous congestion (22)
- Traffic calming needed for Metts Ave and 21st. Neighborhood pedestrian and bicycle traffic in these areas is high. Speeding is a common problem on these two streets which are used as cut-throughs at all times. Stop signs are frequently ignored at the intersection causing accidents or unreported near-accidents. Adding chicanes or mid-intersection islands could be a relatively low cost solution. There is much neighborhood agreement about these problems. (22)
- Signage could be better on this bike path in the spots where it requires cyclists to cross the street to continue on the path. Maybe some kind of sharrows on the crosswalk, or green lines. (21)
- Extending the Piedmont Amtrak/NCDOT train which currently runs from Charlotte to Raleigh to include Wilmington via Fayetteville would provide Wilmington with rail connections to DC, NYC and the rest of the East Coast as well as Raleigh. (21)
- Need bike/ped path on Airlie Road (20)
- Many people commute to Mayfaire to work. Some commute on a bike for various reasons. Once this bridge is crossed on a bike, the lane disappears, and the path to Mayfaire becomes excessively dangerous. (20)
- This could definitely be a roundabout and keep traffic moving (20)
- Pedestrian walkway across Eastwood Road connecting residential area to commercial area around Mayfaire (19)
- This bike lane on Princess Place just starts and stops seemingly at random, creating dangerous merge points where cyclists must rejoin motor vehicle traffic. It needs to be contiguous for it to have any effect. (19)
- There needs to be bicycle access along Market Street going North and/or South (19)
- Very needed multi-use path around Greenville Loop to tie neighborhoods into school zones. (19)
- Late night bus service from the UNCW/Randall Parkway area, directly to downtown, to discourage drunk/drowsy driving (19)
- Public parking area for satellite parking to access Wrightsville Beach with a trolley bus that runs a loop back and forth to the beach. (19)

- Replace Cape Fear Memorial Bridge (19)
- Have this traffic go both clockwise and counterclockwise causes a lot of confusion for motorists. (19)
- It would be great if there were bike/ped facilities available to cross the Cape Fear River between Leland and Wilmington. These would ideally be incorporated into the causeway and CFMB alignment but with separation between bike/ped and vehicle lanes for safety. (18)
- It would be nice to have a crosswalk and path to access Hugh MacRae Park from this area. Crossing with traffic is difficult and there is not a bike path to get to the park. (18)
- Add bike lane on 17 in order to connect with hospital. (17)
- Tighten Turn Radii and Add Crosswalks on all four legs of intersection. Bike Lanes should continue on Randall across Independence to Mercer (17)
- A bike lane should continue straight as well as continue in the right turn lane. Wilmington needs to look at cities like Denver, CO and Portland, OR for proper lane placement. Bicycles are supposed to move with traffic, not stick to the right and go straight in front of right turning cars. (17)
- Bridge is very narrow and needs to be widened (17)
- The intersection of wilshire and wrightsville doesn't need to be a light. it does not move traffic efficiently. it's possible to make a round about that still provides safety for those traveling on the cross city trail (17)
- Add bike/pedestrian crosswalk from George Anderson light across 17th Street. Difficult to cross street and no connection to existing sidewalk on one side of the street. (16)
- Due to population density increases bike lanes and side walks are need on Carolina beach road. (16)
- Light rail on market street...someday? Connect downtown Wilm with shopping, UNCW (16)
- Extend 1-140 from southern terminus near hwy 17 to either Shipyard BLVD or Independence (16)
- 20 years ago NCDOT did a feasibility study to widen Gordon Road and then walked away from the problems and watched them worsen (16)
- A multi-use, off road bike path connecting to a future greenway style, off road multiuse path on CB Road would be amazing for the area. Bike lanes on the road are not safe on these heavy traffic, high speed roads. Thank you! (15)
- Biking across this bridge is dangerous (15)
- A sidewalk or bike path is needed along Shipyard for students walking/biking to Hoggard. A path is worn in this area indicating high use, but there is not access other than to take a dirt path or walk/ride in the grass. (15)
- Rail service to Raleigh from other side of Cape Fear Bridge would be great and alleviate a lot of traffic. (15)
- 16 & 17th very dangerous for walkers to cross (14)
- Needs to have installation of pedestrian activated HAWK crosswalk (14)
- With both Commercial and residential growth within monkey Junction area common there is more of a need for pedestrian friendly sidewalks and crosswalks. There are often people trying to cross Carolina Beach Road coming from Walmart (14)
- Bike Lane Needed from Porters Neck area down to Military Cutoff to connect to the rest of the Wilmington. (14)
- Multi-use path following Burnett Blvd to downtown would improve access to downtown and relieve a little congestion (on the road and in downtown) (14)
- A multi use, off road, protected greenway trail connecting Carolina Beach with other area trails. This would create a safe and healthy alternative to motor vehicle travel as well as bring even more desirability to the area. We need to include more trail/pathes in our future or our town will become increasingly gridlocked. Thank you for your consideration. (14)

- Would facilitate north-south interconnectivity of ped-bike traffic between UNCW/Mayfaire and Pine Grove/Masonboro (14)
- Bike lanes on Rogersville Rd to connect paths from eastwood and Wrightsville (14)
- Tighten Turn Radii, narrow lane width and add crosswalks to all sides of intersection (14)
- Continuous bike lanes are needed from Downtown to Sunset Park (14)
- All need a safe bike path to beach (14)
- Commuter transportation to Wilmington, Surf City (14)
- Buses need to run their routes 4-5 times / hour in order to be a practical transportation option for riders. (14)
- Extend Murrayville Road to connect to Hays Lane near Wal-Mart (14)
- Increase connectivity through businesses on Oleander to improve traffic flow (especially to south) (14)
- Unsafe gap in cycling paths (14)
- Beach buses wrightsville (14)
- College Road, between Shipyard and Wilshire Blvd., is in serious need of widening. It is a Hurricane Evacuation Route. Let's not find that we cannot leave the area in the case we are asked to leave. It is also a serious waste of time for everybody living here every day of the week. Think of the countless man hours that would be saved by widening this short section of road. (14)
- Speed humps, speed bumps or stop signs needed to slow traffic. Posted at 25 but consistently see drivers going 45+ (14)
- MUCH better signal timing is needed on College Rd. between Wilshire and Oleander (14)
- It might be time to consider putting College over Oleander similar to Market/College (14)
- Azalea Dr is segmented by a road barrier that is difficult to go around with bikes, strollers, or wheelchairs. Make a more pedestrian/bike friendly access between the neighborhoods. (13)
- Roads show as connecting but don't. It would be nice to have pedestrian and bike connectivity between neighborhoods- currently you have to navigate around a fence and ditch. Not safe for all the kids that live in this area! (13)
- Add bike paths on Pleasure Island connecting beaches and towns (13)
- We need more roadside space and connector trails on this side of the bridge (13)
- Eastbound traffic on Eastwood turning into Rogersville Road often fail to yield at the crosswalk. (13)
- 5th would be great for bikes, but many drivers seem to think they don't belong there - there just need be markings telling drivers to share the road (13)
- Runners and walkers do not have a safe way to travel down Rogersville Road (13)
- Self-Explanatory to anyone who has ever needed to ride a bicycle over this bridge. (13)
- Have a high speed ferry from Fort Fisher to Charleston with a stop in Myrtle Beach. Seastreak Ferry in NJ which goes to NYC, Martha's Vineyard, Nantucket, as an example. (13)
- MagLev between Wilmington/ILM/Leland/Jacksonville/Hampstead (13)
- Market St is already at close to property lines and traffic is increasing...will need a solution other than widening...better transit? managed lanes? (13)
- No light, no turn lane, heavy traffic pattern with business-unsafe parking on Wendover and unsafe pedestrian activity (13)
- I live at a dangerous intersection. (13)
- This road backs up and drivers tend to drive dangerously when impatient for the Oleander/Pine Grove light (13)

- High Rise Bridge for Wrightsville Beach (13)
- Additional wayfinding signs on the cross-city trail. (12)
- Bike/walking path needed to connect Hugh MacRae park to Holly Tree (12)
- A crosswalk/bike crossing from the northeast corner of the Aldi property, northeast across Waltmoor Rd., connecting to the existing sidewalk/cross city trail. (12)
- This loop is used by cyclists and runners and adding wide shoulders or full bike lanes would make it much safer for all and help traffic flow better (12)
- The bike trail needs more signage at critical intersections. (12)
- Bike lane on Greenville Loop Rd dead ends before and after school forcing kid riders into the car lanes (12)
- Most of the bikeways in NH Co simply dead end leaving the cyclists stranded. What do you do - swerve into a traffic lane or go off road into a ditch? Take going north on Pine Grove, the bikeway ends near Long Leaf Hills dr. (12)
- Add PROTECTED bike lanes from Burnett Blvd to at least Southern Blvd and Preferably Shipyard (12)
- There should be a multiuse path down Oleander so people can walk or bike instead of getting in their car to drive a quarter mile (12)
- I think a rail system in the Wilmington, beaches and surrounding suburbs would be amazing! (12)
- How about a natural gas-fueled trolley? The current one blows out a lot of smelly exhaust. (12)
- Running 133 to I-40 would alleviate traffic that exiting I-40 and has to go through Castle Hayne to get to homes off 117 and 133. (12)
- Left turn light from Parker Farm onto Military Cutoff Northbound is incredibly short, ~15 seconds. Only a handful of cars get through each cycle causing significant congestion in that area of Mayfaire as traffic backs up. Light should be extended another 5-10 seconds during rush hours, if nothing else. (12)
- Convert Water Street from Princess to Dock to pedestrian only (11)
- A bike lane that connects from College Road and Market Street would encourage more walking and/or riding bikes to shops/parks. As it is now, it is very unsafe to use anything other than a motorized vehicle. (11)
- Multi-Use trail connecting future bike path off of River Road near Snow's Cut Bridge running north to Myrtle Grove Junction. This corridor is currently unsafe for pedestrians to walk and bicycle. 421 is the gateway to Carolina and Kure beaches. It would be beneficial to make this corridor an inviting and friendly place to walk and bike. (11)
- Research shows that bike boxes, green boxes at the front of intersections at traffic lights, make a big difference. These should be added at all intersections with stop lights on bike paths. <https://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/bike-boxes/> (11)
- Connect sidewalks from Wrightsville Avenue to Allens Lane along Military Cutoff (11)
- Run a trolley up the middle of Eastwood from downtown out to the beach (11)
- A parking deck / transportation hub located either at the old movie theatre parking lot on Oleander or on the land owned by Wrightsville Beach on Sir Tyler Drive. WB, Wilm, and NHC need to work together to create a trolley plan that would provide transportation to and from the beach and between key areas (i.e. Mayfair and WB) that would lessen traffic on the beach. In return, WB could trade 20 plus parking spaces on Causeway and turn in to bike lanes. Make WB more pedestrian, bike, trolley friendly (11)
- This triangle includes several busy intersections that are often difficult to navigate. Adding a round about or stoplight would make this area safer. (11)

- Masonboro Road is beyond over capacity. I attended a county board review for a project where this data was reviewed. It is a known problem that will continue to get worse with more development coming until all the land is built on. Please do not ignore this known data, do a traffic study and please address this issue. Look at the accident rate for this road, it is on a steep trend up for the last 5 years. (11)
- Is it possible to add additional concourses (10)
- Navassa has long scenic roads that traverse the whole town that would be great for bicycling if there was a safer alternative than simply riding in the road. (10)
- Add bike lane to 23rd street between rail intersection and airport (10)
- There needs to be safe bicycle access across Cape Fear River to allow travel between Brunswick and New Hanover Counties (10)
- There is multi-use construction proposed in this area and residential development popping up daily, but no bike or pedestrian paths. There is a nature preserve in the middle of the neighborhood but no safe pedestrian or bike paths to get there. Many residents have golf carts so a golf cart paths would be awesome as well. (10)
- Would like to have a way to bike from Brunswick Co to Wilmington without having to load bike in the car. (10)
- There should be multiuse trails in front of the school (10)
- A very simple interconnection of the Park Avenue Trail and Pine Grove, avoiding all the traffic/congestion at College, Oleander and Pine Grove Drive. Would allow per/bike traffic flow from Masonboro and south to east-west routes and UNC/Mayfaire north. Signalized crossing, sharrows on S Wallace. (10)
- There needs to be a passage to get from Independence to the river lights multi-use passages. (10)
- Currently bicyclists and pedestrians must share the same tiny sidewalk. Many bicyclists do not disembark their bike, creating lots of foot traffic where people could potentially fall into the road or the water. The crossing needs to be safer for both bicyclists and pedestrians (10)
- There is a driveway off of Randall into an apartment complex (Kerr Crossing). The driveway is a steep incline with no signage for drivers (not even a stop sign for those exiting) and no signage for cyclists/ pedestrians. There are also a couple large trees obstructing the view of both cyclists/pedestrians and drivers. (10)
- Improve public transit on Oleander from downtown to College rd to improve retail/job access (10)
- Reduce traffic by improving the street network/grid through the properties around market street thus increasing connectivity. Also improve public transit (10)
- The intersection of Navaho and Masonboro Loop has become busy due to new developments along Navaho. There is a nearly blind curve if you are turning left from Navaho. Recommend a traffic light study in this area. (10)
- Plant palm trees along the median South of Monkey Junction, leading to Carolina Beach. (10)
- Consider a Roundabout at this intersection (10)
- Add flyover bridge for traffic headed west on 74 to go south on 17 (10)
- traffic is bad enough! developers need to buy us new roads \$\$\$ (10)
- Need sidewalks on these residential streets so we have the ability to walk safely. (9)
- This shopping area needs a multi-use path on one side of the road. (9)
- River Road Bike Way extension from River Lights. (9)
- Michelle Drive and Andover make a great connection between the River-to-Sea Bikeway and the Cross City Trail on Rose (9)

- This bike lane should continue straight as well as continue in the right turn lane. Wilmington needs to look at cities like Denver, CO and Portland, OR. Bicycles are supposed to move with traffic, not stick to the right and go straight in front of right turning cars. (9)
- Add passenger service to Ocracoke (9)
- Add seasonal service to Wrightsville Beach connecting hotels from Downtown through to Beach and from Beaches to Downtown Restaurants and attractions. (9)
- Hours of service need to be longer if buses are to serve riders who work evening hours (9)
- Work with the hotels in the area that are situated within walkable areas (downtown, beaches), and incentivize them to provide airport shuttle service. (9)
- Explore feasibility and impact of connecting Greenville Loop Rd to Masonboro Sound Rd via a new crossing over Hewitt Creek (9)
- There needs to be a bypass to Jacksonville from Wilmington routing traffic around Hampstead the majority of traffic coming to and from Wilmington is Jacksonville. We have bypasses connecting every coastal city but not one between these two cities. Why? (9)
- This intersection is Dangerous when heading North and turning left onto Holly Tree (can't see traffic well coming around curve). We need the traffic circle that was voted for in 2014 Bond issue. With the traffic circle the traffic could continuously move. (9)
- Make this intersection an oblong or peanut shaped roundabout, much safer (9)
- This is such a vital connection and would really help flow/connectivity/safety in the area (9)
- Additional straight/through lane is desperately needed going westbound on Wrightsville on the east side of College (9)
- The area around Mayfaire and the Forum is a nightmare now. I can only imagine what it will be like when this "Avenue" cluster begins. You had better start figuring this out now before you have real issues on your hands. It is not always about who's pockets were filled. It is about the people of this town. (9)
- This intersection and the Piner Rd/Grissom Rd intersection down the road need an upgrade. A roundabout should go where Masonboro Loop Rd, Myrtle Grove Rd and Grissom Rd meet, and Piner Rd should be dead-ended before it reaches Grissom Rd. Rename what is now Grissom Rd to Piner Rd and give the dead-ended portion of what is now Piner Rd a new name for the purposes of simplification. (9)
- Piner Road alternate transportation improvements needed to accommodate existing and new residential developments to improve access to good and services in Monkey Junction. (8)
- Add a bike path along 133 to Southport (8)
- See the top priority project cut sheets from the Wilmington/New Hanover Greenway Plan and the Cape Fear Regional Bike Plan. (8)
- I see lots of bikers using Covil to connect to the bike trail on Randall, and a bike lane would help during high traffic times. (8)
- This would connect side walks from Holly tree (8)
- A very nice little road connecting Masonboro with Pine Valley and Wade Park, as well as 2 Elementary schools; almost unrideable because it is so narrow and the quantity/speed of traffic. Another interconnectivity gem if it could be made safe. (8)
- Bike path needs to be widened on both sides of the road in this area. Bike path is crumbling. (8)
- Needed from monkey junction to 17th and beyond (8)
- Add Crosswalks and "Stop for Pedestrians" signs at ALL crossings from Wooster to Dock st. Drivers don't stop and drive too fast! (8)

- There is no close/good option for cycles and pedestrians to cross Market Street between Eastwood Road and New Centre Dr. A pedestrian bridge over the road (possibly attached to the S. College Bridge over Market) is needed. (8)
- Need turning lanes for each side of the road for Bellamy School. Parents pull to the side but the roadway is not safe. Need bike lane & sidewalk also (8)
- A loop should be built or signage installed for how to navigate the neighborhoods where the path ends (8)
- There are far too few bike lanes available. Ones that exist are dangerous. On the Causeway to Wrightsville Beach, the far right parking lane (where currently accommodates about 15 cars), this should be used as a bike lane. With all of the promotions to have people walk and bike, the city, town and state need to provide a safe way for people to participate in such activities. You are knowingly putting peoples lives in danger to save a little bit of money. (8)
- The sidewalk that has recently been built around Ogden elementary school is great, but we should continue the sidewalk around the entirety of Middle Sound Loop road so it is easily walkable for pedestrians (8)
- This road has very high pedestrian, joggers and bicycle traffic, yet not even a shoulder. It is very dangerous. (8)
- Could we add a ferry to reduce wait times? (8)
- With additional housing being added to all areas of Masonboro Road, a bus route with adjacent parking or bike access in this area or at Piner/Monkey Junction could be considered. (8)
- Light rail crossing over the Cape Fear River (8)
- Add vegetation to CB Rd from MJ to downtown. It looks awful after road was repaved. (8)
- We need the traffic circle that was voted for in 2014 Bond issue. With the traffic circle the traffic could continuously move and help the backup of traffic in the mornings and afternoons. (8)
- Consider putting a roundabout here to help safety and future traffic flow. See Picture (8)
- Consider reducing speed limit on Masonboro Loop (to 40 mph?) to improve safety and traffic flow (8)
- Turn College rd into a Boulevard from Market st to Oleander. It should have 2-3 through lanes a tree planted median, then a service/right turn lane for each direction. See Picture! (8)
- This need to be a round about. It takes forever to turn left off wilshire onto wrightsville therefore everyone cuts through Bonham, Pace, 41st, and Bryan and its dangerous. A light is not efficient (8)
- Need at least one safer pedestrian crossing of 3rd Street somewhere between Red Cross and Market. It's very dangerous. (7)
- Sidewalks are needed for pedestrian safety here (7)
- Need to add a shoulder along Market from Marsh Oaks to Poter's Neck (7)
- Roadway and rail line are at severe angle. (7)
- Connecting walking paths (7)
- Unsafe crossing needs crossing light (7)
- Add crosswalks to all four sides (7)
- Theres no reason for 35 mph speed limit through this area with Kenan fountain and it drops to 25 mph at 3rd anyway (7)
- There is currently no room to safely walk or ride a bike on Waynick Blvd. There are 4 lanes for cars, but no room dedicated for bikes. (7)
- A new public boat ramp on the ICWW in Porters Neck/Scotts Hill Area/South Pender County would be awesome! (7)
- Create Leland with rail between Wilmington International Airport and Myrtle Beach Airport (7)

- Start investing in Electric Buses Now! (7)
- It would be amazing to have the light rail run from uptown to the beaches- would bring so much more attention to the area and convenience to locals and well as tourist. as soon as possible. :) (7)
- Widen travel lanes on Market Street. Too narrow, unsafe. (7)
- Light needed at intersection of Rt 17 and Scotts Hill Medical Drive. Emergency vehicles from the north must continue south of the emergency hospital on Rt 17, then make a U-turn to go back north. (7)
- Turning left off of Darlington Ave and onto Market should not be allowed. Too many accidents happen here and cars often get tired of waiting for Market to clear so they take riskier turns out onto Market. (7)
- A traffic circle might alleviate traffic backup but as a consequence neighborhoods on Pine Grove would have a reduced ability to exit their neighborhoods due to a constant flow of traffic, especially if the traffic circle at Greenville Loop and Pine Grove is installed. The real solution is a new main artery to the Masonboro area is needed to divert traffic. New neighborhoods means more vehicular traffic. No plans to address that additional flow to this area of the county. (7)
- Permanently close Market Street to vehicle traffic from Front to Water streets, and make it an attractive plaza for weekend, seasonal, and festival vendors. There's already nice trees, benches, the fountain, etc, but lose the pavement and curbs and lay bricks, add more benches and trees. (7)
- Three primary lanes of traffic both ways between Shipyard and Wilshire are long overdue. (7)
- Convert Water St. S. into pedestrian only, from Market St. to Dock St. (6)
- Sidewalks (6)
- Roadway and rail lines are at severe angle to each other making the crossing very dangerous (6)
- New school but not safe for kids to walk to. suggest evaluating the area for improvements prior to rezoning in 2020. (6)
- Add bike paths and sidewalks in neighborhoods- eg Millbrook (6)
- Add a public parking lot where people could leave their car and bike to the beach. (6)
- Sanders Rd Multi-Use Pathway (6)
- Tighter Turn Radii and Bump Outs to narrow crossing distance and Crosswalks (6)
- Crosswalk or some sort of pedestrian/cycle crossing at the end of the sidewalk in front of the Exxon to the sidewalk on the other side of Racine (6)
- By creating a crosswalk from the cross city trail to Mayfaire we can create more bicycling transportation options instead of driving! Imagine being able to easily bike to the movie theater! (6)
- Golf cart path from River Rd to Carolina Beach Rd allowing River Lights, Mott's Landing, Willow Glen and Beau Rivage residents to walk, bike, golf cart to shopping center (6)
- Move rail corridor to Brunswick County side of the Cape Fear River (6)
- Pedestrian Crossovers for I-17 (6)
- Add more services for elderly and disabled, Extend the reach where they can access dial a ride and paratransit. (6)
- A light rail to connect the lower part of the county, Southport or Shallotte TBD, with Wilmington. One advantage of a Rt 17 path would be a line in the highway median. (6)
- Warning strips or notification of light is necessary due to curve in road and business exiting without light benefits (6)
- Anyway to reduce traffic in this area? (6)
- Anyway to reduce traffic in this area? (6)
- Princess Place Drive is not a safe bike route with the high traffic and many vehicles far exceeding the speed limit. (6)

- Continue Island Greenway from Alabama St. through Kure Beach to Fort Fisher (6)
- Road needs to be repaved (6)
- One Lane for Southbound 421 not enough (6)
- Make this road connection (6)
- Northbound left turn lane on New Centre Converted to Straight or Straight/Left to reduce extensive backups (6)
- Implement 2007 plan (6)
- Examine better way for WB Eastwood to access SB Racine (6)
- We need air service to Raleigh because there are carriers there such as Frontier, Southwest and Alaska. (5)
- Mallory Creek Connector road to Brunswick Forest does not have walking or biking facilities. There are sidewalks that terminate in both Mallory Creek and Brunswick Forest prior to new connector road. (5)
- Roadway and rail line are at severe angle making the crossing very dangerous. (5)
- High pedestrian traffic due to Cape Fear Community College requires a safe pedestrian crossing. There is no signage or markings there. An administrator commented to me that this is a critical issue with student safety. (5)
- Add a public parking lot for bikers/pedestrians to access the Cross City Trail or to bike to Wrightsville Beach. Could also add a bus station for satellite beach parking. (5)
- Add Crosswalks, Create tighter turn radii, Remove slip lanes (or at least add refuge islands) (5)
- Tighten turn radii and add crosswalks to all 4 sides (5)
- Add crosswalks to all four sides, tighten turn radii, shorten crossing distance (5)
- Add a multi-use trail along Rogersville from Wrightsville to Eastwood. (5)
- Adding sidewalk & bike lane to Clear Run Dr, College Acres Dr, N. section of Mallard (to Rill Rd) would give safer conditions for walkers & bikers to nearby Cross City Trail & UNCW Campus on these popular cut-through roads, (5)
- Randall has no bike lane yet it is highly utilized by cyclists and students. It connects with residential adjacent to campus and with the bike path across College. (5)
- Connect Hoggard High School along north side of Shipyard Blvd. to the Cross City Trail at Independence (5)
- Additional space is needed on the ENTIRETY of Middle Sound Loop as it is routinely used by many people biking and walking. Either that or REDUCED speeds or even speed humps, as people drive MUCH too fast around the blind curves on the loop. It is only a matter of time before someone has a SERIOUS accident. (5)
- Railroad lines inside city seem to block traffic. Maybe a RR bridge that runs to the port? (5)
- The train should be moved to the outside of town. It causes traffic congestion and creates noise pollution. Once the train is outside of town this rail should become a light rail to transport people across town efficiently and consistently (5)
- Bus stop at the Bayshore commons to provide better access to the Walmart Shopping Center (5)
- Relay rail that was removed to create service from Wilmington to Raleigh. (5)
- Have a park and ride where Leland people can get to work by picking up a Express bus to (at least) NCUW or the hospital. (5)
- Flashing school zone light needed near Myrtle Grove Middle school (5)
- Prepare to widen Hoover Road in anticipation of the Hampstead Bypass interchange (5)
- Explore options to increase connectivity between various subdivisions in the Hampstead/Topsail area to lessen need for everyone to travel on US 17 (5)

- A roadway connecting US 17 with NC 133. There is currently no easy way to get from Leland commercial area on US 17 to many of the neighborhoods like Westport off of NC 133. Mallory Creek/Rice Gate connector road is great, however a more direct route would be heavily utilized. (5)
- Difficult to exit onto 421 due to heavy traffic which is expected to increase due to completion of 120 housing units at Beau Rivage entrance. Pot holes in shoulder of egress lane makes it dangerous to use when entering 421. Difficult to access U turn lane from Beau Rivage to go north on 421. (5)
- Dangerous Intersection. Speed limit of 55mph is to high while people try to make u turns and left turns on an uneven intersection. (5)
- There are many manholes left after last new paving that are dangerous (did an inch or so) but a several examples are on S College between Wilshire and Oleander on the outer lanes both north and south bound (5)
- There are many intersections on College Rd that when you are in the left turn lane and there's somebody in the left turn lane coming from the opposite direction, you can't see the oncoming traffic. Many drivers just take the chance and turn. I have seen this accident many times and several have been fatal. (5)
- Extend Independence to MLK (5)
- Establish an ordinance or code requiring any new construction or upgrades to existing construction mandating exterior building color and uniform signage (5)
- Dangerous intersection for pedestrians/bikes (5)
- Dangerous intersection for pedestrians/bikes (5)
- Add right turn from Rogersville to Eastwood (5)
- Please sync the daggum lights on 3rd St! (5)
- Left turn Greenville Loop has obstructed view oncoming traffic (5)
- Build a pontoon bridge that connects each side of the river like the one that is in Curacao (4)
- A path from Hugh MacRae to Wade Park would be great for (4)
- Speed bumps on S Cardinal are a hazard to cyclist, as well as all speed bumps in NH Co. They are like obstacle courses that a cyclist would like avoid, but they happen to be on the best cycling roads. Why aren't there bike slots thru the bumps if the accursed things have to be there. (4)
- Need better/more complete bike/ped facilities on main roads in Leland (Village Road, Old Fayetteville, S Navassa). There are currently no bike lanes and sidewalks are incomplete. (4)
- Students and parents need safer crossing options for those going to the shopping center across the street. This shopping center also is used for additional parking during large sporting events ie football games. (4)
- Need bike lanes in the castle Hayne area. Also, please connect CHPark to madeline Trask Rd. There is already an easement there, but the junkyard keeps a chain across it. (4)
- Many travel from the Hillcrest neighborhood to shop at the Food Lion and must cross 4 lanes of traffic on foot. This crossing is extremely dangerous and there have been fatalities. The curve of Dawson St also makes visibility poor for pedestrians. Please consider some Ped infrastructure somewhere along this corridor to allow a safe crossing to the grocery store and other shops. (4)
- Add multi-use path to commemorate the historic beach car line (4)
- Add a park and ride-ferry to downtown where there would be an express bus to UNCW area and the hospital (4)
- Light rail between Wilmington and Jacksonville/MCB Camp Lejeune for commuters (4)
- Use old rail lines for trolley or trail (4)
- Connect Leland Town Hall with Mass Transit route between Wilmington and Myrtle Beach. (4)
- Extend trolley service - also add a trolley. CNG trolleys (4)

- Encourage parents to use county provided buses to take children to school by charging a drop off fee each day that their child doesn't use mass transit resource. This will also generate revenue either for school system or more public transportation. (4)
- To reduce the number of vehicles on the ferry, if transportation was provided to local areas such as the NC Aquarium at Fort Fisher, and downtown Kure Beach, people could walk onto the ferry and not have to worry about taking their car on. (4)
- The existing railroad track by the airport that continues to downtown would make a great light rail. People staying downtown for tourism or conventions or business travel would appreciate it. I would increase visits to River Walk and River Front Park. (4)
- Build a pontoon bridge that connects each side of the river like the one that is in Curacao (4)
- Allow 2-way traffic in 00 block of N. 7th Street (4)
- Allow 2-way traffic on 00 block of N. 8th Street (4)
- Add lanes to S. Front Street between the Cape Fear Memorial Bridge and Burnett to improve traffic flow (4)
- Replace this dangerous intersection of Holly Tree and Pine Grove with a traffic circle (4)
- Improve intersection to eliminate triangle layout. Roundabout? (4)
- Whose idea was it to add hundreds of residents to a low use road and not improve the main intersection that they use. My office is located off Darlington, and everyday I drive home I fear for folks turning left onto Covil Ave. (4)
- Light turning into Post Office on road called the Kings Hwy / cars going south on highway 421 are making dangerous illegal U turns. Perhaps add a yellow flashing light on top of the 1st of the two no turn signals. (4)
- Speed limit increases to 55mph just passed monkey junction just before two lights. Causes many accidents. Should stay 45mph until Beau Rivage neighborhood. (4)
- Joining with MLK at this point would require a major commitment to bridging and at least a diamond intersection. I chose to go west of the waterway that drains this area to keep bridging cost down. But land use might make another choice. (4)
- Street needs to be repaved (4)
- Better connectivity from Lullwater and Dapple to the Shopping Center and Randall (4)
- Make this intersection an elongated/peanut shaped roundabout to improve traffic flow and safety. See picture! (4)
- Dangerous intersection for pedestrians/bikes (4)
- Dangerous intersection for pedestrians/bikes (4)
- Increase red-light time for cars on Rogersville Rd or better coordinate with Military Cutoff Light (4)
- Wrightsville beach needs better/more parking (4)
- Need a shoulder here (3)
- Construct Multi Use Path along Country Club from US 17 to Sloop Point Loop Road (3)
- Need safe crossing for pedestrians and bicycles (3)
- A biker coming out of Satara Dr to S College use to safely cross thru the intersection that was there. It has been replaced with an idiotic michigan left turn. How is a cyclists supposed to get across traffic to get in the northbound lane? (3)
- People wonder why road cyclists do not use the bike paths. It is because at every intersection there is a speed bump coming off the path and another coming back on to it. This is very uncomfortable for a cyclist with 80-110 psi in their tires. Why can't it be a smooth transition (3)

- Remove unnecessary 3rd through lane on 16th from Castle to Wooster to reduce speeding and improve safety (3)
- Add Crosswalks to all four sides (3)
- The section of trail in front of the Trask Land Offices has terrible drainage. Even a slight rain causes a pool of water on the trail. (3)
- Lack of yield to pedestrian signs cause this to be a dangerous road to cross right onto the Cross City Trail. (3)
- Students and others new safe ride to beach (3)
- Sidewalk needed on Lake Ave from 41st st to Halifax Rd for students from Roland Gries Middle school Very dangerous having students on foot and on bikes in the road (3)
- Just a matter of time before a bike or walker falls into traffic. The Banks channel bridges have safety rails. Do it now while your building the Pedestrian under the bridge path ! (3)
- The road offers a beautiful view of the creek, and having a small dock would offer pedestrians the opportunity to watch wildlife (3)
- N Kerr almost has bike lanes between MLK and farley dr. all it would take to make it true is this section between spring branch bridge and MLK need a couple feet of pavement. Then some paint and signs all the way along. (3)
- Need a multiuse path from Red Cedar to Market Street (3)
- Bike lanes are needed on the northside of Wilmington for its residents that are prominent bike riders. (3)
- The new elementary school has constructed a sidewalk that dumps the kids out onto the road with nowhere to go safely. There is not a crosswalk either. It is a very bad design anywhere, no less at an elementary school. Oriole needs a sidewalk! (3)
- Add a bike lane for the entirety of Beasley to connect to masonboro loop trail (3)
- The wait times in the spring and summer season are 45 minutes-1.5 hours. Adding additional runs, larger ferries, and making current boats and maintenance more reliable so that runs are not canceled. (3)
- Look at the difference in the weight and space of a vehicle vs a pedestrian or cyclists, and yet the cost difference is does not compare. NC should support cyclists by not charging anything if there is less than a dozen bikes. There is always room once all the cars are loaded. When is NC going to support non-combustible alternatives such as bicycling. This would make a statement to the public. (3)
- Rapid transit that allows students and professors ease of travel. (3)
- Connect Community Center or Town Hall in Navassa with the Leland Cultural Arts Center to expose additional users to award-winning arts and entertainment venue. This is especially needs for kids to participate in available after-school and summer programs. Build partnership with Brunswick Arts Council. (3)
- Needs a bus stop shelter here. People are sitting on makeshift benches and folding chairs while waiting for the bus. (3)
- There are like three bus stops on Wilshire that are just pathetically placed in the grass. Why is there no shelter or bench? (3)
- It's great there is a shuttle to the airport but it is way too long of a ride for anyone to use it (3)
- Create a shelter for public transportation customers at the intersection of Carolina Beach and Golden Rd. (3)
- Build new roads connecting NC 210 and US 17 (3)
- Resurface Northchase Parkway (3)
- Particularly heinous congestion (3)
- Particularly heinous congestion (3)

- Address traffic on above mentioned roads by expanding in similar fashion to S. Kerr and create access to 74 to alleviate traffic on Market. (3)
- This road is in horrible condition. The road is being used more since the I-140 Bypass opened. (3)
- Road is in bad shape and needs repaving. (3)
- People trying to get to Walmart and other shops from the silver lake side (3)
- Unbelievable number of potholes on this street makes it extremely hard to navigate. In addition when it rains there is no where for water to go (since there are no storm drains) and creates massive puddling and even more potholes. The city is extremely slow in pothole repair currently. (3)
- Needs to have multiple lanes for castle hayne road (3)
- Light always lines up red with S College traffic merging on. Should be green for large traffic flow. (3)
- When heading north on College Road, change the speed limit from 55mph to 45mph until you cross MLK. Merging onto N College, coming Mkt St, you have to merge with vehicles going 55mph+. Also, a large plant (Corning) has a lot of car coming out into traffic as well in that area. (3)
- Widen for bikes in both directions plus a center turning lane (3)
- Need a new roundabout at intersection of Red Cedar and Middle Sound. The one at Ogden works great and with all the traffic, its difficult to take a left out of Red Cedar (3)
- Densely populated Carolina Place neighborhood has a fast road used as a cut-through and is not safe for families crossing over into Wallace Park. More stop signs or speed humps PLEASE. (3)
- There are two turn lanes from Wrightsville Ave to go north on Military Cutoff - this is also where bikes to WB would travel (Wrightsville Ave has a marked bike trail that sort of drops off here). I've seen several collisions here because it's a tight turn and vehicles don't realize there are two lanes of traffic turning. I've also seen bicycles almost get hit here. (3)
- Connect sporadic right turn lanes along NB College to create 3rd NB lane, drop onto Gordon. (3)
- The flight path over downtown is used by private and airline planes current outside of current Wilmington noise ordinances between the hours of 11p and 7a. For instance, there is consistently low-flying air traffic in residential areas at 1a, 4a, 5a. This is not allowed cities like San Diego where airports and military bases are in close proximity. (2)
- Until air travel is increased between ILM and RDU lets get some reasonable bus service between ILM and RDU so that families don't have to drive the 2-3 hour trip and then park there for a week or more. (2)
- With the deep ditches in this area it's dangerous to on the side of the road (2)
- The crosswalk at this intersection does not signal drivers for the turn lanes that walkers/riders are crossing. It is quite sketchy to cross. (2)
- Trails (2)
- This is the only intersection (all 4 corners of sidewalk) in the entire area that does not have curb cuts/ramps on the corners. Just tall curbs to step down so strollers or handicapped persons can not use the sidewalk. (2)
- Add safety to this intersection. flashing lights during pickup and dropoff times (2)
- Pedestrian path is needed along Lansdowne connecting Navaho to College allowing children walking to bus stops, bicyclists and joggers safe passage along a busy outlet for several subdivisions (2)
- Add higher rails to the bridge's sidewalk that also functions as a bike path. It is only hip height and when you are on a bike you could easily fall off into the water. (2)
- Additional bike lanes are needed on Hawk Rd. near intersection with Red Cedar (2)
- Need multiuse path on Red Cedar to connect with new path on Middle Sound to Ogden Elementary (2)

- I don't understand why cyclist are being told to use the crosswalk on the opposite side of the street. Bicycles are supposed to move with traffic. Wilmington needs to look at cities like Denver, CO and Portland, OR for bicycle lane placement and safety boxes. (2)
- Sidewalks in serious disrepair (2)
- Ped buttons and signals at 17th/Castle (2)
- Connection to both Pine Valley School and Cross City Trail, repaint RL Honeycutt N. of G. Anderson (2)
- We need more public boat ramp areas all up and down the New Hanover County coastline. (2)
- Make Greyhound more frequent and to more destinations. (2)
- Rail or other public transport from surrounding Counties to NH - Pender, Columbus, Brunswick, Bladen available transportation from these counties to each other and New Hanover would make them bedroom communities where there is no industry but a glut of housing. (2)
- Initiate a study that measures the impact to morning and afternoon traffic caused by parents taking their children to school vs. using county provided buses. This is a county wide problem. (2)
- Provide buses to beach (2)
- Difficult to see cross traffic, flashing light doesn't help (2)
- Traffic run turn lane 600ft (2)
- Need to slow down drivers on Lansdowne Rd, Greenwich Ln, Brookshire Ln. Cut-thru drivers from Masonboro Loop to S. College. I won't let my kids take school bus b/c of careless speeders. (2)
- Widen Lanvale Road to 4 lanes with a dedicated bike path (2)
- Improve intersection to eliminate sharp turns on NC 210 (2)
- Improve intersection to improve safety - fully signal-controlled left turn movements (2)
- Road paint cannot be seen at night when the roads are wet. Does not appear that reflective paint was used. Suggest adding additional reflectors or repainting this portion of Oleander (2)
- Explore making narrow residential streets alternate one-way passage (2)
- As a major cut-through between 17th Street, Carolina Beach Road, and the Greenfield Lake area, the intersection of Yaupon Dr and Wisteria Dr. is a dangerous spot that needs attention. High speeds on straight roads contribute to missing the stop signs and near misses of pedestrians and cars. Lack of sidewalks or bike lanes means that anyone using this neighborhood street as a means of transportation risks being hit by unsafe drivers. (2)
- Road condition improvements on city streets (2)
- Takes a long light for this light to trip coming from either way on Chestnut St. by bicycle or car. (2)
- Make it a 4 lane with turn into lanes that leads into River Rd. With so many new homes and land used for apt and not road improvements, Don't lock in a 2 lane road. (2)
- North -south major highway dwindles to two lanes (Covil Ave) County Commissioners at confrontation with city over disruption of existing affordable housing stocks about the widening of Covil extending Independence into the minority community. This is a legacy argument that prolongs racial segregation. Housing policy ought to be changed . Will it? Refer to the recent book Uneasy Peace by Patrick Sharkey. Our neighborhood is currently working on being better represented on the City Council. (2)
- A heavy investment of bridging will be required at this site to fulfill the vision of extending Ind. to MLK. To the west is Creekwood South Public Housing and to the east is a major recreation site Maides Park which needs to stay interconnected by ground level access. Bridging the railroad is expensive as well. (2)
- Hurst Street is the main connection between people who for a time live in public housing and the rest of the community with Maides Park etc to the east and should remain open and viable with commitment of resources to biking and walking if not even wider road surface (2)

- As more development happens down this road, it gets more and more dangerous due to increased traffic. (2)
- Make speed limit 35 mph from Burnett blvd. to Southern Ave. to improve safety, traffic flow and walkability (2)
- Need turn arrows from 17th Street to George Anderson (2)
- Hampstead Bypass has been discussed since the early 1990's. You have delayed past the point of public safety. (2)
- More stop signs and speed humps, finish sidewalks, widen road for bikes. This is now the new cut through from Independence to Carolina Beach Rd, is getting bad and only going to get worse as River Rd develops and Echo Farms adds hundreds of houses and apartments. (2)
- With the brewery opening and more traffic turning at this intersection, there needs to be more vehicle control, maybe medians and/or slower speed. (2)
- WMPO boundary to Mt. Misery Rd (2)
- We need parking for business travelers only please. When you are leaving for a business trip you do not have time to drive around from lot to lot looking for a place to park especially in the early am. Back in my home town we had a valet service for business travelers. It was great. You dropped your car curb side and told them when you were coming back. They even offered detail service while you were away. Worth every penny! (1)
- Too much through traffic (1)
- The entire section of the CC trail from John Barry Drive to Waltmoor needs to be re-thought. There are multiple dangerous crossings and the trail is oriented so that drivers turning right at driveways and the 17th/College Rd intersections are watching left. How many people need to be struck and/or killed before there is a better solution? (1)
- We need a light and crosswalk so that people using Portia Hines park have a safe way to cross. (1)
- We need a pedestrian path running along Navaho Trl. Allowing joggers and bicycles to safely travel between subdivisions and those who are traveling from Masonboro Loop to College (1)
- Almost impossible to cross n college at bavarian lane to the grocery store. (1)
- In sunset park and sunset south every street I've been on has a sidewalk except the one i live on Louisiana Ave. It would be nice to have a safe sidewalk because our road is often used by vehicles as a cut thru to get to Burnett. (1)
- MUP in Park from Metts to Princess Place (1)
- MSL needs completion of their bike path to be completed around the entire loop. Speed bumps and lower speed limits DO NOT NEED TO BE ADDED TO OUR LOOP. We have many active people from our community, runners, walkers and bikers who use the loop as well as potentially school children who could walk to school. Unfortunately, we have many people who use our loop as their workout, cyclists, which is an accident waiting to happen. Finishing the Loop bike path is very needed! (1)
- Need a safer crossing option at this intersection. The hill, in combination with the split median make for a treacherous crossing. (1)
- Historic downtown should be pedestrian ONLY along Front and Water streets from the community college parking deck to Chandlers Wharf. Exceptions for licensed contractors and delivery vehicles ONLY from 6am to 4pm. (1)
- High speed ferry from the Battleship area to Independence rd./River Rd. Area to ease congestion on downtown roads for hospital commuters. This could be paired with a pro and ride lot on the Leland side and bus service on the Wilmington side (1)
- Bypass freight rail in Wilmington. Port across to Brunswick Co. (1)

- Re-route the rail line that currently crosses the Cape Fear River just north of town so that it runs along the western shore of the Cape Fear River and crosses from Brunswick to New Hanover County near the port. Use the right-of-way that is freed up as a result, to construct a new, innovative, multi-faceted transportation service in and around the city. Involve multi-passenger autonomous vehicles; Uber/Lyft pickup/dropoff points; new bicycle lanes and walking paths; ILM inter-connection. (1)
- Not good Lacs stopping aides (1)
- Would encourage people to use the golf course more often without needing a car to get there. (1)
- Bus needed from Oleander @ WB to Monkey Junction (1)
- Provide access from central or downtown location to Ft Fisher, aquarium, battleship, historic downtown, etc. (1)
- Incorporate transportation stop in Sturgeon Creek Park that connects Leland and Navassa. (1)
- Include Navassa with local arts and entertainment venues. (1)
- Connect Brunswick Community College-Leland Campus with North Brunswick High School so students have access to college courses. (1)
- Connect Leland's House of Pickleball (HOP) with other arts, entertainment, schools, and parks. (1)
- Connect Pender Commerce Park and the rest of the Highway 421 corridor to WAVE Transit (1)
- Create a park/ride from Brunswick Forest area. Park then take a express bus to the Battleship and from there a water taxi. Once across the river, express buses to UNCW and NHRMC. (1)
- Anyway to reduce traffic in this area? (1)
- Anyway to reduce traffic in this area? (1)
- Need a connection here (1)
- Highly visible arrows and reflectors are very helpful at night, several spots (1)
- Carolina Beach Rd center turn lane danger for head on/people run the center lane to the light at CV Rd/ Independence. You may as well be playing chicken. (1)
- This road is too fast, I see accidents here all the time and its always because people go 10 over anyway. (1)
- At least one collector street between Sidbury and Holly Shelter Roads (1)
- Low visibility prior to crossing (1)
- EF Blvd width is not consistent (1)
- This road could use left turn lanes at multiple intersections. (1)
- With the updated City Hall and Police Dept, this road is getting very busy. Once the park expansions begin, it will get much busier. Unsafe visibility due to vegetation. (1)
- Road is in poor shape. Needs repaving (1)
- This intersection is mind boggling. Michigan lefts are not needed if you have a stoplight. If there is any credit to a michigan left it is the fact that a stoplight is not required. Get rid of these michigan lefts and let a stoplight intersection do what it is supposed to do. (1)
- Needs a light (1)
- There is a noticeable different in timing south of this intersection vs it and ones north to Market. It may be time to reevaluate the timing to improve north/south flow (1)
- Add a left turn lane signal on 41st headed south to turn on to lake ave (1)
- No U turns please - the green arrow to enter this development is very short and people doing U turns here are taking too long and dangerous. Aldi's has added to this traffic confusion cluster at this entrance. It is a nightmare to get into your own neighborhood. Plus the entrance was ruined by Aldi's which no one goes to by the way. (1)

- The speed limits in these residential neighborhoods are 35 mph. That is the same speed limit as Shipyard Blvd. They need to be lowered to 25 mph or less. It is a danger to children, walkers, runners, and cyclists. (1)
- This intersection still feels unsafe for pedestrians and bicyclists using the cross city trail. Please improve this intersection. (1)
- Extensive roadway repairs needed throughout especially around DC Virgo school. Drainage improvements needed around N 8th and railroad ROW. Brunswick and 6th needs better sight lines. Brunswick between 3rd and 5th needs parking abatement. For the most part, Brunswick is a one-lane street because of parked cars blocking travel lanes. Sight lines at 5th Avenue intersections without lights north of Bull bridge are dangerous because parked cars block sight lines. (1)
- Exiting the university, this needs to be a left turn only lane and a straight/right turn lane. Traffic backs up here because of left turners exiting the university. Traffic backs up due to those who want to turn left. (1)
- Perfect example of how dangerous Market Street is. Limiting turns into the middle turn lane will help. (1)
- Widen lanes at this school entrance so vehicles can get around cars trying to turn in. This backs up traffic esp. at school start/end hours. (1)
- Dedicated lanes with more signal timing to get to on Pine Grove road. Add medians. (1)
- This road is so dangerous, add medians length of roadway (1)
- Realign roadway to make Wrightsville to Dawson the main movement, tee Wrightsville into realigned curve. (1)
- Install Roundabout at awkward intersection (1)
- Implement access management, repurpose two way left turn lane to third Nb College Road lane from Park North until major project can address, relocate SB left at Wrightsville to loop - Park-Kerr-Wrightsville (1)
- It is too difficult to make a left turn from Macmillan onto Pine Grove during peak traffic time in the afternoon. This blocks traffic that wants to turn right onto Pine Grove. It also sometimes blocks all traffic when some drivers get impatient and block the intersection. Another improvement would be to post a sign reminding drivers on Macmillan that they can turn right onto Pine Grove and then left onto Treadwell Street to get to Oleander westbound (and not turn left onto Pine Grove). (1)
- Create an elevated freeway to expedite getting from point a to point b (maybe extend I-40 to snows cut bridge?) (or extend I-74 into ILM?) (1)
- I realize a light was just put in here but it really should be a roundabout (1)
- Lanvale Rd @ Old Fayetteville Rd (1)
- Dangerous intersection. Lots of people have to wait in suicide lane to turn left onto greenville loop from oleander. Also confusing turning left onto Oleander from greenville avenue. (1)
- Bus service every 30 minutes direct from ILM to the new downtown transit hub and to Mayfair/Landfall area
- Please consider this path as an important addition!
- The tiny bike lanes are more often than not covered with objects that have flown off of trucks
- MUP or sidewalks needed on streets connecting college to masonboro
- Continue the riverwalk as a bike and pedestrian path connecting downtown to Greenfield Lake and the South Front area so people can move through these areas without crossing busy roads.
- Need safe bike lanes from Greenville Loop connecting to Eastwood
- Need sidewalks in the Seagate area. Lots of people with no place to walk safely.
- Multi-use path following Burnett Blvd to downtown would improve access to downtown and relieve a little congestion (on the road and in downtown)

- This is a very unsafe bridge for cyclists. An extra dedicated bike lane would be a big plus for connecting safely WB with the bike path to downtown Wilmington
- From Greenville Ave/Oleander to Snow's Cut Bridge or further to Kure Beach. This would be a major enhancement for Masonboro area residents
- Bike crossing here is dangerous. I can't imagine riding a bike across College at 17th. Not sure how to fix this... just have observed it is such a high traffic, speedy intersection.
- Construct a dedicated offset bike path along Rt 133
- The trail on the east side of military cutoff is great, but without crosswalks there is no way for pedestrians or cyclists to cross. Often there are not enough cars to trigger the lights, and bikes are not large enough to do so
- Proposed improvements along Pine Grove are to widen the side easement and put in a bike lane. This is a pretty dangerous road with increased vehicular traffic given the developmental growth of the Masonboro area. Widening the road is not a safe way to promote pedestrian access to Hugh McRae. The City owns the majority of both sides of Pine Grove between Greenville Loop and Hugh McRae (Municipal Golf Course). Multi-use path will make it safe for runners/walkers, as well.
- We need a bike lane from Holly Tree Rd to Parsley School where a new pathway is going to built.
- Roads that have been marked as Bike Paths (Orange St, Park Ave., etc) need to be improved to support bicycle priority. Reduced speed limits (10-15 mph), one-way for cars, and lane dividers need to be implemented to increase driver alertness and safety for cyclists and pedestrians. Simply stenciling a bicycle on the road and adding a handful of sings is totally inadequate for this purpose!!
- Impossible to safely cross near multiple area schools without pedestrian safety measures. Crosswalk and sidewalks are needed on Carolina Beach Rd. near local schools to enable safer and healthier alternatives to driving.
- Pedestrian paths are needed to safely get around for exercise and for normal daily use.
- Extend Bike Path from Harper to Cape Fear Blvd or Mike Chapell Park
- River Road south of Sanders needs improvement. North has been improved a lot lately
- Widen Carolina Beach Rd. to include bike lanes
- On street parking has been removed from this neighborhood business district, adding bike lanes in a small section instead, but causing the traffic speed to increase. On street or other public parking should be added back to this community business district in order to improve/enhance the development of these rundown properties.
- Sidewalks are not present on north to south (numbered) streets. Lots of pedestrian traffic with cars parked along roads results in close interactions between drivers and pedestrians
- We don't have enough multi-use or sidewalk except in the town. We would walk to stores if we didn't have to walk on grass, streets or parking lots
- Create a sidewalk or multi use path from River Road to Carolina Beach Road on Independence. This will connect residential and commercial areas and encourage multi modal use
- Needed along most of College Road especially Myrtle grove to shipyard
- Improve road/pedestrian path connectivity in the area between Oleander and Greenville Loop
- Better connectivity from New Centre to properties East (Lennon Dr.) and West (Kerr Ave.)
- Improve road/pedestrian path connectivity between Oleander, Greenville Loop and Pine Grove
- Reduce crossing distance (reduce turn radii, pedestrian islands, narrower lanes) and provide crosswalks on all four sides

- Create bike lanes around Middle Sound Loop and designated bike lane through land near new bypass entry point to Military cutoff to give residents north of Eastwood option to bike to Wrightsville Beach and surrounding shops
- Add a bike/pedestrian crossing
- Add pedestrian/bike crossing
- Safe Crossing for Bikes, Pedestrians, Runners, etc. to make it to Hugh MacRae Park
- Safe Crossing for Bikes, Pedestrians, Runners, etc. to make it to Hugh MacRae Park
- Add a multi-use trail along Rogersville from Wrightsville to Eastwood.
- Add a bike lane along Bayshore so neighborhood can access the new trailhead at Thais Trail without walking on neighbors grass.
- Add crosswalk and bike lanes along Torchwood so neighborhoods on other side of Market can get to Ogden park safely
- Add a Multiuse trail on Gordon that will connect to the one on Military Cutoff
- Create a crossing that is dedicated to bikes and pedestrians.
- Use 421 right of way to add a bike path and pedestrian walkway on the west side of 421 from Carolina Beach Lake at least to Alabama Ave.
- This road NEEDS a sidewalk
- There should be a safe crosswalk at the Wrightsville/Independence intersection
- We want a multiuse path on Oleander! There could be such good connectivity!
- There should already be a sidewalk here
- I bet a large number of cars on Market are just going down the road. They could bike or walk but it is SOOOOO unsafe. Put in a multiuse path and you'll see less traffic
- Wilshire Blvd needs a continuous sidewalk that does not require pedestrians to cross the street multiple times
- This area was never completed. You can only travel one way on bicycle and it is still not safe for bike/ped. This needs to be a multiuse path like the rest of the cross city trail
- There are crossings here that are not safe. Need to change signal timing so pedestrians have time to cross.
- With the DOT planning a major redesign of North College Road in the next four years, it is critical that functional bicycle lanes are added. Wilmington has done a good job adding recreational biking trails around town, but the ability to safely bike to work, school, or to the grocery store is lacking.
- Please add a bike lane for the very popular cycling loop of Porters Neck to Bald Eagle to Futch Creek.
- Provide safe crossings for bikes & pedestrians on Hwy 17 at Waterford/Magnolia Greens & Hwy 74/76 from same area into Leland.
- Add a multi-use path along Old Fayetteville Rd. for safer school access. Longer Turn Bays for school access also needed.
- Reroute River Road around the industrial terminals
- Widen to entrance of Port's north gate and give trucks their own lane.
- Close off Burnett Boulevard at Southern and route the local traffic out to CB Road so it doesn't drive through the industrial area and across rail road tracks.
- Tourist bus stop along historic coastline - Sea Breeze community with fishing industry. 1 tour per hour. stop at Snows Cut Bridge and State Park.
- Provide additional future funding for those who are in lower income brackets. As time goes on, there will be a segment of our population that will desperately need this type of assistance/grants

- Widen Lanvale Rd. Between Route 17 and Hwy 74.
- Movement across WAVE system for bus stop cutouts to ease lane blockage
- You currently have to U turn out of the neighborhood. With all of the current development in this area a 4 way stop is needed
- Navassa is preparing to clean up a superfund site near I-140 bypass. When cleaned up it will become a social and economic focus point for this community. As part of this effort the town will need a critical transportation link to I-140.
- I do not agree with the idea of a traffic circle. The island should be made more visible and the traffic lights should be timed better.
- Speed needs to be reduced to 25 mph and police need to enforce the speed
- The Michigan left at the intersection of Satara Dr and College has made this transition an extreme hazard. Most everyone pulling out of Satara gets honked at. The intersection prior to this Michigan left UNimprovement worked great for all concerns. Lets put it back like it was.
- Vehicles leaving Georgetown to from Gatefield Dr going north have to travel an extra mile because they do not have an intersection to cross. This Michigan left is atrocious and energy wasteful.
- Michigan lefts, which cost our tax payers millions, have devastated our roadways. They add more blacktop unnecessarily for turning radius, confuse the driver as to how to get to his destination, frustrate both the driver, and northbound and southbound traffic, and waste a tremendous amount of energy. Plus they are in their own right a hazard. At an intersection you make a 90 degree turn into traffic; with Michigan lefts you have to turn 180 degrees into traffic. (Don't have room to finish)
- Alleviate some traffic pressure on College going North by focusing some more traffic up this western n/s corridor. Waze already appears to be doing this. Perhaps pulling data from that app can help answer some questions and give insight?
- Traffic light
- Make a turning lane to Creekwood Road
- Complete Godfrey Creek Rd to Hwy 210 to provide secondary roadway through the busy part of Hampstead. Other connections could be made to provide secondary roadways through the entire town of Hampstead. When accidents occur on Hwy 17 traffic has no other avenue through Hampstead and comes to a complete stop.
- Drivers speeding on Brookshire, Greenwich & Waltmore, esp at rush hour times are out of control. The island, designed to slow traffic, on Brookshire has a recurring broken sign from being hit so often. Not okay to close to the trail on Waltmore and Wade Park. Need to slow traffic on those roads.
- Need road connection between these two. The roads are there, but they are not connected.
- Brunswick Forest Pkwy and Low Country Blvd Intersection
- Brunswick Forest Pkwy and Low Country Blvd, Leland. Speed Limit is 40 MPH past that intersection, too fast. Should be lowered to least 30 MPH. No Stop sign in median coming from Low Country Blvd going into the BF Fitness Center. Town of Leland proposes a traffic light for resolution. BF residents propose closing entire intersection, eliminating costly modifications, keeping the intersection safer. Want temporary safety measures be taken before construction begins.
- As UNCW grows, this road often backs up with traffic. Perhaps widen the road?
- The building on NW corner of the intersection of Wilson and 421 blocks the view for pedestrians and bicycles heading north on the sidewalk along 421. Remove part of the structure or install a mirror, so that vehicles about to enter 421 are easily seen.
- Dangerous intersection--low visibility
- Some solution to ease the gridlock due to AM school traffic
- In the AM this light (heading north on Pine Grove) will remain red for far too long (up to 4 mins)

- Should be a stop sign
- Should be a stop sign
- Red Cross St. Has been in need of repairs for many years now. Although this is clearly an area that our city is not focused on improving or the well-being of its residents, it would be nice to see repairs made to the roads as they are now highly utilized by downtown tourists and those who live in the soda pop/brooklyn arts district and other tourists who the city has prioritized over its local residents.
- It is confusing to have Burnett end and S 3rd St begin at Willard St instead of the Carolina Beach Rd/S Front St intersection. It should be S 3rd St all the way to the intersection.
- Continue Tiburon to S. 41st Street for better connectivity
- Widen to four lanes
- This is the entrance to a school and offices, this area significantly backs up at school start and end hours. There is only one travel lane in each direction on Wellington, there needs to be a light or roundabout and the road needs widening so through traffic can get past.
- School entrance/widening/roundabout or light. I dropped the pin in the wrong spot, it should go here for the comment that got pinned at Silver Stream Lane.
- This triangle area needs to be improved, considerations could include one large traffic circle or signals.
- This either needs a light, roundabout or this whole area needs to be considered for a larger circle to keep traffic moving.
- Close intersection, College Acres Right in-right out onto Racine
- Install roundabout to facilitate entry/exit to Oakley
- Provide access to the Pointe, calm traffic on G Anderson
- Provide access to Breezewood, calm traffic on G Anderson
- A right turn lane is needed from Pine Grove onto Beasley Road.
- During the morning commute (especially during the school year) it is now faster to turn left onto Beasley Road from Masonboro Loop Road and go through the stoplight at Beasley & Pine Grove than it is to stay strain Masonboro Loop to Pine Grove. The stoplight is not green long enough for the more prevalent traffic flow on Pine Grove.
- This stoplight will turn red for traffic on Pine Grove before the car on Beasley Road has even come to a stop (e.g. during early morning hours). Can it be adjusted to blink red for Beasley during early hours (5 am for example)?
- Add a Center Turn Lane to Masonboro Loop
- Repaving needs to be done the entire length of Lincoln Rd. It's horrible
- Traffic can back up far enough where you can't get to the left turn lane even though it is empty. Tweak lane divider (divider for folks turning left into food lion plaza)
- Those coming Military Cutoff and making a left onto Gordon catch the light at that intersection. After turning onto Gordon road, you just miss the Market/Gordon road light and have to sit through an entire light. Change light cadence so Gordon/Market light changes after Gordon/Military Cutoff light changes.
- In turning left on Gordon road, the wait can be awhile even when there is no traffic coming south on Military Cutoff. Tune lights/add vehicle recognition to minimize cars sitting at lights with no oncoming traffic.
- Widen road and shoulders on Sloop Point Rd due to increased large vehicle and boat trailer traffic traveling to and from public boat ramp.
- This intersection needs to be an all-way stop. People do not stop at the current stop sign and low visibility due to parked cars makes right of way traffic gamble every time they cross this spot.

- This street is more patches than road now. Please re-pave Dock street and figure out why there are so many potholes forming at the rain garden ditches near s. 12th street.
- Curve is dangerous. Lots of accidents.
- Intersection has not been fixed. Was on Transportation Bond.
- Traffic backs up badly during peak times because of many needing to make the left turn onto Pine Grove.
- The left turning lane onto Greenville Loop from Oleander is dangerous especially at peak times. It needs better markings. Also, should not be a left turning lane for traffic heading toward Bradley Creek bridge.
- Directly connect with EB Ramp from I-140 to Holmes Bridge and WB Ramp from Holmes Bridge to I-140. Single lane in each direction.
- 2nd Bridge at Site of CFMB for Inbound Traffic. Current (or rebuild) existing for Outbound Traffic
- Build EB On Ramp from Old Fayetteville and WB Off Ramp to Old Fayetteville
- Redesign this interchange so it matches traffic flow. Why does US 17 have to merge onto US 17 (74-76) There should be a dedicated lane for Lane Continuity.
- Vehicles entering the highway and trying to access 74-76 west are having to weave thru westbound traffic trying to access US 17 South. This is getting worse as the area grows.
- Reroute US 117 from N. College thru the N. Kerr Corridor across MLK Pkwy. to Independence Blvd.
- Darden Road is too narrow and there is no lines on road or lights-speed limit 35, unsafe for pedestrians near elementary school

Exhibit H: Cape Fear Moving Forward 2045 Phase II Public Comments and WMPO Staff Responses

The following pages contain comments made on the Cape Fear Moving Forward 2045 draft plan between February 26, 2020 and May 15, 2020. The table also includes a response from WMPO staff for each comment as well as changes, if any, that occurred to the draft plan as a result of the comment.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
David Hollis	Town Manager, Leland / CAC Member	This must be a mistake for the Old Fayetteville Road project. \$35 million for widening 2 existing lanes for 1.5 miles. The Town's project will install the multi-use path and widen one side of the road with 2 feet of asphalt and 2 feet of curb and gutter for about a mile of the road. The cost is currently projected at \$2.2 million. A similar project on page 317 that is twice as long, to widen and install a bike lane on Blue Clay Road, is \$1.4 million.	Utilizing NCDOT's Prioritization cost estimation tool, the project cost was estimated to be \$2,260,000 in 2020. With the application of a 3% annual inflation rate, project year cost estimate is \$3,521,006. This cost amendment resulted in an additional funding available to fiscally constrain additional projects. Per the initial project rankings and the additional funds, the following projects can be added to the fiscally constrained roadway project list: RW-222 Independence Blvd Widening; RW-42 US 17 Access Management Improvements; RW-175 NC 210 and Island Creek Road Intersection Improvements.
David Hollis	Town Manager, Leland / CAC Member	The path for the NC 133 to Hwy 17 Connector project will not likely run through the existing Jackies Creek neighborhood. It would be better to show the line through the vacant Cameron tract to the south to keep from getting people upset and give a more reasonable proposed location.	Resolution: Update revised cost estimate in tables and cutsheets. Recommend addition of RW-222, RW-42, and RW-175 to fiscally constrained roadway project list.
Al Schroetel	Cape Fear Cyclists / WMPO BPAC	looking at the top Bike/Ped projects in the Fiscally Constrained tables (pages 35 to 37) it does seem that the Northeastern portion of the WMPO region is underrepresented. However, that is the section that has the greatest projected growth (Page 31).	Project to be shown south of established neighborhoods. Resolution: Revise maps as recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Al Schroetel	Cape Fear Cyclists / WMPO BPAC	In a separate e-mail to Caitlin Marks (cc to you) I have asked about the status of a MUJU along the Military Cutoff Extension. I do not think this was included in any of the 2045 Plan BP priorities...but maybe that is an NCDOT project?	The design includes a 9' MUP from Ogden Park Dr to approx. Plantation Rd. design plans are available. This project is included in the New Hanover County Greenway Plan. Resolution: Included in NCDOT design for current STIP project (U-4902), no changes recommended.
Al Schroetel	Cape Fear Cyclists / WMPO BPAC	Also in the Fiscally Constrained projects in the 2045 plan is the absence of any Bike/Ped Facilities; on Sidbury Road. Again, this may be a NCDOT project and I have identified this requirement to Caitlin in a separate e-mail.	This project was considered for inclusion as a fiscally constrained bicycle and pedestrian improvement project. Of the approximate 170 regionally significant projects, this stand alone project ranked at 123 and 137 (was split into two sections) based on its assessed score. Based on the scoring criteria developed by the bicycle and pedestrian modal subcommittee and Citizen Advisory Committee (CAC), the project received low scores in the following areas: lack of connections to existing trails; no connections to destination points like parks, libraries, hospitals, shopping ,etc.; and project is not located in a low income or minority community. Sidbury Road improvements (RW-23) is a fiscally constrained roadway project that includes bike lanes and sidewalks in the cross section which would fulfill NCDOT complete streets policy requirements to be covered cost free to New Hanover and Pender Counties when roadway improvements are to be made to Sidbury Road. Resolution: Change Sidbury Road Improvements cross section from bike lanes and sidewalks to a multi-use path to be consistent with Wilmington/New Hanover County Greenway Plan cross section.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Wayne Marquino	Citizen (Wilmington)	'I'd like to understand the table at bottom of the first page of "Bicycle and Pedestrian" (pg 35) better. Maybe the plan can elaborate. It indicates a number of ped/bike infrastructure improvement which NC DOT will fund if they are "In Plan". In plan/Whose plan? How to we move Side paths and On-road bicycle facilities from out of plan to "In Plan"? our MUP seems to have a very low fraction of On road bike facilities (I assume these are bike lanes) and Pedestrian facilities (I assume these are cross walks).	<p>The text above the NCDOT Complete Streets Cost Share chart on page 50 explains that alternative transportation projects which are identified in a region's CTP and/or MTP can be included in NCDOT roadway projects and will be fully funded by NCDOT. NCDOT will consider other locally adopted plans on two conditions: 1) the planned facility addresses an identified transportation need; and 2) the planned facility meets the design guidance standards in the NCDOT Complete Streets Implementation Guide.</p> <p>On-road bicycle facilities include bicycle lanes (protected or striped) as well as paved shoulders. Pedestrian facilities include sidewalks, marked crosswalks, and pedestrian signals. Cape Fear Moving Forward 2045 includes 82 fiscally-constrained bicycle and pedestrian projects. Refer to the Fiscally-Constrained Bicycle and Pedestrian Project List and Maps on pages 66-73. Additionally, the fiscally constrained roadway projects include bicycle and pedestrian facilities, such as MUPs, sidewalks, and bike lanes. Please refer to the proposed project cross-sections found in Appendix J, Roadway Element.</p>
Wayne Marquino	Citizen (Wilmington)	pg 45 - something seems wrong with the graphic or legend - Aren't the black roads county? There are no county roads in the legend, on NCDOT	<p>Resolution: Add underlined text to plan, along with a couple of examples of the Cost Share Formula (in graphic format). We are adding project cross-sections to better explain exactly what type of facilities are included with each bicycle and pedestrian project.</p> <p>Counties actually do not own and maintain roads, so those that are outside of the incorporated areas are all NCDOT owned and managed.</p> <p>Resolution: No changes are recommended.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Wayne Marquino	Citizen (Wilmington)	pg 50 - "Cape Fear Moving Forward 2045 recommends the implementation of the following TSMO strategies in the Wilmington region...." None of these recommendations improve ped/bike safety or access. The TDM strategies are segregated (on pg 52). This process is how we get new major roadways built like MLK or improved like 17 in Hampstead with no bike lanes.	<p>TDM is a TSMO strategy which the WMPO believes is both important enough and broad enough to deserve its own section within Chapter 5 as well as its own Appendix (Appendix M, Transportation Demand Management Element).</p> <p>Several of the TSMO strategies listed on page 50 improve bicycle and pedestrian safety. Access management techniques can reduce conflict points and crossing distances for pedestrians and bicyclists. This is critical because, according to the FHWA, driveways are the primary cause of crashes involving pedestrians walking on the sidewalk. Intersection modifications include restricting or eliminating turning maneuvers, such as eliminating right turn on red, which can reduce crashes involving pedestrians. Pavement markings are used to delineate bike lanes and crosswalks, in addition to travel lanes. Streetscape improvements include sidewalks, bike lanes, median islands, bulb-outs (extended curbs), narrower travel lanes, and others, all of which can contribute to the creation of a "Complete Street." See Appendix L, Transportation Systems Management and Operations Element, for more information on these strategies.</p>
Wayne Marquino	Citizen (Wilmington)	Fig 7-1 Map of Fiscally Constrained Projects - There are few/no green lines parallel to redlines (bike / roadway) projects. Obtaining right of way is a major cost. If the right of way synergy between road and bike routes is not used, we'll continue to have no-go areas for bikes, like eagle island and 17 in Hampstead. If I bicycle across Eagle Island on 74 am I going to get a ticket? Can we add a green line there parallel to the red one? If the CF Memorial bridge is replaced will it provide bicycle and ped access to Leland?	<p>Resolution: No changes are recommended.</p> <p>The fiscally constrained roadway projects include bicycle and pedestrian facilities, such as MUPs, sidewalks, and bike lanes. Please refer to the proposed project cross-sections found in Appendix J, Roadway Element. Both the Isabel Holmes Bridge (US74) and the Cape Fear Memorial Bridge (US76) are fully controlled access highways and bicycling is prohibited. The US76/Cape Fear Memorial Bridge Replacement (RW-127) does include a proposed 10' MUP.</p>
Wayne Marquino	Citizen (Wilmington)	What is " PT-100 I-40 at Cape Fear Community College North Campus Park and Ride 2040 \$9,581" - I-40 does not have any on/off ramps to CFCC N.campus so how is Park & Ride at CFCC related to I-40? \$9,581. is not going to buy a new interchange.	<p>PT-100 is a proposed park and ride at Cape Fear Community College North Campus which is in the vicinity of I-40 but does not have direct access to I-40.</p> <p>Resolution: Change PT-100 description to "Cape Fear Community College North Campus Park and Ride"</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Wayne Marquino	Citizen (Wilmington)	<p>"Fiscally-Constrained Roadway Project List" - Why are the Oleander/College and Oleander/Military Cutoff/Eastwood projects both in the 2025 planning period? Is the intention to bring traffic on Oleander to a halt while those are in progress?</p>	<p>The financial forecasts for Cape Fear Moving Forward 2045 were provided in five-year increments. Fiscally-constrained projects were assigned an anticipated planning year, also in five-year increments, based upon the financial forecasts. Two projects having the same identified planning year does not necessarily mean the projects will be under construction at the same time. Both of these projects are programmed in the State Transportation Improvement Program (STIP). This means that NCDOT is going to fund both projects, but has programmed them to begin when the necessary funds become available. For the US76 (Oleander Dr) & NC132 (College Rd) Interchange (U-57/04), right-of-way (ROW) acquisition and utility work is anticipated to begin in FY 2023; construction is anticipated to begin in FY 2026. For US74/Eastwood Rd & Military Cutoff Rd (U-5710), a portion of this project is currently in ROW acquisition, with construction on that portion anticipated to begin in FY 2020. ROW acquisition for the remainder of the project is anticipated for FY 2020 and FY 2021, with construction anticipated to begin in FY 2023.</p>
			<p>Resolution: No changes are recommended.</p>
		<p>Why not move the "Wilmington Citywide Signal System" to start tomorrow? It's cost is low compared all the other roadway projects and it has more potential to reduce drive time.</p>	<p>In a sense, this project has already started. It has been identified as a need in the region - it was submitted by NCDOT Division 3 for NCDOT's prioritization process and scored high enough to be programmed in the State Transportation Improvement Program (STIP). This means that NCDOT will fund the project, but has programmed it to begin construction in FY 2027 when the necessary funds become available.</p>
			<p>Resolution: No changes are recommended.</p>
			<p>Appendix pg 168, Objective 1: "Increase pedestrian facilities that fall within 1 mile of school campuses." Pedestrian deaths are outstripping deaths inside automobiles, this goal is already being met. Revise the plan to provide more crosswalks, and bike paths, to reduce facilities at the locations with this highest fatalities, e.g. Dawson & Wooster streets - The rule that all new X-walks have a signal, and the NCDOT and City of Wilmington criteria that a walk signal is required to add cross walks is delaying installing cross-walks.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Susanne Hartman	Citizen (Wilmington)	News releases need to be printed on Facebook and local papers: Hampstead News & Alerts; Sneads Ferry Village News; Topsail Area News & Alerts; Hampstead/TI Area Alerts	Per the WMPO's adopted Public Participation Plan, a press release advertising the 30-day comment period and the planned regional open houses, was sent out to media outlets, planning partners, and members. Additionally, the WMPO utilized its Facebook, Instagram, and Twitter accounts to advertise the comment period and open houses. For future public events, the WMPO will work closely with its members to disseminate this information to local community social media pages.
Stephen Whitney	WMPO BPAC / Citizen	Rescore BP-238 and BP-239 Brunswick Nature Park Connector. Improvements can be required by developers as done w/ Mallory Creek to Brunswick Forest Section from Mallory Creek north by developer; Improvements allowed along power easement. No costs for property acquisition; Can be implemented in phases. Reduce cost to reflect staging; This is a major regional development project. Connects Brunswick Forest/Mallory Creek and others to Brunswick County Nature Park.	Resolution: No changes are recommended.
Stephen Whitney	WMPO BPAC / Citizen	Show BikePed facilities from Brunswick Forest to Hewett Burton Road. This would be required by Town of Leland and paid by developer. The connection would lik to Hazel Branch Road and provide safe B/P parallel to Rt 17.	These projects are two of 175 regionally significant projects that were scored based of criteria created by the WMPO bicycle and Pedestrian Multimodal Subcommittee and the Citizens Advisory Committee. Of the 175 projects, 82 were able to be fiscally constrained. BP-239 FINAL RANK = 127 BP-238 FINAL RANK = 133 Given the proposed removal of committed bicycle and pedestrian projects that are part of a roadway project, additional monies are available to include BP-239 in the fiscally constrained bicycle and pedestrian project list. These projects are also in the Leland Pedestrian Plan and can be pursued by both Leland and Brunswick County.
Stephen Whitney	WMPO BPAC / Citizen	Consider BikePed bridge across Greenfield Lake at Stadium Drive. Connect neighborhoods to hospital.	Resolution: Recommend the inclusion of BP-239 into the fiscally constrained bicycle and pedestrian project list.
Stephen Whitney	WMPO BPAC / Citizen		A portion of this project was identified in the original 800+ regional projects but was not considered in the 175 fiscally constrained projects. It is currently included in Leland's adopted Pedestrian plan. The Town and Brunswick County still have the ability to pursue this project.
Stephen Whitney	WMPO BPAC / Citizen		Resolution: No changes are recommended.
			This project was not submitted during the public outreach phase of the plan development.
			Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Stephen Whitney	WMPO BPAC / Citizen	Provide BikePed bridge across Burnt Mill Creek at Mercer Street. Provides safe connection along Mercer Street. Connects River to Sea to Market Street.	With the Independence extention (Bike/Ped project BP-16 and Roadway project U-4434) there will be a multiuse path at grade along Independence Blvd from Wrightsville Avenue to Market Street. Resolution: No changes are recommended.
Stephen Whitney	WMPO BPAC / Citizen	Glad to see traffic signals along Rt 17 at Ploof/Waterford, West Gate/ Grandiflora, and Lanvale. These should be high priority projects.	Resolution: No changes are recommended.
Rebekah Roth / NHC Planning Staff	New Hanover County	On the Fiscally-Constrained Bicycle and Pedestrian Project List, it appears that several projects (BP-581 (Carolina Beach Road & College Road), BP-646 (College Road and Oleander Drive), BP-584 (College Road & Monkey Junction Shopping Center Entrance), BP-577 (Bayshore Drive & Market Street), BP-627 (Piner Road & Myrtle Grove Road)) are already included in the design or recommended cross sections for roadway projects anticipated for funding prior to the anticipated funding year of the bike/ped projects. If there is not a need for this redundancy, approximately \$113,800 (not considering inflation) could be freed-up, which could allow projects such as BP-147a (Central Blvd/Morningside Dr. Bike Lanes), the Front Street sharrows (BP-471 and 370), etc. to be funded.	Staff reviewed the fiscally constrained bicycle and pedestrian list and recommends removal of stand alone bicycle and pedestrian projects that are committed for funding as part of a roadway project or are complete. These are: BP-16 Independence Blvd Extension MUP, BP-574 Drysdale Dr & Military Cutoff, BP-647 Market St & Gordon Rd, BP-788 3rd St & Brunswick St, BP-722 3rd St N & Red Cross St, BP-581 Carolina Beach Rd & College Rd, BP-646 College Rd & Oleander Dr, BP-648 Military Cutoff Rd & Eastwood Rd, and BP-577 Bayshore Dr & Market St. Based on the remaining ranked projects and the revenue freed up by the removal of the previously listed 5 projects, the following are recommended for inclusion in the fiscally constrained list: BP-147A Central Blvd/Morningside Dr Bike Lanes, BP-406 Princess St Sharrows, BP-442 Lumina Ave Sharrows, BP-239 Brunswick Nature Park Connector 1, BP-471 Front St Sharrow, BP-370 Front St. Sharrow, BP-441 Causeway Dr Sharrows, and BP-561 Carolina Beach Rd & Myrtle Grove Rd. Resolution: Recommend removal of BP-16, BP-574, BP-647, BP-788, BP-722, BP-581, BP-646, BP-648, BP-577 and addition of BP-147A, BP-406, BP-442, BP-239, BP-471, BP-370, BP-441, and BP-561 to bicycle and pedestrian fiscally constrained project list.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. iii: Pat Battleman's name is misspelled.	Ms. Battelman's name is spelled correctly per Town of Leland. Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 10: Is there a reason why you reference the average household income rather than the median household income? The information in the map for this section shows median household income.	It has been confirmed that both the household income number for the WMPD region as a whole was the median value, not the average. The map was also created using median household income data. Resolution: Update text on page 10 and map title on page 14 to say "median household income".
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 12-17 (and Appendix A): Could the colors displayed on the maps be intensified? It is difficult/impossible to tell the difference between the lowest and next lowest categories in this map series.	Resolution: Change map colors on pages 12-17.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 16: Mapping the number of households without vehicles (if possible—could it be estimated?) would be more useful than the percent given the varying populations in each TAZ.	Resolution: After review, this map will be replaced to show the number of households without vehicles per square mile. This normalizes the data since census tracts vary in both size and population.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 30: Could you label each category based on the Level of Concentration rather than the ES score—I'm not that familiar with the score on its own and had to keep flipping back and forth between the map and the table on the previous page to understand what was being shown on the map. Changing the label would be helpful for any readers of the document and would help the map be more useful if taken out for a presentation.	Resolution: Change legend to show levels of concentration as suggested, include EJ Score in parentheses. Add note about definitions on previous page.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 31: In the inset map, the Wilmington label appears to cover up the TAZs where an increase in population is expected in the downtown area, which may lead to questions given recent articles/presentations about how much the downtown population is expected to grow.	Resolution: Clean up jurisdictional labeling.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 35: Based on my understanding, the cost share information in the table is only for roadway projects. Standalone bike/ped projects still require the 20% match even if in a plan, correct?	Stand alone bicycle and pedestrian projects, whether funded through the STIP or DA funding, require a local 20% match.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 54: The table for the CMP report is too small to read but big enough to make it feel like it should be legible. Could this be enlarged? If layout is an issue, it would likely be possible to move the CMP network map to p.53 in place of the report cover and move a smaller report cover, which does not provide useful information, to p.54.	Resolution: Add text to clarify the difference between NCDOT Complete Streets Cost Share and the 20% local match required for standalone bike/ped projects.
Rebekah Roth / NHC Planning Staff	New Hanover County		Resolution: Format this table in InDesign at a larger size.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 57: The acronym LRT is used in the Project Cost Estimates for Needs by Node table. There is nothing in this section that explains what that means, so it would be helpful to have it spelled out (I'm assuming it stands for Light Rapid Transit but that took me a while).	On page 57, LRT refers to Light Rail Transit Resolution: Change first occurrence to "Light Rail Transit (LRT)" and add to List of Acronyms in the front end of the Technical Appendices.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 63-91 (and Appendix A): The full-scale maps in these areas have labels showing municipalities in Brunswick County which sometimes conflict with the title. Could either the title have a solid background or those labels be removed since those jurisdictions aren't in the WMPO?	Resolution: Remove labels for municipalities located outside of the WMPO boundary.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. 72 & 73: These maps are zoomed in closer than the other views of these portions of NHC, making the titles inaccurate (i.e. NE NHC on p. 72 only includes projects within eastern Wilmington and not any in what we generally view as NE NHC, p. 73 only shows Pleasure Island and none of the projects between Monkey Junction and Snows Cut). It looks like the full scale is shown on the maps on p. 93 and 94.	It was not possible to print every map at the exact same scale. The scales had to be adjusted depending on the area and mode shown for legibility. Resolution: Review and revise map titles once all edits have been completed.
Rebekah Roth / NHC Planning Staff	New Hanover County	p. N-407: An "e" needs to be added so the public outreach community reads "Royal Palms Mobile Home Park."	Resolution: Revise text as suggested in comment.
Mason Herndon	NCDOT Division 3 (Environmental Program)	Class II should be EA's and Class III CE's as stated in the paragraph at the top of the page. (Page 403)	Resolution: Revise text as suggested in comment.
Mason Herndon	NCDOT Division 3 (Environmental Program)	In this section I would emphasize that the WMPO first commitment is to avoid or minimize impacts to the natural and built environment. Mitigation for unavoidable impacts would be the second step. (Page 404)	Resolution: Revise text as suggested in comment.
Mason Herndon	NCDOT Division 3 (Environmental Program)	Depressed roads and tunnels are not viable options in the coastal plain. (Page 405)	Resolution: Remove these two mitigation measures from chart.
Vanessa Lacer	Wave / Citizen Advisory Committee	I have reviewed the Draft MTP and found discrepancies in the project list for Public Transportation. On pages 78-82 over 10 of the project types are incorrect. I had begun to list them (I stopped at 10), but I thought it more effective to alert you to the significant number as they will likely all need confirmation. If the data were mixed up during sorting, the project cost amounts may also be incorrect (I have not compared those numbers). Additionally, as one of the scoring criteria for Public Transportation is "Park and Ride" it may be possible that those projects mislabeled as Park and Ride have also been scored incorrectly.	Resolution: Review and update project types in fiscally constrained public transportation table.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Eric Canup	Citizen (Wilmington)	<p>I live in the River's Edge neighborhood, which is located on the southeast side of Independence Boulevard, just prior to its intersection with River Road. In the past two years, we have seen the following development taking place within a one-mile radius of our house: 1) River Lights--2300 homes, mixed use restaurants/retail. This project is ongoing and has already created a noticeable increase in traffic turning from River Road onto Independence Blvd. 2) Indy West--High density apartment homes along the northwest side of Independence Blvd. between River Road and Carolina Beach Road. 3) The Woodlands at Echo Farms--High density town homes along the southeast side of Independence Blvd. between River Road and Carolina Beach Rd. within the confines of the old Echo Farms golf course. This project is ongoing. 4) Echo Farms Blvd. extension--30-40 single-family homes on the northwest side of Independence Blvd. between River Road and Carolina Beach Rd. The traffic along this section of road has already become significantly more challenging during rush hour periods, and two of these projects (River Lights and The Woodlands) are not remotely near completion, which would indicate that thousands more residents and their cars have yet to inhabit this area. It has become commonplace for it to take me 3-4 light cycles to get through Carolina Beach Rd. in the morning rush hour. It has also taken me 3-5 minutes to leave my neighborhood in the other direction and make a right or left turn onto River Road, as making this turn is inhibited by the traffic travelling in both directions along River Road. After looking over the 2045 MTP, it also appears that the long-term plan is to bring the Cape Fear Crossing from Brunswick County directly into this section of Independence Blvd. Granted, this project is 25 years out, but the MTP does not suggest any plans to make any other accommodations for the increase in traffic along this section of road during the same time period. My suggestions are these: 1) Widen Independence Blvd. to four lanes from River Road to Carolina Beach Road. 2) Build a traffic circle at the intersection of River Road and Independence Boulevard. I appreciate your consideration of these suggestions and the work you do in planning for the future of Wilmington and New Hanover County.</p>	<p>Resolution: No changes are recommended.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Brad Shaver	USACE	<p>Page 404 (11 of 20) at the bottom of the page the author refers to "known environmental communities and hydrologic resources". Using mapping from NCDEQ, FEMA, and others you can make this claim for some of the resources but you can't regarding wetlands. There is no one wetland map that identifies all wetlands. There are multiple maps that predict where wetlands exist such as National Wetland Inventory (NWI) mapping and NC Crews mapping hosted by the Division of Coastal Management but these both are simply using remote sensing tools to predict where wetlands will exist. I would stay away from using terms such as "known" when it comes to wetlands. Wetlands are identified on a case by case basis that involves a wetland delineation and verification by the appropriate regulatory agency. I certainly understand your intent but Regulatory agencies such as ours get nervous when something is listed as known when that is not necessarily true. Maybe the easiest solution would be footnoting the tables and charts with where the wetland information comes from and that it is not meant to be absolute but estimated.</p>	<p>Resolution: Revise text as suggested in comment. Review entire section to ensure all instances of this wording are revised.</p>
Brad Shaver	USACE	<p>Under the wetlands table describing mitigation measures you have listed wetland creation. I would advise removing this and replacing with on-site wetland restoration and/or preservation of wetlands in threat of being impacted. Based on a 2008 EPA guidance document for mitigation wetland creation is not a preferred option and our office has not seen this as a option for over a decade.</p>	<p>We believe this table originated from a collaboration between the Piedmont Triad MPOs and FHWA's North Carolina Division circa 2008. We have been working to update it.</p> <p>Resolution: Revise text as suggested in comment.</p>
Brad Shaver	USACE	<p>I would define where the wetland layer on pg 408 comes from as a footnote, again explaining it is based off a predictive model not known locations of wetlands.</p>	<p>Resolution: Confirm source of layer with GIS Analyst, add suggested footnote to text.</p>
Rachel McIntyre	WMPO	<p>Correct minor formatting errors in CAC Foreword (double spaces between sentences); CAC heading in Acknowledgements should read "Citizens Advisory Committee"</p>	<p>Resolution: Make suggested changes.</p>
Rachel McIntyre	WMPO	<p>Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)</p>	<p>Resolution: Make suggested changes.</p>
Rachel McIntyre	WMPO	<p>Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)</p>	<p>Resolution: Make suggested changes.</p>
Rachel McIntyre	WMPO	<p>Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)</p>	<p>Resolution: Make suggested changes.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Ken Sahl (Wilmington)	Citizen (Wilmington)	I live in the Del Webb Riverlights neighborhood, which is located on River Road between Independence Boulevard and Lorraine Drive. In the past two years, we have seen the following development taking place within a one-mile radius of our house: 1) River Lights--2300 homes, mixed use restaurants/retail. This project is ongoing and has already created a noticeable increase in traffic turning from River Road onto the northwest side of Independence Blvd. between River Road and Carolina Beach Road. 2) Indy West--High density apartment homes along the northwest side of Independence Blvd. between River Road and Carolina Beach Road. 3) The Woodlands at Echo Farms--High density town homes along the southeast side of Independence Blvd. between River Road and Carolina Beach Rd. within the confines of the old Echo Farms golf course. This project is ongoing. 4) Echo Farms Blvd. extension--30-40 single-family homes on the northwest side of Independence Blvd. between River Road and Carolina Beach Rd. The traffic along this section of road has already become significantly more challenging during rush hour periods, and two of these projects (River Lights and The Woodlands) are not remotely near completion, which would indicate that thousands more residents and their cars have yet to inhabit this area. It has become commonplace for it to take me 3-4 light cycles to get through Carolina Beach Rd. in the morning rush hour. It has also taken me 3-5 minutes to leave my neighborhood in the other direction and make a right or left turn onto River Road, as making this turn is inhibited by the traffic travelling in both directions along River Road. After looking over the 2045 MTP, it also appears that the long-term plan is to bring the Cape Fear Crossing from Brunswick County directly into this section of Independence Blvd. Granted, this project is 25 years out, but the MTP does not suggest any plans to make any other accommodations for the increase in traffic along this section of road during the same time period. My suggestions are these: 1) Widen Independence Blvd. to four lanes from River Road to Carolina Beach Road. 2) Build a traffic circle at the intersection of River Road and Independence Boulevard. I appreciate your consideration of these suggestions and the work you do in planning for the future of Wilmington and New Hanover County.	Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution	
Andy McGinn	Citizen (Wilmington)	<p>Good morning, I appreciate the opportunity to make comments on this plan. I have a few and while they are not specific to a single project, they are connected and relevant. Congestion is an outcome of our increased car reliance and our built environment. New roadways or wider roadways will not fix this. The only thing that will fix it is less cars on the road. I do think the public transit system can be made more attractive to riders. Some fixes like fare collection can go a long way. Express bus lanes would be another. I also believe the MPO, along with the city and counties should advocate for dedicated funding for public transit. A major factor that is given little attention is that we have built ourselves into this situation. Sprawl is given little attention, yet is a main driver. I believe this report and platform can be used to advocate for how we build our area. A more dense concentration along existing transit routes can drive riders to the public transit option. Building community nodes along a safe walkable route can also ease congestion by incenting people to leave their car at home. This can clearly help break the cycle of a car centered planning process. I do appreciate the breadth and depth of this report. Transportation will continue to be a major concern for people for a long time. But, the MPO should take a lead role in advocating for how we build for the future.</p>	<p>We address these concerns throughout the plan. The plan acknowledges the need for a dedicated funding source for Wave Transit and recommends the implementation of Bus Rapid Transit (BRT) elements, such as dedicated bus lanes, and technology improvements including expanded fare payment options in order to attract choice riders. Refer to pages 41-42 of the plan document as well as Appendix J, Public Transportation Element. The plan also discusses the need to coordinate transportation and land use planning, including Transit-Oriented Development (TOD). Refer to pages 375-376 of Appendix L, where it is recommended that WMPO member jurisdictions encourage TOD where appropriate through their land use and zoning regulations. The plan also provides information on NCDOT's and the WMPO Board's "Complete Streets" policies, which require the consideration and implementation of multimodal facilities in transportation projects. Refer to page 35 of the plan document and pages 372-373 of Appendix L.</p>	<p>Resolution: No changes are recommended.</p>
Thomas Rambach	Citizen			<p>The 2045 plan considered both current and future transportation needs during its development. While many of the projects included in the fiscally constrained lists are higher-cost, long-term solutions, low-cost, short-term solutions such as adding turn lanes are discussed and considered in the Transportation Systems Management and Operations (TSMO) Element. Please refer to Appendix L. The plan recommends a variety of TSMO strategies to improve our transportation system, which can be implemented on their own or as part of larger transportation projects. Other ways to improve congestion without expensive projects include Transportation Demand Management (TDM) strategies such as bicycle and pedestrian improvements, telecommuting and alternative work schedules, carpooling, etc. Additionally, the WMPO is required to have a Congestion Management Process (CMP), which is updated on a biennial basis. The CMP monitors and analyzes congestion on the most critical transportation corridors within the region. The process recommends various strategies to address congestion-related deficiencies along these corridors that align with TSMO solutions.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Terry Benjey	Bicyclist Advocacy Group	<p>MUP Availability and Connections: There is no safe access from the current Military Cutoff MUP to the MUP that is planned from the Ogden Park area, running north along the Military Cutoff Extension. This situation can be somewhat eased in the following way:</p> <ol style="list-style-type: none"> 1. Beginning with the newly completed extension of the Military Cutoff MUP around the new access road from Military Cutoff to Market Street, connect to the MUP that is planned for Market Street extending to Middle Sound / Ledrie Road intersection. Our understanding is there is to be a cross walk on Market Street at that intersection as shown on sheet 29 of the Military Cutoff Extension project and also a map provided by Caitlin Marks (copy attached) 2. Add a MUP going from that intersection to the Ogden Business Lane (near the Ice House) and from there to Ogden Park Road, where the Military Cutoff Extension Proposed MUP begins. <p>This would make it possible to go from the current Military Cutoff MUP to the proposed MUP beside the Military Cutoff Road extension. It is an indirect and rather circuitous route, but it is our best attempt to provide pedestrian and bicycle access considering the previously approved plans for the Military Cutoff extension.</p> <p>Crosswalk Availability: There is no safe way for bicyclists and pedestrians to cross Military Cutoff or Market Street at Gordon Road. This serious safety issue can be lessened by:</p> <ol style="list-style-type: none"> 1. Add a ped/bicycle crosswalk on Market Street at Gordon road to facilitate non-vehicular traffic between the Ogden Elementary school and two shopping centers 2. Add a cross walk on Military Cutoff at the intersection with Gordon road between the SE corner and the SW corners. <p>The location of these crosswalks is shown on the attached PowerPoint chart. Please confirm that these crosswalks are included in the NCDOT project plans. They would serve pedestrians and cyclists who are attempting to cross both roads and facilitate non-vehicular travel between shopping centers, health facilities, residential areas and a school.</p> <p>We also hope that NC DOT planners are taking into consideration that this area is part of the planned Interstate East Coast Greenway (Complementary Historic Coastal Route) alignment.</p> <p>Underlying this is a concern that the traffic modifications along Gordon Road including both intersections at Military Cutoff and at Market Street are not including "Complete Street" guidelines. This is an area that features a Food Lion, Planet Fitness, Walgreens, CVS, McDonalds, and a number of other restaurants and businesses. The Military Cutoff MUP serves "active modes of transportation" (pedestrians and cyclists) and connections to an extensive range of residential areas, this proposal connects it to Ogden Park and beyond.</p>	

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Terry Benjey Bicycle Foundation	Bicyclist Advocacy Group	Safe cycling via Market Street to Porters Neck, Scotts Hill, and through Hampstead	NCDOT, in coordination with New Hanover County and the WMPO, has programmed funding for the proposed improvements outlined in this comment. The only facility not included within the programmed improvements is a pedestrian crossing at Military Cutoff Road and Gordon Road. The project was originally considered for inclusion within the biked fiscally constrained project list, but was not carried forward by the BikePed modal subcommittee, or CAC for project cross section development, scoring, and ranking. The Hampstead Superstreet project, funded in the 2020-2029 STIP includes 5' sidewalks and shoulders.
Stephanie Ayers	NC Port of Wilmington/TCC Member	Would request in the appendix, we add this language somewhere. This would really help us with federal grant applications. "In 2018, NC Ports undertook a Container Terminal Yard Improvement Planning Study with the key objective of expanding the current terminal throughput capacity to accommodate a minimum 750,000 (TEUs) annually by 2025. Recent investments in infrastructure improvement projects including the procurement of new neo-Panamax cranes, berth renovations and vessel navigation improvements has increased the container berth's capacity to well over 1,000,000 TEUs annually. However, to achieve the forecasted annual throughput volume, it has been identified that existing key port infrastructure directly behind the berth, such as the main terminal gate complex, the container storage yard and paving, and intermodal yard improvements are required so that the capacity of the rest of the terminal can match or exceed the targeted annual throughput. In total, the five-year infrastructure investment plan requires \$250 million in support of the expansion plan at NC Ports."	Resolution: No changes are recommended.
Stephanie Ayers	NC Port of Wilmington/TCC Member	Replacement of some of the Port related pictures with provided new pictures.	Resolution: Add requested language.
Stephanie Ayers	NC Port of Wilmington/TCC Member	This should be changed to reflect correct volumes as identified in the 2018 Economic Contribution Report. 322,291 TEUs	Resolution: Make suggested changes.
Stephanie Ayers	NC Port of Wilmington/TCC Member	Replace text with: North Carolina Ports is working with its federal partners on necessary navigational harbor enhancements that will enable the Port of Wilmington to better accommodate deep-draft container vessels. Efforts to widen the existing turning basin from 1,400 feet to 1,524 feet were completed in spring 2020 and enable the port to accommodate ultra-large container vessels which can carry 14,000 TEUs.	Resolution: Make suggested changes.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Debra Willis	Citizen (Leland)	US 17 cuts northern Brunswick County in half. There is no safe way for bicycles or pedestrians to cross. In addition, there is no public transportation alternative to cross the very busy highway	There are three bicycle and pedestrian crossing projects within the fiscally constrained project list. These are BP-838 US 17 & Old Waterford Way/Ploof Rd Crosswalk Improvements, BP-839 US17 & W Gate Dr/Grandiflora Dr Crosswalk Improvements, BP-842 US17 & Lanvale Rd/Provision Pkwy Crosswalk Improvements Resolution: No changes are recommended.
Debra Willis	Citizen (Leland)	There needs to be a connector street from Old Fayetteville Rd to Village Rd (RW-77). With two schools on Old Fayetteville Rd, more access is needed to be able to get off of Old Fayetteville in case of an accident.	RW-77, Basin Street Extension, is a proposed new road on new location that would connect Old Fayetteville Road to Village Road NE. Please refer to page 322 in Appendix J, where this fiscally-constrained roadway project is detailed and mapped. Resolution: No changes are recommended.
Debra Willis	Citizen (Leland)	Old Fayetteville Rd is in Horrible shape! There are no sidewalks near the schools. The road has no shoulder on either side. It is heavily traveled with the middle school and high school, as well as town hall. The road also has mail delivery, garbage pickup. It is not safe for bicycles or pedestrians. The bridge across the creek is failing and becomes more of a safety hazard every day.	There is a roadway modernization for Old Fayetteville Road included in the fiscally-constrained project list (RW-78). Please refer to page 360 in Appendix J, where this project, which includes a 10' MUP, is detailed and mapped. An NCDOT project is planned to replace the bridge over Surgeon Creek on Old Fayetteville Road (Bridge 181). The anticipated let date is April 14, 2022. Please note that this schedule is subject to change until further notice. Resolution: No changes are recommended.
Debra Willis	Citizen (Leland)	The intersection of Old Fayetteville Rd and Lanvale Rd is very dangerous. There needs to be a traffic signal and the intersection needs to be improved to allow for safe turning radius in all directions, proper shoulders in all directions.	NCDOT Division 3 is moving forward with the installation of a traffic signal at this location utilizing monies from the high impact, low cost funding source. Resolution: No changes are recommended.
Debra Willis	Citizen (Leland)	Lanvale Rd is unsafe. There are no shoulders and there are huge ruts where vehicles have run off the road. It is unsafe for bicycles or pedestrians and also unsafe for our garbage collectors and mail delivery personnel.	RW-7, Lanvale Road NE Widening, includes two additional travel lanes and a 10' MUP. Please refer to page 337 in Appendix J, where this fiscally-constrained roadway project is detailed and mapped. Resolution: No changes are recommended.
Debra Willis	Citizen (Leland)	The intersection of Lanvale Rd and Village Rd is unsafe, especially with traffic from US 74.	This intersection was not identified by the CAC as a regionally significant project. Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Debra Willis	Citizen (Leland)	NC 133 is unsafe with traffic from all of the residential areas and school. It is not bicycle or pedestrian friendly.	RW-51, NC133/River Road SE Widening, includes two additional travel lanes, a median, and a 10 MUP. Please refer to page 343 in Appendix J, where this fiscally-constrained roadway project is detailed and mapped. Resolution: No changes are recommended.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
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Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.

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Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Rachel McIntyre	WMPO	Correct minor formatting, typographical, and grammatical errors. Ensure consistency with acronym use (define once per chapter/appendix, then use acronym)	Resolution: Make suggested changes.
Joanne Steenhuis	NCDEQ	I think the region has a very low amount of open area/parks/state owned land that could be used for parks. I would think that getting more open area etc. would help with many of the issues we are seeing now (flooding and nowhere for water to go) and I think this issue would be exacerbated as the area becomes even more developed. There is not a lot of large open parcels left and if there are most of it is probably wet or in forestry. I know that is not a road issue, although they are additional impervious surfaces.	This comment is covered under TSMO land use discussion, and briefly in roadway where discussing resiliency. Resolution: Ensure that this comment is adequately addressed in TSMO land use discussion and/or resiliency sections. Add wording if necessary.
Joanne Steenhuis	NCDEQ	On page 401 you have misspelled beach on U-5790.	This typo came from the original project list and wasn't caught – it needs to be corrected everywhere.
Joanne Steenhuis	NCDEQ	In response to revised Mitigation Measures chart: I like the revision (as I know DWR and the USACE thinks wetland creation usually fails). I wonder if you might want to add wetland preservation to help control flooding. I think the statements ["Wetland restoration possible through NCDEQ's Division of Mitigation Services (DMS)" and "On-site wetland restoration."] should be separate.	Resolution: Fix typo on page 401, also fix in Fiscally-Constrained Roadway Project List (Chapter 7 and Appendix K) and search original project list.
Stephanie Ayers	NC Port of Wilmington/TCC Member	The primary truck routes on page 222, should probably include Burnett Boulevard (entrance to North Gate) and Shipyard Boulevard (entrance to South Gate).	Resolution: Make suggested changes.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Theresa B Landrigan	Citizen (Wilmington)	<p>Can you quickly remedy the traffic at this hazardous intersection?</p> <ol style="list-style-type: none"> 1. Widen Independence from two to four lanes, from Carolina Beach Road to River Road 2. Install a rotary traffic circle at the intersection of Independence and River Road. <p>It's bad now and will only increase in the near future, because</p> <ol style="list-style-type: none"> 1. River Road repair near the State Ports will end 2. Building escalates along River Road 	<p>The widening of Independence Blvd between River Road and US 421/Carolina Beach Road is recommended for inclusion in the draft roadway fiscally constrained project list. Project funding will still need to be identified for these projects.</p> <p>Resolution: No changes are recommended.</p>
Valerie Baxter	Citizen (Wilmington)	<p>Dear Mayor Saffo, City Council and City Planners - I live in the River's Edge neighborhood, which is located on Independence, just prior to its intersection with River Road. In the past two years, we have seen significant development taking place within a one-mile radius of our homes which is saturating the 2-lane Independence. I know there is a requirement to conduct a traffic impact study for construction of 90+ residence before allowing a builder to build. It doesn't seem like this requirement is being met for this area.</p> <p>We are dealing with a tremendous increase of traffic volume on Independence, especially during rush hour periods. During morning rush hour, it is taking 8-10 minutes for me to get through the light at Carolina Beach - it use to take me 2-3 minutes. There have been times when it has taken me 3-5 minutes just to leave my neighborhood as we only have one (1) entrance/exit which is another significant issue. We have 260 homes in River's Edge and The Marshes have 244 condos with another 244 approved to be developed. Where is the traffic impact study for this additional impact on our one entrance/exit? If we needed EMT during rush hour, this could be a disaster.</p> <p>After reviewing the city plans, I was surprised to see there isn't a plan to widen Independence or to relieve congestion at Independence and River Rd with a traffic circle or a light. We really need some relief here. Please conduct a traffic impact study quickly and help us to be able to get in and out of our neighborhood safely.</p> <p>I appreciate your consideration of these suggestions and the work you do in planning for the future of Wilmington and New Hanover County.</p>	

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Terry Benjey Bicycle Foundation	Bicyclist Advocacy Group	A safe bike/ped crossing of the Cape Fear River in or near Wilmington	A Wilmington - Leland bicycle and pedestrian crossing was the number one ranking bicycle and pedestrian project (BP-268). Given the significant cost of the project, the CAC determined that the project would likely require an alternative funding source or to be part of a roadway project. Both the replacement of the Cape Fear Memorial Bridge and the Causeway Improvements Ph. 2 fiscally constrained roadway projects include a separated multi-use path within their cross sections for this connection. Resolution: No changes are recommended.
Terry Benjey Bicycle Foundation	Bicyclist Advocacy Group	A separate bike lane or MUP across Eagle Island and the Brunswick River roughly parallel to US 17/74/76	A Wilmington - Leland bicycle and pedestrian crossing was the number one ranking bicycle and pedestrian project (BP-268). Given the significant cost of the project, the CAC determined that the project would likely require an alternative funding source or to be part of a roadway project. Both the replacement of the Cape Fear Memorial Bridge and the Causeway Improvements Ph. 2 fiscally constrained roadway projects include a separated multi-use path within their cross sections for this connection. Resolution: No changes are recommended.
Terry Benjey Bicycle Foundation	Bicyclist Advocacy Group	Extend the existing Independence Blvd bike path from the CAM to River Road.	The Independence Blvd MUP Ph.2 (between US 421 and S. 17th Street) is included within the BikePed fiscally constrained project list with a rank of 39. The Independence Blvd MUP Ph.1 (between River Rd and US 421) was selected for cross section identification, scoring, and final ranking by the CAC. Of 175 projects, the final ranking of the project was 130 and it was unable to be included in the fiscally constrained project list. The cross sections for the roadway fiscally constrained projects of Independence Blvd Access Management (RW-223) and Independence Blvd Widening (RW-222) include a 10' multi-use path as part of their identified cross sections. Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Terry Benjey Bicycle Foundation	Bicyclist Advocacy Group	A bike friendly "North - South" facility on the western side of the Cape Fear River	<p>A multi-use path adjacent to NC 133/River Road (BP-180) was considered for the fiscally constrained BikePed project list. Based on its score, it ranked 144 out of 175 and was unable to be fiscally constrained. Similarly, the Brunswick Nature Park Connectors (BP- 239 and BP-238) were also considered and scored, ranking 127 and 133, respectively, and were also unable to be fiscally constrained. The cross section for the roadway fiscally constrained project NC133/River Road Widening (RW-51) includes a 10' multi-use path.</p> <p>Resolution: No changes are recommended.</p>
Abby Lorenzo	WMPO	Roadway fiscally constrained projects ranked 57 and 58 are still identified as RW/T #. Need to be changed to just RW#.	<p>Resolution: Make suggested changes.</p> <p>The widening of Independence Blvd between River Road and US 421/Carolina Beach Road is recommended for inclusion in the draft roadway fiscally constrained project list. Project funding will still need to be identified for these projects.</p> <p>Resolution: No changes are recommended.</p> <p>Dear Mayor Saffo, City Council and City Planners - I live in the River's Edge neighborhood, which is located on Independence, just prior to its intersection with River Road. In the past two years, we have seen significant development taking place within a one-mile radius of our homes which is saturating the 2-lane Independence. I know there is a requirement to conduct a traffic impact study for construction of 90+ residence before allowing a builder to build. It doesn't seem like this requirement is being met for this area.</p> <p>We are dealing with a tremendous increase of traffic volume on Independence, especially during rush hour periods. During morning rush hour, it is taking 8-10 minutes for me to get through the light at Carolina Beach - it use to take me 2-3 minutes. There have been times when it has taken me 3-5 minutes just to leave my neighborhood as we only have one (1) entrance/exit which is another significant issue. We have 260 homes in River's Edge and The Marshes have 244 condos with another 244 approved to be developed. Where is the traffic impact study for this additional impact on our one entrance/exit? If we needed EMT during rush hour, this could be a disaster.</p> <p>After reviewing the city plans, I was surprised to see there isn't a plan to widen Independence or to relieve congestion at Independence and River Rd with a traffic circle or a light in the next 25 year plan. We really need some relief here. Please conduct a traffic impact study quickly and help us to be able to get in and out of our neighborhood safely.</p> <p>I appreciate your consideration of these suggestions and the work you do in planning for the future of Wilmington and New Hanover County.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Jeffrey Miller	Citizen (Wilmington)	<p>Good afternoon,</p> <p>My name is Jeffrey Miller and I'm a resident of the River's Edge neighborhood near the intersection of Independence Blvd and River Rd. With the construction of River Lights, Indy West, and others, traffic has increased along Independence Blvd between River Road and Carolina Beach Road. This has caused long lines getting in and out of neighborhoods and increased the time it takes to cross or turn onto River Road and Carolina Beach Road. With part of River Road closed for the last 6 months, these problems have only compounded. As River Lights grows, these temporary traffic issues will likely become the norm and turn this section of Independence Blvd into a permanent bottleneck.</p> <p>I ask that you consider expanding Independence Blvd between Carolina Beach Road and River Road, a section of road approximately only one mile long. Widening to four lanes would be optimal, but if this isn't possible, creating a central turn lane would be very beneficial. The comprehensive plan from summer 2017 references welcome ideas such as creating shorter trips to access businesses, increasing the ability for foot/bike travel, and forming 'complete streets.' Keeping this in mind, walking along Independence Blvd isn't safe yet people still do it, and the narrow bike lane often forces cyclists into traffic lanes, risking their safety and further impeding the flow of traffic.</p> <p>Creating a wider and more 'complete' road will also help the local economy by giving many people access to The Pointe at Barclay via a short bike ride or walk.</p> <p>I believe Independence Blvd will need to become a major thoroughfare in the near-future. As the River Lights area continues to expand, commuters will likely start looking to bypass traffic during rush hour, creating unnecessary use and wear to residential streets and risking the safety of children playing and heading to school.</p> <p>A traffic light at the intersection of Independence Blvd and River Road is also necessary, but in conjunction with the expansion of Independence Blvd. I say this because currently the eastbound lane of Independence Blvd expands to two lanes so shortly before the light at Carolina Beach Road, very few cars make it through each greenlight during rush hour. A traffic circle may be a better option if expansion is limited to only adding a turn lane.</p> <p>Thank you very much for taking the time to read this and for considering these suggestions. Expanding this one mile of Independence Blvd and creating safer options for walking and biking will benefit traffic flow, support local businesses, and allow the safer and faster deployment of emergency services, all while fitting right in with the already proposed comprehensive plans for improving Wilmington's infrastructure. Thank you again for your time and consideration.</p>	<p>The widening of Independence Blvd between River Road and US 421/Carolina Beach Road is recommended for inclusion in the draft roadway fiscally constrained project list. Project funding will still need to be identified for these projects.</p> <p>Resolution: No changes are recommended.</p>

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Abby Lorenzo	WMPO	There is a mistake in the cost estimate for RW-123, Burnett Boulevard Widening. \$123,830,000 seems much too high.	Utilizing NCDOT's Prioritization cost estimation tool, the project cost was estimated to be \$4,202,000 in 2020. With the application of a 3% annual inflation rate, project year cost estimate is \$8,798,055. The change in cost estimate allowed for an additional project, RW-57 Plantation Road Extension, to be added to the fiscally constrained project list. Resolution: Update revised cost estimate in tables and cutsheets.
Abby Lorenzo	WMPO	Expand the EJ DOI Analysis to include Bicycle and Pedestrian and Public Transportation Fiscally Constrained Projects	Resolution: Recommend additional analysis and results be included in Appendix N.
Abby Lorenzo	WMPO	Add examples of potential benefits and burdens by project type and provide mitigation options.	Resolution: Recommend additional information be included in Appendix N.
Abby Lorenzo	WMPO	Quantify distribution of fiscally constrained project spending by EJ DOI analysis group.	Resolution: Recommend additional analysis and results be included in Appendix N.
Edward Orde	Wilmington	There is a need for more bicycle and pedestrian infrastructure. Specifically, the lack of connectivity between sidewalks is a big issue. What kind of requirements do we place on builders and developers to add sidewalks outside of their newly constructed buildings, if any? There needs to be a great deal more of walkable and bikeable infrastructure, at schools and businesses especially.	WMPO staff agrees there should be more attention to multimodal travel in future years and believe the 2045 MTP reflects that. The bike/ped projects listed in the MTP are prioritized based on funding projections but are not limited to WMPO/NCDOT funding sources. Individuals are encouraged to share their thoughts with town and city councils to self-fund bike/ped projects. In particular, to provide feedback to the Wilmington City Council to continue the many improvements that came from the 2014 Transportation Bond. Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Darcell Gill	Leland	A southern bridge connection still needs to be implemented as well as a ferry between New Hanover and Brunswick Counties. The southern bridge connection should have bicycle and pedestrian facilities.	The Cape Fear Crossing project is discussed and supported within the plan and includes bicycle and pedestrian facilities. The project is supported as a toll facility and the portion of the facility that could be funded by forecasted toll revenues is included in the Roadway fiscally-constrained list. The WMPO will continue to support the identification of an alternative funding source that will fund the entire project. The Ferry and Water Transportation Modal Subcommittee considered water transport between New Hanover and Brunswick County. A downtown Wilmington ferry stop and Independence Blvd ferry terminal are included in the fiscally-constrained Ferry and Water Transportation project list.
Darcell Gill	Leland	There needs to be a public transportation route that connects CFCC's downtown and north campuses, as well as a route offering service to the airport on the weekends.	Resolution: No changes are recommended.
Darcell Gill	Leland	There needs to be access from US 74/76 in Leland to Old Fayetteville Road to provide connectivity to the schools located there.	Weekend service for Wave's route 207, which currently provides service from downtown Wilmington to ILM and CFCC's north campus, was not submitted by the public or Wave Transit during the development of the Public Transportation Element. The WMPO will continue to work with Wave Transit to identify alternative funding opportunities to fund increasing route frequency and operating hours.
Darcell Gill	Leland	What is the Isabel Holmes Bridge Flyover project?	Resolution: No changes are recommended.
Darcell Gill	Leland	Is the US 17 Superstreet project in Brunswick County?	The Isabel Holmes Flyover project (U-5731) will be the construction of a trumpet interchange at the intersection of US 421 and US 74/NC 133.
Darcell Gill	Leland		Resolution: No changes are recommended.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Darcell Gill	Leland	Are there any plans to make US 17 an interstate?	There are no projects at this time to make US 17 an interstate. The designated route of Interstate 74 is proposed to run on US 17 from I-140 to points south. The WMPO Board has supported a resolution to bring I-74 to terminate in Wilmington versus its proposed termination in South Carolina.
Darcell Gill	Leland	Will the widening of NC 133/River Road in Brunswick County extend to Southport?	Resolution: No changes are recommended. The proposed widening of NC 133/River Road (RW-51) terminates at Rabon Way. The widening of further portions of NC 133 towards Southport are outside of the WMPO Planning Boundary.
John Smist	WECT	What are the biggest priorities addressed by the plan relating to motor vehicles?	The fiscally-constrained roadway projects are ranked based on priority and address some of the biggest transportation issues in the region. The WMPD will continue to work with its members and NCDOT to prioritize projects from this list, to ensure critical projects are programmed and implemented. For example, the #1 ranked project is the Hampstead Bypass, which would greatly improve connectivity in the region. Other top priority projects include intersection improvements at Military Cutoff Road & Eastwood Road; MLK Jr Pkwy & Kerr Avenue; and Market Street & Eastwood Road, as well as the Independence Blvd Extension.
John Smist	WECT	This plan will replace Cape Fear Transportation 2040; how different is this plan from the 2040 plan and what has changed?	Resolution: No changes are recommended. The 2045 plan is in many ways an update to the 2040 plan, and includes many of the same projects and similar policies. The 2045 includes considerations for the new planning factors and requirements established by the FAST Act, as well as local, regional, and statewide funding changes, future innovative technologies, and resiliency. It also reflects an update to regional priorities in terms of projects and policies.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
John Smist	WECT	Has the amount of public input and response changed between 2040 and 2045?	Current WMPO staff was not involved in the development of the 2040 plan, but based on records it appears there was a slight increase in public response to public outreach since 2040.
Rob Zapple	NHC Commissioner/ WMPO Board Member	The top priority projects are programmed for funding between 2020-2025. With NCDOT facing financial issues, how will that affect these projects?	Resolution: No changes are recommended. The WMPO will continue to work with NCDOT to push top priority projects forward. It is still important to have this plan with our top priorities in place for when funding does become available. Many of the projects programmed in the first five years of the plan were based off of the State's STIP from over a year ago. Many of NCDOT's recent financial challenges have occurred since the draft plan was released in late February 2020. These impacts to historical funding trends will be considered in development of the next MTP update.
Rob Zapple	NHC Commissioner/ WMPO Board Member	Is the replacement of the Cape Fear Memorial Bridge included in this plan?	Resolution: No changes are recommended. The replacement of the Cape Fear Memorial Bridge is included in the fiscally-constrained roadway project list. Although listed for funding in 2040, the WMPO will work with NCDOT to prioritize this project to address sooner.
Rob Zapple	NHC Commissioner/ WMPO Board Member	What about I-40 improvements for sections that were flooded during Hurricane Florence?	Resolution: No changes are recommended. The portions of I-40 that were subject to flooding during Hurricane Florence are outside of the WMPO planning boundary. The WMPO Board did pass a resolution supporting resiliency project efforts that included portions of I-40.
Cyndi Byrd	New Hanover County	There are planned bicycle improvements on Lendire. What will this project look like?	Resolution: No changes are recommended. These improvements are part of the on-going Military Cutoff Extension project and final plans can be obtained by contacting NCDOT Division 3.

Source	Organization	Comment	WMPO Staff Recommendation/Resolution
Cyndi Byrd	New Hanover County	I've lived here all my life, and there has always been talk of rail lines to Raleigh or CLT, but nothing has been done.	The biggest continued challenge for passenger rail service to the Wilmington region has been the identification of a funding source. The 2045 plan supports the reestablishment of the Wallace to Castle Hayne track connection that would allow passenger rail service to resume to and from Wilmington.
Charles Whitehurst		I'd like to know the major goals of this plan explained in a more laymans term; what is the money going to be used for?	Resolution: No changes are recommended.
Andrew Donovan	New Hanover County	Biggest concern is accommodating both the increase of vehicular and bikeped traffic along major corridors and intersections like Military Cutoff and Eastwood Road. Opportunities to include bikeped infrastructure should be maximized.	The 2045 plan forecasts expected transportation funding based on historical funding trends. The projects contained within the fiscally-constrained project lists are priority projects which, based on cost and expected funding, could potentially be implemented. The funding, however, is not guaranteed. The WMPO will utilize the projects included within the plan to submit to NCDOT for prioritization.
Andrew Donovan	New Hanover County		Resolution: No changes are recommended.
Andrew Donovan	New Hanover County	Encourage the development of a light rail transit system in Wilmington as well as the purchase of ROW.	WMPO staff has heard numerous comments from the public echoing similar sentiments of multimodal mobility. NCDOT's updated Complete Streets policy is making it easier to ensure that multimodal facilities are included in the construction of roadway projects. Prior to the 2019 policy update, a local cost share was required to implement these facilities. With the update, multimodal facilities included in an adopted MTP will be covered at 100% by NCDOT, making it easier for even small jurisdictions and counties to increase these facilities. Bicycle and Pedestrian facilities are included in the cross sections of all fiscally-constrained roadway projects included in this plan.
			Resolution: No changes are recommended.

Exhibit I: WMPO Public Participation Plan (PPP)

Wilmington Urban Area
Metropolitan Planning Organization
Public Participation Plan



Adopted January 25, 2017

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1 Introduction

1.1 Overview

The Wilmington Urban Area Metropolitan Planning Organization's (WMPO) Public Participation Plan is an umbrella policy, encompassing the plans and programs of the greater Wilmington Urban Area's transportation planning process. Public participation is an integral part of the WMPO's planning efforts. The Public Participation Plan is comprised of the public involvement programs for all the major planning activities, including the Metropolitan Transportation Plan (MTP), Metropolitan Transportation Improvement Program (MTIP), the Unified Planning Work Program (UPWP) and federal requirements (FAST Act, Civil Rights Act, Environmental Justice, Limited English Proficiency and Americans with Disabilities Act).

The WMPO is an intergovernmental transportation planning agency created by an agreement among the City of Wilmington, Town of Belville, Town of Carolina Beach, Town of Kure Beach, Town of Leland, Town of Navassa, Town of Wrightsville Beach, Brunswick County, New Hanover County, Pender County, Cape Fear Public Transportation Authority and the North Carolina Board of Transportation. Federal and state laws require the formation of Metropolitan Planning Organizations (MPO) in urbanized areas with populations of greater than 50,000 in order for surface transportation projects to be eligible for federal transportation funding.

The Wilmington Urban Area population has exceeded 200,000 and in July 2012 the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) designated the Wilmington Urban Area as a Transportation Management Area (TMA). This new designation provides for additional requirements including a Congestion Management Process, official FHWA/FTA Certification Review, additional federal reporting requirements and the administration of the Direct Attributable Programs.

The WMPO is responsible for conducting a continuing, cooperative, and comprehensive transportation planning process for all of the members within the WMPO urbanized area. The WMPO must plan for the movement of both people and goods within the WMPO boundaries by all modes of travel, including highways, public transportation, bicycles, and pedestrians. It also plans for the connections (such as airports, seaports, buses, railroads, and pipeline terminals) linking these modes and connecting the greater Wilmington area to the rest of the State, country, and world.

1.2 The WMPO Mission Statement

Create and execute continuing, cooperative and comprehensive regional long-range planning efforts that proactively drive transportation decisions to improve safety, connectivity, economic development and quality of life in the Wilmington region.

1.3 The WMPO Board

The Board is the policy and decision-making body for the WMPO. The Board is comprised of elected and appointed officials from the City of Wilmington, towns of Belville, Carolina Beach, Kure Beach, Leland, Navassa, Wrightsville Beach, Brunswick County, New Hanover County, Pender County, Cape Fear Public Transportation Authority, and the North Carolina Board of

Transportation. The Board is ultimately responsible for providing opportunities for citizen participation in the transportation planning process.

WMPO Voting Members:

Brunswick County: One elected official
New Hanover County: One elected official
Pender County: One elected official
City of Wilmington: Two elected officials
Town of Belville: One elected official
Town of Carolina Beach: One elected official
Town of Kure Beach: One elected official
Town of Leland: One elected official
Town of Navassa: One elected official
Town of Wrightsville Beach: One elected official
Cape Fear Public Transportation Authority: One elected official (appointed by the New Hanover County Board of Commissioners to the Authority Board)
North Carolina Board of Transportation: One appointed official

WMPO Non-Voting Members:

Federal Highway Administration
Cape Fear Council of Governments
North Carolina State Ports Authority
Wilmington Airport Authority
North Carolina Turnpike Authority

1.3.1 Board Meetings

Regular schedules will be adopted by the Board at the last meeting of the calendar year for the upcoming year. These meetings will typically be held eleven (11) times per calendar year unless otherwise approved. Notice of these meetings will be published in the Star News and Wilmington Journal at least five (5) days prior to the day of the meeting and also posted in accordance to the State Open Meetings Laws. These meetings and agendas will also be published on the WMPO's website. These meetings are open to members of the public and upon request anyone can be placed on the Board mailing list. At the beginning of each regular meeting, a sign-in sheet will be available before each meeting for those who wish to speak. Each speaker is limited to three (3) minutes and the entire public comment period shall not exceed fifteen (15) minutes. If necessary, the Chairman can extend the public comment period by a vote of the Board.

1.4 Technical Coordinating Committee (TCC)

The Technical Coordinating Committee (TCC) is made of planners, engineers, and other staff from each of the member agencies to facilitate coordination of the WMPO's planning activities and transportation planning and related activities occurring within each member agency's jurisdiction. The TCC makes recommendations to the Board.

1.5 Bicycle and Pedestrian Advisory Committee

The Bicycle and Pedestrian Advisory Committee is composed of members appointed by the Board, the Chancellor of the University of North Carolina at Wilmington, and the Chairman of the Bicycle and Pedestrian Advisory Committee. The Bicycle and Pedestrian Advisory Committee promotes the safe use of bicycling and walking for transportation, fitness, and recreation; provides recommendations on policies and plans that affect the development of bicycle and pedestrian facilities; and contributes to the development of the MTP.

2 Purpose

The purpose of the WMPO Public Participation Plan is to create an open decision-making process whereby citizens have the opportunity to be involved in all stages of the transportation planning process. This policy is designed to ensure that transportation decisions will reflect public priorities.

2.1 Goals

The goals of the WMPO's Public Participation Plan are:

- A. The WMPO will actively seek and consider public input and incorporate or otherwise respond to the views of its stakeholders in making its decisions.
- B. The public will be informed in a timely manner about and empowered to participate in the WMPO's decision-making processes, which are open, understandable, and consistently followed. Access points for public input will be clearly defined from the earliest stages of a decision process and provide adequate time for stakeholders to participate.
- C. Credible, effective public participation processes will be consistently incorporated into the WMPO's program operations, planning activities, and decision-making processes, at headquarters and in the field. Every employee within the WMPO will share responsibility to promote, practice, and improve public participation.

2.2 Objectives

- Bring a broad cross-section of the public into the public policy and transportation planning decision-making process.
- Maintain public involvement from the early stages of the planning process through detailed project development.
- Use different combinations of public involvement techniques to meet the diverse needs of the general public.
- Determine the public's knowledge of the metropolitan transportation system and the public's values and attitudes concerning transportation.
- Educate citizens and elected officials in order to increase general understanding of transportation issues.
- Make technical and other information available to the public.
- Establish a channel for an effective feedback process. Evaluate the public involvement process and procedures to assess their success at meeting requirements specified in the FAST Act (or most current regulation), NEPA, and FTA/FHWA Guidance on Public Participation.

3 Federal Requirements

The federal laws and processes covering public participation in the transportation planning process include the following:

- *Fixing America's Surface Transportation Act (FAST Act)*, (or most current regulation);
- *Title VI of the Civil Rights Act of 1964*;
- *Executive Order 13161, Improving Access to Services for Persons with Limited English Proficiency (2000)*;
- *The Americans with Disabilities Act of 1990, the Rehabilitation Act of 1973 (Section 504), and Rehabilitation Act Amendments of 1998 (Section 508)*; and
- *Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994), USDOT Order 5610.2(a), and FHWA Order 6640.23A*.

In order to be in compliance with the federal requirements for Environmental Justice (EJ) and Limited English proficiency (LEP), the WMPO may develop strategies that encourage EJ and LEP populations to participate in the transportation planning process.

3.1 Federal Regulation

As mandated under the 23 U.S. Code § 134 and directed by the FAST Act, or other, current supporting federal regulations, MPOs must establish, periodically review and update public participation processes. These processes should assure early and continued public awareness of and access to the transportation decision-making process.

The planning regulations contain a number of performance standards for public involvement, including:

- Providing timely notice and reasonable access to information about transportation issues and processes;
- Providing adequate public notice of public participation activities and time for public review and comment at key decision points, including a reasonable opportunity to comment on the proposed metropolitan transportation plan and the MTIP;
- Demonstrating explicit consideration and response to public input received during the development of the metropolitan transportation plan and the MTIP;
- Employing visualization techniques to describe metropolitan transportation plans and MTIPs; and
- Making public information (technical information and meeting notices) available in electronically accessible formats and means.

3.2 Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 states that “no person in the United States shall, on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.”

3.3 The Americans with Disabilities Act of 1990, the Rehabilitation Act of 1973 (Section 504), and the Rehabilitation Act Amendments of 1998 (Section 508)

The *Americans with Disabilities Act of 1990* mandates that public facilities be made accessible to people with disabilities and has been the basis for requiring that transit buses and street curbs be retrofitted or reconstructed with appropriate equipment and design details.

The *Rehabilitation Act of 1973* (Section 504) states that “no qualified individual with a disability in the United States shall be excluded from, denied the benefits of, or be subjected to discrimination under” any program or activity that receives federal financial assistance.

The *Rehabilitation Act Amendments of 1998* (Section 508) states that federal agencies must ensure that electronic and information technology is accessible to employees and members of the public with disabilities to the extent it does not pose an “undue burden.”

All notices for planning activities of the **WMPO** will include an announcement that states that persons with disabilities will be accommodated. Special provisions will be made if notified 48 hours in advance (e.g.. having available large print documents, audio material, someone proficient in sign language, a translator or other provisions requested). Public meetings will be held in locations accessible to persons with disabilities and will be located near or on a transit route if possible. TTY users may dial 711 to contact the WMPO.

3.4 Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency (2000)

The basis of *Executive Order 13166* lies in *Title VI of the Civil Rights Act of 1964*. It requires that federal agencies work to ensure that recipients of federal financial assistance provide “meaningful access” to their limited English proficiency applicants and beneficiaries.

3.5 Executive Order 12898, USDOT Order 5610.2(a), and FHWA Order 6640.23A.

3.5.1 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994)

The basis of *Executive Order 12898* lies in *Title VI of the Civil Rights Act of 1964*. The Executive Order directs that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

3.5.2 Department of Transportation Update Environmental Justice Order 5610.2(a)

The *USDOT Order 5610.2(a)* sets forth the U.S. Department of Transportation (USDOT) policy to consider environmental justice principles in all USDOT programs, policies, and activities. The three fundamental environmental justice principles include:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;

- To ensure full and fair participation by all potentially affected communities in transportation decision-making; and
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

3.5.3 Federal Highway Administration Order 6640.23A Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The *FHWA Order 6640.23A* is the directive that establishes policies and procedures for the FHWA to use in complying with *Executive Order 12898*. In addition, it defines the following terms:

Low-Income – A person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

Low-Income Population – Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed program, policy, or activity.

Minority – A person who is:

- Black: a person having origins in any of the black racial groups of Africa;
- Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent;
- American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or
- Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa or other Pacific Islands.

Minority Population – Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed program, policy, or activity.

3.6 Environmental Justice and Limited English Proficiency Outreach Strategies

The WMPO places great emphasis on reaching people and groups that have not traditionally been participants in the transportation planning process. These traditional non-participants include low-income, minority, elderly and disabled; do not have vehicles; and low literate or have limited English proficiency. The WMPO will develop strategies to address participation barriers that may include the following listed below. In addition, staff may modify the techniques listed in the next section, Outreach Efforts, to ensure traditionally non-participating populations are involved in the transportation planning process.

3.6.1 Develop and Implement a Plan to Reach Non-Participating Minority and Low Income Populations

WMPO staff should identify and meet with organizations and community leaders who represent traditional non-participant populations. The purpose of these meetings will be to build relationships with the groups and leaders as well as identify strategies to bring traditional non-participants into the planning process. The identified strategies will be implemented in cooperation with the organizations and community leaders. Detailed plans may outline the meetings with group leaders and implementing strategies.

3.6.2 Develop Outreach and Education Programs

The WMPO should develop outreach and education program designed to educate the public about the regional transportation planning process and its relevancy to all stakeholders. English and Spanish materials may be produced as part of this program and may include such tools as pamphlets and brochures which can be used in various presentations and for distribution.

Special considerations and arrangements will be made to design a program that is tailored for traditional non-participants. These considerations may include developing materials specifically targeted to those communities. It will be necessary to periodically review and update the program and materials.

4 Outreach Efforts

The WMPO will seek public input through a menu of techniques, including public notices, comment periods, workshops, charrettes, public hearings, newsletters, surveys, media relations, periodic transportation summits, and the Citizen's Advisory Committee (CAC). The techniques employed will vary, depending on the specific planning task and a menu of options are outlined in this section. The WMPO will hold a forty-five (45) day public comment period for amendments to the Public Participation Plan and will seek input and feedback on the WMPO's public involvement efforts.

4.1 Stakeholder Interviews

A stakeholder is defined as any person or group that is affected by a transportation plan, program or project, including those who are not aware they will be affected. In accordance with the FAST Act, stakeholders will include "individuals, affected public agencies, representatives of public transportation employees, public ports, freight shippers, providers of freight transportation services, private providers of transportation (including intercity bus operators, employer-based commuting programs, such as carpool program, vanpool program, transit benefit program, parking cash-out program, shuttle program, or telework program), representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties."

Individuals will include the general public; environmental, health, neighborhood, citizen and civic organizations; and, traditionally underserved communities such as people with disabilities, and/or low-income, minority, and elderly.

The WMPO will create a database holding contact information for individual stakeholders and representative stakeholder groups. The WMPO will continually work to identify new stakeholders interested in and or affected by the transportation planning process. With their consent, these names, addresses, phone numbers and e-mail addresses will be included in the stakeholder, contact database.

Ongoing meetings with stakeholders will be conducted to share information and for the WMPO to receive feedback on transportation issues throughout the community and region.

4.2 Publicize WMPO Activities

Media coverage will be actively cultivated to ensure that mainstream and ethnic radio, television and newspaper outlets understand the importance of providing information on transportation planning activities. In addition, articles, new releases and/or media releases will be used to disseminate information to announce public review and comment periods and public meetings. In order to accomplish this task, a current list of media outlets such as mainstream and ethnic television and radio stations and newspapers, including small community-based publications, will be established and maintained.

4.3 Establish a Speaker Bureau

The Speaker's Bureau will consist of WMPO members and staff who can speak to civic organizations, professional organizations, neighborhood associations and other groups about the

regional transportation planning process. Members of the Speaker's Bureau will present information in order to educate the public regarding the WMPO planning process and on-going transportation projects within the region. A goal of holding a Speaker's Bureau will be that WMPO staff will gain further insight on the public's issues/concerns and transportation needs within the region.

4.4 Maintain a Website

The WMPO's website (www.wmpo.org) provides information about WMPO meetings and activities, including listing all upcoming meetings. This website includes a calendar, agendas and minutes; plans and documents and updates on current transportation projects. This website should provide the public with an opportunity to provide input and formal comments on an ongoing basis through the e-mail links.

4.5 Develop and Distribute Brochures

The WMPO may produce a brochure in English and Spanish dedicated to explaining the WMPO and its roles and responsibilities. If requested, this brochure will be provided in large print format. The brochure should be available on-line and made available to identified stakeholders, libraries, government buildings, WMPO offices and other locations. Specialized brochures may be required to be provided to targeted groups.

4.6 Conduct Public Informational Workshops, Charrettes and Public Open Houses

Public Informational Workshops, Charrettes and Public Open Houses may be conducted on topics associated with the transportation planning process. Such workshops, charrettes and/or open houses will be designed based on the intent of the meeting. These can be used to educate the participants on specific topics, e.g. transportation projects, the transportation model, planning efforts, etc. Public Informational Workshops, Charrettes and Public Open Houses provide a means for allowing the public to express their ideas and concerns in an informal setting. The workshops, charrettes and open houses may be conducted on an as-needed basis.

4.7 Conduct Surveys

Surveys may be used to gather information from peoples' perceptions, preferences and practices. In areas where low literacy exists; surveys should be conducted in person. In limited English proficient communities, these surveys should be published in Spanish. In areas where the public is literate, surveys may be mailed, e-mailed or posted on the WMPO's website.

4.8 Create Newsletters

The WMPO may produce a quarterly newsletter in both English and Spanish dedicated to transportation planning activities in the Wilmington region. If requested, this newsletter should be provided in a large print format. This newsletter should include information regarding technical issues written in layman's terms for the general public. In addition, the newsletter should provide the public with periodic updates of WMPO activities. The newsletter should be available on-line and distributed to all identified stakeholders, made available to libraries, government buildings, WMPO offices and other locations. Additionally, a specialized newsletter may be needed to provide timely information on targeted projects/topics.

4.9 Periodic Transportation Summits

Periodic Transportation Summits may be conducted by the WMPO to educate local elected officials, business, transportation, and community leaders on topics in the transportation industry. These summits will be focused on federal, state and local transportation issues and serves as an avenue to bring these leaders together to discuss transportation concerns and needs. The WMPO may utilize Transportation Summits for State and local leaders to discuss local and regional transportation issues.

4.10 Citizen Advisory Committee (CAC)

The WMPO Board may establish a Citizen Advisory Committee (CAC). The CAC is a volunteer group consisting of representatives from community organizations, professional associations, neighborhood associations, civic and community organizations and the private sector. The CAC will assist in developing public participation programs and collecting public input for the decision making process. Comments received from the CAC members and non-members are treated equally. The CAC will establish a meeting schedule approved at the last meeting of the calendar year for the upcoming year. These meetings are open to the public and provide an opportunity for interested parties to hear and discuss transportation matters to guide developing the MTP and other studies.

4.11 Social Media

The WMPO may use social media outlets to provide an additional avenue to effectively communicate information and encourage citizen participation. Adjusting practices to involve innovative technologies ensures that the WMPO is capitalizing on cost-effective resources that citizens use when obtaining and sharing information. Posts and comments directed to the WMPO through social media outlets will not be considered to be public comments for planning activities or projects.

4.12 Annual Report

The WMPO may publish an Annual Report that highlights annual agency accomplishments and provides a review of the services provided to the community.

4.13 Visualization Techniques

The WMPO may use visualization techniques for communicating information to the public, elected and appointed officials, and other stakeholders. Visualization techniques should deliver information in a clear and concise manner, promoting a better understanding of existing or proposed transportation planning activities.

Depending on the planning activity, visualization techniques may include, but not limited to: GIS maps; web-based surveys; videos; brochures or flyers; PowerPoint presentations; or photographic renderings. The WMPO should evaluate the effectiveness of visualization techniques and seek guidance from other partnering agencies, including, but not limited to FHWA's "Visualization in Planning" website.

5 Plan Specific Guidelines

The WMPO's Public Participation Plan is consist of a number of procedures and all planning programs and activities are required to go through the Board's public participation process. In addition, the WMPO has initiated specific public participation techniques for the MTP, the MTIP, the UPWP complying federal requirements – FAST Act, Civil Rights Act, Environmental Justice, Limited English Proficiency and Americans with Disabilities Act.

5.1 Public Comment for MTP, UPWP, and MTIP

The WMPO will provide an opportunity for meaningful public involvement in the development and update of the MTP; final draft of the MTIP; and in the development of the UPWP. The public comment period will be a minimum thirty (30) day period, effective from the date of the public notice publication. Written comments will be received during the comment period and will be directed to the WMPO. The WMPO's contact person, phone number and e-mail address will be included in the public notice. The Board shall hold at least one public hearing prior to the adoption of the MTIP every two years. A public comment period is not required for administrative modifications to the MTIP.

The WMPO will assemble all comments and forward summary of comments to the TCC and the Board. The Board typically acknowledges public comments for the MTP, UPWP, and MTIP in one of the following two ways: the Board may incorporate a summary of public comments and the WMPO's response, as an appendix, into the specific planning document, or, depending on the number of comments, the Board may instruct the planning staff to respond directly by letter. Acknowledging public comments is a way to let the public know that its comments are being addressed and is part of the public involvement feedback process.

5.2 Metropolitan Transportation Plan (MTP)

The MTP is developed for the Metropolitan Planning Area (MPA) and covers at least a 20-year planning horizon. The MTP encompasses transportation strategies to maintain the existing transportation infrastructure while meeting the future needs of all federally funded transportation modes in the MPA, including highways, public transportation, bicycle and pedestrian, freight and rail, ferry, and aviation.

5.2.1 Objectives

- Proactive participation techniques may be employed to involve citizens and provide fuller access to information and technical data on the Transportation Plan. The technique may include, but not be limited to, public meetings/hearings, surveys, focus groups, newsletters, public service announcements, charrettes, transportation advisory group, mass media, etc.
- Public meetings may be held to formulate a vision for the MTP development, provide the public background information on the metropolitan transportation system and other issues as well as the proposed framework of the MTP update process, and to receive citizen input.

- Public meetings (forums) designed to solicit public comment may be held at various locations around the metropolitan area to encourage the greatest public participation.
- Efforts will be made to hold public meetings at locations which are accessible to persons with disabilities and preferably located along a transit route.

Notifications will inform the public of the availability of the draft MTP for review and comment, where to send written comments, and addresses and phone numbers of contact persons. The notices also will include an announcement that states that persons with disabilities will be accommodated. Special provisions will be made if notified 48 hours in advance (e.g. having available large print documents, audio material, someone proficient in sign language, a translator, or other provisions as requested). Additionally, the notice will inform the public where copies of the draft MTP will be on file for public review. A copy will also be available in a PDF format for downloading on the WMPO website.

5.3 Metropolitan Transportation Improvement Program (MTIP)

The federally required Metropolitan Transportation Improvement Program, or MTIP, is a comprehensive listing of all the WMPOs transportation projects that receive federal funds. The MTIP sets forth the Board's priorities, funding and scheduling of transportation improvement projects (highway, bicycle, pedestrian, transit capital and operating assistance, and other transportation improvements in the WMPO) using State and federal funds. The MTIP serves as the project selection document for transportation projects and, therefore, is the implementation mechanism by which the objectives of the MTP are reached.

The MTIP and the State Transportation Improvement Program (STIP) must match exactly in projects, schedule, and scope, for projects to move forward with federal funding. It is therefore critical that close coordination be held with the State to assure that both parties are in agreement with the program and thus allow projects and programs (including transit elements) to move forward.

The Board adopts the MTIP and STIP every two years. By law, the MTIP and STIP must cover at least a three-year period and contain a priority list of projects grouped by year. Further, the MTIP and STIP must be financially constrained by year (meaning that the amount of dollars programmed must not exceed the amount of dollars estimated to be available). Federal regulations also require an opportunity for public comment prior to MTIP approval.

5.3.1 Annual Listing of Obligated Projects

The WMPO publishes the annual listing of obligated projects which displays projects and strategies that were authorized and committed using federal funds in the previous year. The annual listing will be published on the WMPO website at www.wmpo.org within ninety (90) days following the end of the program year. Hard copies are available upon request by contacting the WMPO.

5.4 Unified Planning Work Program (UPWP)

The FAST Act requires each MPO, as a condition to the receipt of federal highway and transit capital or operating assistance, to conduct a documented comprehensive transportation planning

process. A Unified Planning Work Program (UPWP), which includes planning and project development activities that address transportation issues in the area, is required by this process. Annual certification that the planning process is being carried on in conformance with stated requirements is necessary for the receipt of funding for surface transportation programs, air quality, national highway system, Interstate maintenance, state bridge replacement, and transit capital and operating funds.

The purpose of the UPWP is to administer the MPO planning program and carry out the planning activities necessary to implement the MTP. It also serves to document the proposed expenditures of federal, state and local transportation planning funds, and provides a management tool for the WMPO and the funding agencies in scheduling major transportation planning activities and projects.

The major elements of the Unified Planning Work Program include:

- Surveillance of Change
- Metropolitan Transportation Plan
- Planning Work Program
- Transportation Improvement Plan
- Civil Rights/Other Regulatory Requirements
- Incidental Planning/Project Development
- Management and Operations

The UPWP must identify the MPO's planning tasks to be undertaken with the use of federal transportation funds, including highway and transit funds. The purpose of public involvement in the UPWP process is to keep the public apprised of and to receive input on the planning activities to be undertaken by the MPO.

5.5 Plan Specific Chart

	Public Comment Period	Public Hearing	Draft Document Availability	Responding to Public Comment	Final Plan Availability
MTP	Minimum 30 days	Not required	WMPO offices and website, WMPO member planning department offices, and at area libraries	When significant written/oral comments are received on the draft, a summary, analysis, and report on the disposition of comments shall be made as part of the final MTP	WMPO offices and website, WMPO member planning department offices, and at area libraries
MTIP	Minimum 30 days	Yes, prior to the MTIP adoption every 2 years	WMPO offices and website	When significant written/oral comments are received shall be presented to the Board	WMPO offices and website
UPWP	Minimum 30 days	Not required	WMPO offices and website	When significant written/oral comments are received shall be presented to the Board	WMPO offices and website
PPP	Minimum 45 days	Not required	WMPO offices and website	When significant written/oral comments are received shall be presented to the Board	WMPO offices and website

Sources:

- Wilmington Urban Area Metropolitan Planning Organization Public Participation Plan,
Adopted January 25, 2017



APPENDIX E: Financial Element

Financial Forecast

A key requirement of the Metropolitan Transportation Plan (MTP) is that it be fiscally constrained, meaning that the cost to implement the plan cannot exceed the level of funding considered to be reasonably available for the region. The process for determining fiscal constraint typically starts with the development of a financial forecast utilizing historical funding sources. The financial forecast estimates future fiscal conditions, serving as a guide to policy and programmatic decisions. The financial forecast is compared against the cost to meet the transportation needs of the Metropolitan Planning Organization (MPO) as identified through a systems analysis and associated cost estimates for the region.

The Fixing America's Surface Transportation (FAST) Act, signed into law on December 4, 2015, provides ongoing financial certainty for ground-level transportation infrastructure planning and investment. The Act requires a financial plan as a part of the MTP. The financial plan includes proposed investments that are realistic within the context of reasonably anticipated future revenues over the life of the plan. Meeting this test is referred to as "financial constraint" in the MTP.

The WMPO's previously developed financial forecast had a base year of 2015 and projected funding through 2040. This forecast was updated to reflect the latest funding assumptions in support of the 2045 MTP. The sections below detail the process, data, and results of this effort.

Process

The base year of the new financial forecast is 2020, and it spans through 2045. The six separate transportation modes—Aviation, Bicycle and Pedestrian, Ferry and Water Transportation, Freight and Freight Rail, Public Transportation, and Roadway—have one worksheet each within the financial forecast spreadsheet. Each mode has two main funding categories: (1) Capital and (2) Operations and Maintenance. Within both categories, separate relevant funding sources are itemized. Category totals and annual totals are provided for each mode. These modes and categories were taken from the 2040 MTP financial forecast; as they still represent the complete picture of transportation in the Wilmington area, no changes were made. The financial forecasting model (spreadsheet) was updated to reflect new data input years, as well as the new horizon year of 2045.

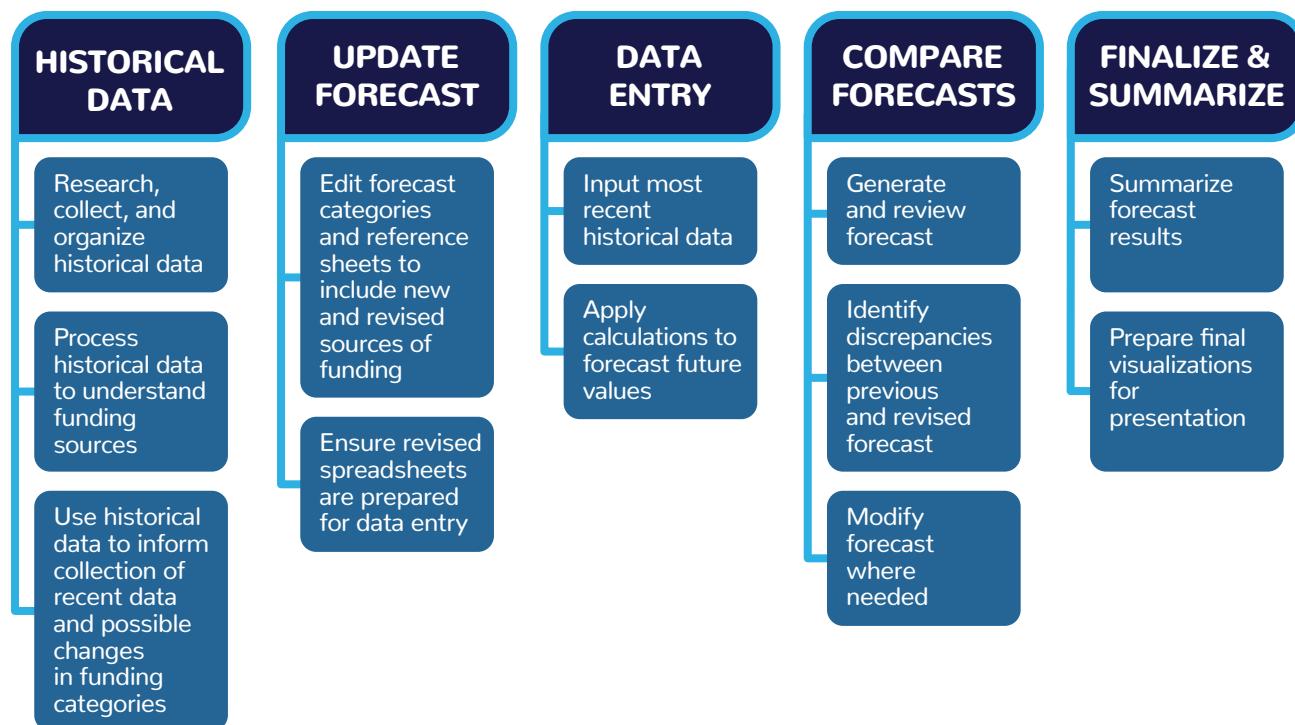
Efforts were then made to collect all relevant data, both historic and projected. Funding information was gathered from the WMPO, other local transportation experts, NCDOT, and numerous online sources.

The next step involved synthesizing the data and appropriately categorizing it into the financial forecast. When historical data was available and consistent, an arithmetic average was taken to calculate the base year, 2020, and an inflation rate was applied to subsequent years. When historical data was unavailable or inconsistent, the inflation rate was applied to the most recent or reasonably accurate values. An annual inflation rate of 3% was assumed.

All forecasts include various assumptions, and this financial forecast is no exception. All assumptions made for each mode are clarified in the mode's worksheet. These notes include details of where funds originated from, percentages of funding sources allocated to a transportation mode, past expenditures by the City of Wilmington on a particular type of transportation mode, allocations for specific projects within a given mode, and numerous notes on the sources of data.

Data

Visual Representation of the Forecasting Process



The table on the following page lists the funding sources which informed the financial forecast. Additional data was gathered from local agencies and subject matter experts.

Mode	Funding Source(s)
 AVIATION	<ul style="list-style-type: none"> • Federal Aviation Administration (FAA) Grant History • State Match • Wilmington International Airport (ILM) Capital Improvement Plan (CIP) • Customer Facility Charge, Passenger Facility Charge • Airport Operations & Maintenance Revenues
 BICYCLE & PEDESTRIAN	<ul style="list-style-type: none"> • Surface Transportation Block Grant Program—Direct Attributable (STBG-DA) and Transportation Alternatives Set Aside—Direct Attributable (TASA-DA) • Local Match • City of Wilmington GO Bond • Municipal Operations and Maintenance (O&M), including trails, sidewalks, bike lanes
 FERRY & WATER TRANSPORTATION	<ul style="list-style-type: none"> • Federal Ferry Boat Program • Toll Revenues • Regional State Transportation Investments • State Operations and Maintenance
 FREIGHT & FREIGHT RAIL	<ul style="list-style-type: none"> • Rail Industry Access Program (RIAP) • Short Line Infrastructure Assistance Program (SIAP)
 PUBLIC TRANSPORTATION	<ul style="list-style-type: none"> • Federal Transit Administration (FTA) Funds (Capital and O&M) • State and Local Matches • Operations and Maintenance (NCDOT and Local) • Passenger Fares
 ROADWAY	<ul style="list-style-type: none"> • State Transportation Improvement Program (STIP) • STBG-DA • Local Match • City of Wilmington GO Bond • Operations and Maintenance (NCDOT Division and Powell Bill)

Results

Looking at each mode specifically, conclusions can be drawn about funding allocations and how they have changed over time. Comparing the 2040 and 2045 financial forecasts, we can see that:

- There was a significant increase in Roadway capital funding (+79%).
- Bicycle and Pedestrian capital funding decreased significantly (-33%).
- Public Transportation funding experienced a significant decline (-65%).
- Ferry and Water Transportation funding increased substantially (+56%).

- Aviation capital funding remained approximately the same (within 1%).
- Freight and Freight Rail capital funding is expected to have a substantial decline (-21%).

The table below shows the totals by mode. Overall, the WMPO's financial forecast for capital funding in 2040, \$2.4 billion, is anticipated to grow by 60%. The 2045 financial forecast for capital funding is \$3.8 billion.



Wilmington Traffic Separation Study (TSS) Findings

The WMPO was awarded \$41.4 million dollars to improve train operation and safety, and to increase train speed. These dollars are a result of the Wilmington TSS that identified specific at-grade crossing improvements. These funds are a one-time Consolidated Rail Infrastructure and Safety Improvement (CRISI) grant, available for rehab on the CSX Southeast Line to bring the rail from Class 1 to Class 2 Federal Railroad Administration (FRA) track safety designation.

CAPITAL FUNDING FINANCIAL FORECAST (FY 2020-2045)

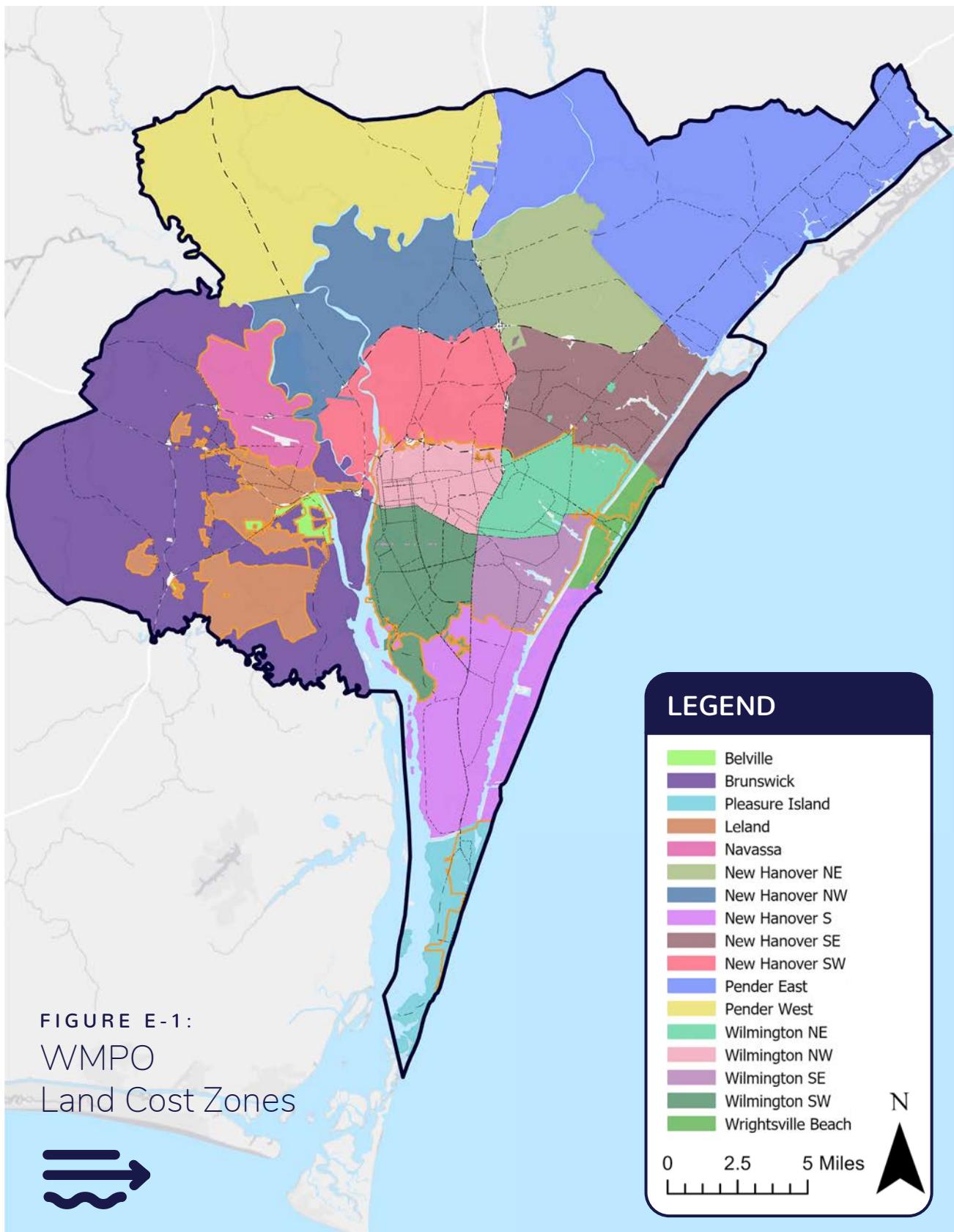
Mode	Capital Funding
Aviation	\$208,125,960
Bicycle and Pedestrian	\$77,033,372
Ferry and Water Transportation	\$58,697,582
Freight and Freight Rail	\$31,736,429
Public Transportation	\$29,236,306
Roadway	\$3,398,214,479
TOTAL	\$3,803,044,128

See pages 161-171 for detailed financial forecast spreadsheets for each mode.

Project Cost Estimates

Cost estimates were prepared for the six transportation modes: Aviation, Bicycle and Pedestrian, Ferry and Water Transportation, Freight and Freight Rail, Public Transportation, and Roadway. Project Cost Estimation spreadsheets were developed for each mode and contain the list of proposed projects, along with key attributes of the project necessary for assessing the project cost. These attributes vary by mode.

Capital costs are provided in five-year increments, starting in 2020 and running through 2045, assuming a 3% annual rate of inflation. The capital cost estimate for each project was calculated using the mode-specific tools and estimation methods, as documented on pages 148 and 149. The estimated costs were verified using multiple data sources. Right-of-way (ROW) costs contributed significantly to the variation in project cost estimates. To better capture ROW costs, the WMPO planning boundary was divided into zones based on empirical evidence of significant land cost differences. These zones are illustrated in Figure E-1. For each land use type in each zone, a per-acre land cost was calculated using tax parcel data. For each project that required ROW acquisition, the area of ROW was multiplied with the corresponding per-acre land cost based on the zone and the land use type. For simplicity, only four land use types were considered: Residential, Commercial, Industrial, and Un-zoned. The per-acre land costs include the cost of development on the land.



Moving Forward 2045



Aviation Projects: The approach for cost estimation of aviation projects was individualized, similar to the approach for ferry and water transportation projects. The cost estimates for many aviation projects in the list have been evaluated in the 2005 Wilmington International Airport (ILM) Airport Master Plan Revision. Cost estimates for the projects not included in the ILM master plan were estimated based on similar projects listed in NCDOT's Draft 2020-2029 STIP.



Bicycle and Pedestrian Projects: The bicycle and pedestrian project costs were estimated using NCDOT's "Bicycle and Pedestrian Facilities Cost" tool. This tool estimates project costs by comparing them with a cost repository of existing bicycle and pedestrian projects in North Carolina. Costs for individual components of a project (width, curb and gutter, grade separations, intersection treatments, etc.) are estimated independently based on corresponding costs in the repository. Partial ROW, grade separation, driveway considerations, and other metrics are added to individual project costs as deemed necessary. These estimates for individual components are then added to obtain the construction cost estimate for each project. ROW acquisition, design, and contingency costs are added to this estimate to arrive at a final estimate. This tool was in the beta phase at the time this estimate was undertaken. A few changes were made to the tool to make it work for estimating the costs of the WMPO's bicycle and pedestrian projects.



Ferry and Water Transportation Projects: Cost estimation for ferry and water transportation projects differs from that for roadway and bicycle and pedestrian projects because they cannot be broken down into individual, standard components. All five ferry projects selected for cost estimation were considerably different from one another. Therefore, the approach for cost estimation was individualized for each project. Cost estimates for the ferry and water transportation projects were primarily based on NCDOT's Draft 2020-2029 STIP, in combination with a recent cost estimate from NCDOT on the replacement cost for a ferry vessel.



Freight and Freight Rail Projects: The freight and freight rail projects included in the list fall into two broad categories: safety improvements (pertaining to railroad crossings and signal upgrades) and new rail corridors. Each category required a separate process for preparing cost estimates. The costs for safety improvement projects were estimated based on the costs of similar projects across North Carolina. Costs for new rail corridors were estimated by adding individual estimates for ROW acquisition and for laying new track. The cost estimate for the rail realignment project from the Port of Wilmington to Davis Yard was taken from the project's feasibility study.



Public Transportation Projects: Public transportation projects fall into two broad categories: facility improvements and service improvements. Each category required a separate process for preparing cost estimates. Facility improvements include constructing bus shelters, installing amenities such as Wi-Fi, and installing automatic passenger counting machines. Costs for facility improvement projects (bus stops, for example) were estimated from the sale price of components on e-commerce websites with additional costs of transportation, installation and contingency. Service improvements provide additional transit services including the addition or modification of bus routes, and the provision of Light Rail Transit (LRT). The cost estimates for service improvement projects were determined based on information provided by other MPOs across North Carolina for similar projects.



Roadway Projects: NCDOT's itemized cost estimate sheets used in the project bidding process were used as the primary source of information for estimating costs for the roadway projects. These sheets were used to create a table containing itemized costs per mile for each component of a roadway project (number of lanes, median, sidewalk, etc.). Costs for all segment-based projects were estimated using this table. A separate but similar table was prepared to estimate costs for intersection projects. Costs for removal and construction of bridges and other grade separations were estimated based on NCDOT's per-square-foot estimates. The final cost per project was compared with average costs from previous estimates and other sources for further validation of assumptions.

Data

The table below lists the primary data sources which informed the development of the project cost estimates. This list is not exhaustive. Additional data gathered from other source websites was documented in the worksheets for each mode.

Primary Data Sources by Mode	
Mode	Primary Data Sources
Aviation	<ul style="list-style-type: none"> • 2005 Wilmington International Airport (ILM) Airport Master Plan Revision • NCDOT STIP Project Details
Bicycle and Pedestrian	<ul style="list-style-type: none"> • NCDOT Bicycle and Pedestrian Facility Cost Tool
Ferry and Water Transportation	<ul style="list-style-type: none"> • NCDOT Press Releases • NCDOT STIP Project Details
Freight and Freight Rail	<ul style="list-style-type: none"> • Rail Realignment Feasibility Study • NCDOT STIP Project Details
Public Transportation	<ul style="list-style-type: none"> • Wave Short Range Transit Plan (SRTP) • Wave Transit Eclipse Specification 10-23-14 • Wave Transit's Five Year Bus Stop Enhancement Plan • Wave Transit 2019 Budget
Roadway	<ul style="list-style-type: none"> • NCDOT Project Bid Estimates

Results

The table on the following page, Project Cost Estimates by Mode, lists the cost estimates by mode for the year 2020. List 1 includes all projects estimated by the consultant, WSP. List 2 includes total NCDOT cost estimates of programmed STIP projects.

Two projects which may require special funding due to their high cost estimates have been shown separately. The LRT project alone is estimated to cost \$2.8 billion (in 2020 dollars), which is approximately 55 times the estimate for the rest of the public transportation projects combined. The rail realignment project is estimated to cost \$631 million, which is approximately 4 times the estimate for the rest of the freight and freight rail projects combined.

Project Cost Estimates by Mode (2020 Dollars, rounded to the nearest million)			
Mode	List 1	List 2	Total
Aviation	\$62,000,000	\$58,000,000	\$120,000,000
Bicycle and Pedestrian	\$664,000,000	\$108,000,000	\$772,000,000
Ferry and Water Transportation	\$19,000,000	\$16,000,000	\$35,000,000
Freight and Freight Rail (without Rail Realignment Project)	\$141,000,000	\$17,000,000	\$158,000,000
Rail Realignment Project	\$631,000,000		\$631,000,000
Public Transportation (without LRT)	\$30,000,000	\$22,000,000	\$52,000,000
LRT	\$2,865,000,000		\$2,865,000,000
Roadway	\$2,548,000,000	\$3,699,000,000	\$6,247,000,000
Total (Conservative)*	\$3,465,000,000	\$3,920,000,000	\$7,385,000,000
Total (All Projects)	\$6,961,000,000	\$3,920,000,000	\$10,881,000,000

*Conservative total does NOT include Rail Realignment or LRT projects

Alternative Funding

Development of Alternative Funding Plan

As noted previously, a key requirement of the MTP is that it be fiscally constrained, meaning that the cost to implement the plan cannot exceed the level of funding considered to be reasonably available for the region. It is nearly always the case that the cost for meeting those needs exceeds the funding available in the financial forecast, creating a gap between the needs of the region and available resources. In this case, an alternative funding plan can be developed to help close that gap. For the final MTP, the MPO must select and prioritize projects within the available funding as identified by the financial forecast combined with the alternative funding plan. If forecast funds are still insufficient to fund all of the key projects identified for the region, the MTP can include illustrative projects, or projects that could be included in the fiscally constrained plan if new funding sources are identified. These illustrative projects do contribute to the MPO's longer-term transportation plan, and give local governments the ability to conduct planning studies, while at the same time exploring opportunities for new funding. A good example of this is the application of grant monies that may have not previously been a part of the MPO's funding plan.

The first step in the development of the alternative funding plan was a review of funding sources recommended in the previous MTP, including an assessment of which recommendations had been implemented. The WMPO's 2040 MTP, Cape Fear Transportation 2040, which was adopted on November 18, 2015, included six sources of alternative funding for a total of \$505 million to help close the gap between project needs and funds available through traditional funding sources. These alternative funding sources included: Quarter-Cent Local Option Sales Tax, Quarter-Cent Local Option Sales Tax for Transit, Vehicle Registration Fee, Motor Vehicle License Tax, Vehicle Rental Tax, and Statewide Auto Part Tax.

The next step was a review and evaluation of potential funding sources, including consideration of those outside the standard toolbox, but being implemented in (or considered for) other North Carolina communities. This step included a literature review, research into what other North Carolina MPOs are doing, and conversations with subject matter experts, including an expert in finance law from the University of North Carolina School of Government. This process was used to narrow the universe of funding options to those identified as likely sources for the WMPO. The final selected sources were further evaluated based primarily on legal feasibility, the types of projects that can be funded, and a general expectation of the amount of funding generated.

Taxes

Quarter-Cent Local Option Sales Tax

The local option sales tax is implemented at the county level per North Carolina General Statutes (NC G.S.) Chapter 105, Article 46 and typically requires a voter referendum. On May 4th, 2010, New Hanover County voters approved the quarter-cent sales tax referendum, and the tax took effect on October 1st, 2010. In 2014, Brunswick County voters rejected the quarter-cent sales tax referendum. Pender County has not attempted a voter referendum for the quarter-cent sales tax. This tax does not apply to groceries, prescriptions drugs, gasoline, automobile purchases, or utilities. Sales tax revenues can be used to fund any county-maintained service.

Quarter-Cent Local Option Sales Tax for Transit

Like the quarter-cent local option sales tax, the quarter-cent local option sales tax for transit (NC G.S. Chapter 105, Article 43) is implemented at the county level and requires a voter referendum and county approval. Only counties that operate public transportation systems can consider this tax, and the revenues must be used to finance, construct, operate, and maintain the transit system. Improvements eligible for funding through this revenue source can also include projects supportive of the transit system, such as supporting bicycle and pedestrian infrastructure and signal system improvements. None of the counties within the WMPO region have adopted a quarter-cent local option sales tax for transit.

	WMPO County		
	New Hanover	Brunswick	Pender
Maximum Total Sales Tax Allowed in North Carolina		7.5%	
State Sales Tax Rate		4.75%	
Maximum County Eligible Sales Tax		2.75%	
Current County Sales Tax Rate	2.25%	2%	2%
Remaining County Eligible Sales Tax	0.5%	0.75%	0.75%

Vehicle Registration Fees

NC G.S. 105-570 enables county vehicle registration taxes. These taxes can be used to fund the financing, construction, operation, and maintenance of the transit system. Following a successful vote by the board of county commissioners, a county that operates a transit system can charge a maximum of \$7 for every registered vehicle, with some exceptions.

Motor Vehicle License Tax

Municipalities can levy an annual general motor vehicle tax up to \$30 based on NC G.S. 20-97. No more than \$5 of this tax can be used for general purpose. Additionally, no more than \$5 of the tax may be used for the financing, construction, operation, and maintenance of local public transportation systems. The remainder of the tax may be used for maintenance, repairs, construction, reconstruction, widening, or improvements to local streets that are not part of the State's highway system.

Vehicle Rental Tax

Counties in North Carolina can levy taxes on the gross receipts of passenger vehicle rentals at the rate of 1.5%, per NC G.S. 153A-156. Rented passenger vehicles to be taxed include traditional passenger vehicles, cargo vehicles, trailers, and semitrailers. Rentals of heavy equipment (defined as earthmoving, construction, or industrial equipment) that is mobile and weighs at least 1,500 pounds, can be taxed at 1.2% per NC G.S. 153A-156.1.

Tolling (New Construction)

Toll fees are direct charges to road users who have chosen to use a toll facility. The Turnpike Authority was created via N.C. GS 136-89.182, and is authorized to study, plan, develop, construct, operate, and maintain up to eleven projects, which currently include the Triangle Expressway (complete), I-540 Triangle Expressway Southeast Extension (in development), Monroe Bypass (complete), and Mid-Currituck Bridge (in development).

Grant and Loan Programs

Grant Anticipation Revenue Vehicles (GARVEEs)

GARVEEs include any bond, note, certificate, mortgage, lease or other debt financing instrument issued by a state or local government whose principal and interest are repaid primarily with federal-aid funds. The principal and interest are paid back with future federal highways or transit funds. This method can be used for most highway projects, transit projects, purchasing of transit vehicles, or connections to intermodal ports and stations.

Private Activity Bonds (PABs)

PABs are tax-exempt bonds issued by or on behalf of a local or state government to provide special financing benefits to qualified projects. They work as municipal bonds that attract private investment to projects with public benefits. They attract businesses and labor to a region to drive public benefit, which would qualify the bond for tax-exempt status.

Transportation Infrastructure Finance and Innovation Act (TIFIA) Loan Program

TIFIA provides federal credit assistance for projects meeting certain criteria for regionally or nationally significant projects. The program is intended to expedite projects by giving sponsors access to assistance through direct loans, loan guarantees, or lines of credit. Up to 33% of project costs can be assisted through TIFIA and projects must be supported partially with user charges or other non-federal funding sources. For a small project, the grant must be at least \$5 million.

Infrastructure For Rebuilding America (INFRA) Grants

The INFRA program, formally the Nationally Significant Freight and Highway Projects (NSFHP) program, was established to provide funding assistance to national and/or regionally significant highway and freight projects. Funding is awarded to projects that meet the four objectives of the program: support for national and regional economic vitality; the leveraging of federal funding with non-federal sources; the use of innovative technology and project delivery; and accountability of recipients' performance. An INFRA grant may not exceed 60% of total eligible project costs. An additional 20% of project costs may be funded with other federal assistance, bringing the total federal participation in the project to a maximum 80%.

State Infrastructure Banks (SIBs)

This program provides a revolving fund mechanism that finances highway and transit projects through direct loans with attractive interest rates. The revenues from repayment and interest are used to fund additional loans. They are capitalized initially from a variety of funding sources, using up to 1% of state-federal highway and transit capital funds and matching funds equal to 25% of all federal funds used for SIBs. These funds allow large transportation projects to be funded up front and for accelerated construction schedules. North Carolina does not currently have an active SIB but South Carolina's has been very successful, providing the highest level of financing of any SIB in the nation.

Railroad Rehabilitation and Improvement Financing (RRIF)

Under this program, the U.S. Department of Transportation (DOT) is authorized to provide direct loans and loan guarantees up to \$35 billion to finance the development of railroad infrastructure. Not less than \$7 billion is reserved for projects benefiting freight railroads other than Class I carriers. This supports acquiring, improving, or rehabilitating intermodal or rail equipment or facilities, including track, track components, bridges, yards, buildings, and shops, and includes the installation of positive train control systems; developing or establishing new intermodal or railroad facilities; reimbursing planning and design expenses relating to the activities listed above; refinancing outstanding debt incurred for the purposes listed above; and financing transit-oriented development (TOD) (credit assistance only available until December 4, 2019).

Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant Program

Previously known as Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants, BUILD allows project sponsors at the state and local levels to obtain funding for multimodal, multijurisdictional projects that are more difficult to support through traditional DOT or local programs. BUILD can fund road, rail, transit, and port projects that promise to achieve national objectives. U.S. DOT uses a rigorous merit-based process to select projects with exceptional benefits, explore ways to deliver projects faster and save on construction costs, and make needed investments in infrastructure.

Consolidated Rail Infrastructure and Safety Improvement (CRISI) Grants Program

The CRISI Grants Program assists with financing passenger and freight rail system improvements to achieve safety, efficiency, and reliability benefits. The FRA considers CRISI funding for intercity passenger rail service, reducing rail congestion, and improving short-line and regional rail infrastructure; projects to enhance passenger or freight multimodal connections; and other safety improvements, including the deployment of non-PTC (Positive Train Control) safety technology.

Capital Investment Grants (CIG) Program

The CIG Program is the primary grant program used by the FTA to fund major transit capital investments including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit (BRT). There is no annual call for applications; therefore, projects seeking CIG funding must complete a series of steps over several years in order to be eligible. “New Starts” projects include new fixed guideway systems, such as light rail or commuter rail; fixed guideway BRT systems; and extensions to existing systems. To be eligible for CIG funding, the total project cost of a New Starts project must be equal to or greater than \$300 million, or total New Starts funding sought must equal or exceed \$100 million.

Passenger Ferry Grant Program

This program provides competitive funding for projects that support passenger ferry systems through the FTA. Funds are awarded based on factors such as the age and condition of existing ferry vessels, terminals, and related infrastructure; benefits to riders, such as increased reliability; project readiness; and connectivity to other modes of transportation.

Financing

Transportation Bonds

Transportation bonds require voter approval and allow municipalities to sell bonds to investors, generating funds for transportation projects sooner. Authorized under NC G.S. 159-43, the investors are typically paid back via a property tax increase. Transportation bonding is a common funding mechanism that has been successful in North Carolina.

Revenue Bonds

Revenue bonds are paid back by user-generated revenues. NC G.S. 159-81 (3)(e) allows revenue bonds to be utilized for public transportation systems, facilities, or equipment, including but not limited to bus, truck, ferry, and railroad terminals, depots, trackage, and vehicles/vessels as well as mass transit systems.

General Obligation Bonds

General obligation bonds are backed by the full faith and credit of the borrower and, therefore, are paid back by any revenue source. All capital projects can be financed with general obligation bonds, but voter approval is typically needed.

Special Assessment Districts

Special assessment districts are districts that are established within a municipality for the purposes of funding infrastructure projects that directly benefit the properties located within the assessment district. Charges are levied on properties located within the assessment district to cover the costs of those projects. Funds generated can be used to fund the capital costs of streets and sidewalks, which may include the acquisition of property, construction, expansion, and improvement of real property. A vote by the affected landowners is required by North Carolina General Statutes.

Transportation Impact Fees

Transportation impact fees are contributions made to the local government by a developer to fund off-site capital improvements needed to accommodate future growth. The local government must have the authority to impose the fees as a condition of development approval, and the design and implementation of impact fee requirements must not be unfair, arbitrary, unreasonable, or without rational basis. A local bill passed by the State's General Assembly is needed to grant permission for impact fees to municipalities.

Tax Increment Financing (TIF)

TIF utilizes the value generated in developments surrounding new transportation infrastructure to repay bonds issued for the project. The local government designates an area as a TIF district, creates a development plan to be approved by the statewide commission, and, if approved, the value of all property in the district is measured to create a base valuation. As the property tax increases due to increased land value, the base valuation captures the amount of property tax directed to the general fund and any additional tax revenue is used to pay off the bond. Under North Carolina law, local government units—both counties and municipalities—may designate TIF districts and issue debt instruments to fund improvements within them. TIF funds may be used only for projects that enable, facilitate, or benefit private development within the development financing district, the revenue increment of which is pledged as security for the debt instruments.

Maintenance of Effort (MOE) Funds

MOE funds establish financial mandates on local revenues or monies in the expenditure budget for the local government that establish a minimum contribution of funds for specific projects, regardless of whether state (or federal) funds are received in support of the project. In this way, MOE requirements prevent local governments from substituting state (or federal) funds for local revenues as state (or federal) funding increases. The rationale behind these requirements is to ensure the additional funds provided by state (or federal) funding sources are not used to offset spending levels previously supported by local revenue.

Funding Sources Recommended for Consideration by the WMPO

The review and analysis of potential funding sources led to the recommendation of the following sources for consideration by the WMPO:

- Quarter-Cent Local Option Sales Tax (\$225.4 million forecast for 2040 MTP)
- Quarter-Cent Local Option Sales Tax for Transit (\$207 million forecast for 2040 MTP)
- Vehicle Registration Fee (\$23 million forecast for 2040 MTP)
- Motor Vehicle License Tax (\$10.6 million forecast for 2040 MTP)
- Vehicle Rental Tax (\$43.7 million forecast for 2040 MTP)
- Transportation Bonds
- Tolling

The selection of these options was driven primarily by the criteria that fiscal constraint be based on funding considered to be reasonably available for the region. A secondary consideration was the selection of sources where the future funding was thought to be more predictable. When funding is more predictable, the community is in a better position to deal with planned growth, address congestion, improve safety, and

budget wisely. The recommendations above do not include potential grants or project-specific revenue sources—this does not imply that these sources are undesirable and should not be pursued by the WMPO, but that they are too project-specific and uncertain to be considered as part of the alternative funding plan.

These recommendations were presented to the Citizens Advisory Committee (CAC) on March 6, 2019, the Technical Coordinating Committee (TCC) on March 13, 2019, and the WMPO Board on March 27, 2019. The strengths and limitations of these sources were also presented. The WMPO Board considered the information presented, along with input provided by the CAC and TCC, and selected the following alternative funding sources for further consideration: quarter-cent local option sales tax, quarter-cent local option sales tax for transit, vehicle registration fee, motor vehicle license tax, motor vehicle license tax for transit, vehicle rental tax, bicycle registration fee, visitor tax/fee, local room occupancy tax, marina or dockage fee, impact fees, and Strategic Transportation Investments (STI) incentives.

A recommendation was also made for the WMPO Board to consider project-specific funding alternatives, such as transportation bonds and tolling, for its alternative funding plan. Transportation bonds, such as the City of Wilmington's 2014 Transportation Bond, have historically proved successful in the region. Additionally, the WMPO Board, as part of its 2017-2022 Strategic Business Plan, has supported the tolling of the Cape Fear Crossing project. This new route on new location facility is the only major project within the WMPO planning boundary currently eligible to be a toll facility per NC G.S. 136-89, which regulates the North Carolina Turnpike Authority.

Additional research was conducted on these recommended funding sources which showed that only nine of the fourteen sources are viable options for funding MTP projects. The section below summarizes the reasons for excluding the remaining sources from the alternative funding forecast.

Visitor Tax/Fee

Research indicates that sales tax increases are primarily used to recover costs from tourists, with the understanding that they spend money when in the region for vacation. This will be covered under the sales tax options already being forecasted. The other option is an increase on the Local Room Occupancy Tax, which is covered below.

Local Room Occupancy Tax

Local room occupancy taxes are capped at 6%, and New Hanover County currently charges that rate. Pender County and Brunswick County currently charge 3% and 1% local room occupancy tax respectively. The only North Carolina county that charges more than 6% is Mecklenburg County at a rate of 8%, which is used specifically to fund the NASCAR Hall of Fame. This option was removed from consideration given the lack of widespread adoption of a higher rate, and the lone example of the higher rate being for a non-transportation project. Moreover, within the WMPO planning boundary, there are no lodging facilities in Pender County, and only two hotels in Brunswick County, according to Google Maps. Projected revenues from these facilities may not be high enough to justify levying an additional tax.

Marina or Dockage Fee

Marina dockage fees are not mentioned in the state legislation that we could find. Research indicates that these fees already exist for most municipalities with a public dock. Private docks typically charge sales tax and/or property tax, so revenue is already being collected in that way. We contacted the Wilmington Docks

and reviewed the City of Wilmington budget, but were unable to identify how these funds are set or how they are used. Therefore, these fees seem like an unlikely source of funding for transportation infrastructure projects, and WSP recommended removing them from consideration.

Impact Fees

Research shows that impact fees are very controversial, and probably unavailable to fund large-scale transportation projects. For that reason, WSP recommended removing them from consideration. In the past, impact fees have been used to help cover the cost of water and sewer infrastructure and public school construction; however, last year, the General Assembly passed a bill greatly restricting the use of these fees for those purposes. The restrictions placed on impact fees would likely render them useless for transportation projects.

STI Incentives

Based on our understanding, if a local government funds an STI project with their own revenues, NCDOT will provide a bonus of 50% of the construction costs. The WMPO would then need to use that bonus on Statewide Strategic Mobility Projects, Regional Impact Projects, or Division Needs Projects that are in the STIP, essentially providing additional resources not available through historical funding sources. This could be considered for specific projects if there is funding through the Wilmington Bond to cover a specific project of interest.

Approach

This section documents the financial forecasting approach for the sources that were recommended for the alternative funding plan.

Three distinct methods were used to estimate potential funding from the nine sources deemed viable, and summarized below. Data from the North Carolina Department of Revenue (NCDOR) was used to estimate revenues from quarter-cent local option sales tax and quarter-cent local option sales tax for transit. The North Carolina Department of Motor Vehicles (NCDMV) does not make data on the number of registered vehicles or licensed drivers publicly available; therefore, Census data and other governmental and non-governmental sources (Statista) were used to estimate these numbers for the Wilmington region. A similar approach was used to estimate potential funding from the bicycle registration fee. A special data request was made to New Hanover County to estimate the vehicle rental tax.

Quarter-Cent Local Option Sales Tax and Quarter-Cent Local Option Sales Tax for Transit

NCDOR makes annual sales tax collection data for every county publicly available. Total taxable sales for the counties of New Hanover, Pender, and Brunswick between 2014 and 2018 were used to project future taxable sales for each county using a five-year moving average method. The projected taxable sales for the counties of Brunswick and Pender were adjusted based on the percentage of their population residing within the WMPO planning boundary. Quarter-cent tax collections were estimated on an annual basis between 2021 and 2045 using projected total taxable sales for all three counties. The quarter-cent local option sales tax for transit was estimated using the same method.

Vehicle Registration Fee

NCDMV, and most counties within North Carolina, do not publish data on number of registered vehicles.

This data was estimated using the same sources used to obtain the number of licensed drivers. The ratio of registered vehicles to the number of licensed drivers was calculated for the years 2010 and 2016 and the observed trend was extrapolated to 2045. These ratios were used to estimate the total number of registered vehicles within the WMPO planning boundary for each year between 2021 and 2045. A \$7 fee per vehicle was considered to estimate the projected revenue generated from a vehicle registration fee.

Motor Vehicle License Tax and Motor Vehicle License Tax for Transit

NCDMV, and most counties within North Carolina, do not publish data on the number of licensed drivers. This data for North Carolina was obtained from two sources: FHWA for the year 2010 and Statista for the year 2017. Growth in population of driving age (16 years and over) in the Wilmington region was estimated using census data. This trend was used to estimate the growth in the number of licensed drivers, assuming that the proportion of licensed drivers to total population in the region reflects that projected for the State of North Carolina. A \$5 annual license tax was considered to estimate the projected revenue generated from a motor vehicle license tax between the years 2021 and 2045.

Vehicle Rental Tax

An annual vehicle rental tax was estimated using the existing 1.5% vehicle rental tax collection data for New Hanover County for the years 2014 to 2018. The data was then directly requested from New Hanover County through their public records requesting system. This data was used to estimate collection projections for a 5% transit tax on rental vehicles between the years 2021 and 2045. No rental vehicle facilities were found in the portions of Pender and Brunswick counties that are within the WMPO planning boundary.

Bicycle Registration Fee

Bicycle enumeration and ownership data is not reliably maintained by any public agency. Statista is the only source which shows bicycle ownership and usage data, but their sources are restricted to customers only. The number of existing bicycles and bicycle sales per year were estimated for the Wilmington region using Statista's national figures, assuming bicycle ownership trends are uniform across the United States. A \$10 annual registration fee was considered to estimate revenue generated from bicycle registrations between 2021 and 2045.

Transportation Bonds

Projected revenues for a transportation bond initiative were modeled after and projected utilizing the City of Wilmington's 2014 Transportation Bond initiative. The 2014 bond was valued at \$44 million and strategically leveraged this revenue towards a total of \$55 million in projects.

Tolling

N.C. GS 136-89.187 only allows the application of tolling on new route facilities, new managed lanes, and new high-cost bridges. The Cape Fear Crossing project is currently, per this legislation, the only toll-eligible project. Estimated toll revenues for Alternative MA, as generated in a draft sketch-level traffic and revenue analysis by the North Carolina Turnpike Authority, were utilized.

Data

The table below lists the primary data sources which informed the development of funding estimates. This list is not exhaustive. Additional data gathered from other source websites was documented in the worksheets.

Primary Data Sources	
Tax/Fee	Primary Source(s)
Quarter-Cent Local Option Sales Tax and Quarter-Cent Local Option Sales Tax for Transit	<ul style="list-style-type: none"> • NCDOR State Sales and Use Tax Reports by Fiscal Year • American Community Survey (ACS)
Vehicle Registration Fee	<ul style="list-style-type: none"> • FHWA • Statista.com • ACS
Motor Vehicle License Tax and Motor Vehicle License Tax for Transit	<ul style="list-style-type: none"> • FHWA • Statista.com • ACS
Vehicle Rental Tax	<ul style="list-style-type: none"> • New Hanover County Finance Department
Bicycle Registration Fee	<ul style="list-style-type: none"> • Statista.com • ACS
Transportation Bond	<ul style="list-style-type: none"> • Modeled after City of Wilmington 2014 Transportation Bond
Tolling (Cape Fear Crossing)	<ul style="list-style-type: none"> • DRAFT Sketch-Level Traffic and Revenue Analysis for the Cape Fear Crossing

Results

The following tables list the total revenue estimates between 2021 and 2045. These are adjusted for 2020 and 2045 values using a 3% annual rate of inflation.

Tax/Fee	Revenue Estimates in 2020 Dollars (Rounded to nearest million)			
	Total	New Hanover	Brunswick	Pender
Quarter-Cent Local Option Sales Tax	612	494	69	49
Quarter-Cent Local Option Sales Tax for Transit	612	494	69	49
Vehicle Registration Fee	40	32	4	4
Motor Vehicle License Tax	25	20	3	2
Motor Vehicle License Tax for Transit	25	20	3	2
Vehicle Rental Tax	29	29	0	0
Bicycle Registration Fee	7	6	1	1
Total	1350	1094	149	106
Percentage by County	100%	81%	11%	8%

Tax/Fee	Revenue Estimates in 2045 Dollars (Rounded to nearest million)			
	Total	New Hanover	Brunswick	Pender
Quarter-Cent Local Option Sales Tax	1,281	1,034	145	102
Quarter-Cent Local Option Sales Tax for Transit	1,281	1,034	145	102
Vehicle Registration Fee	83	67	9	8
Motor Vehicle License Tax	52	42	6	5
Motor Vehicle License Tax for Transit	52	42	6	5
Vehicle Rental Tax	60	60	0	0
Bicycle Registration Fee	14	12	2	1
Total	2,823	2,279	313	223
Percentage by County	100%	81%	11%	8%

Tax/Fee	Revenue Estimates in Dollars (Rounded to nearest million)		
	2020	2030	2040
Transportation Bond*	55	74	99

* Transportation bond was assumed on a 10-year, cyclic basis

Tax/Fee	Revenue Estimate in Dollars (Rounded to nearest million)	
	Over Anticipated Project Lifespan	
Tolling (Cape Fear Crossing)	159**	

** The North Carolina Turnpike Authority's Sketch-Level Traffic and Revenue Analysis for the Cape Fear Crossing assumed a project lifespan of 40 years. Over the course of that lifespan, and less the costs of operations and maintenance of the facility, it was forecasted that toll revenues would generate approximately \$158,670,000.

After careful consideration and discussions amongst the WMPO Board, and the governing boards of the jurisdictions they represent, the Board ultimately chose to support tolling revenues for the Cape Fear Crossing within the Cape Fear Moving Forward 2045 alternative funding plan.

Financial Forecast: Aviation

 Capital								Operations & Maintenance
	FY	AIP Entitlement	T (Aviation)	O (Aviation)	CFC	PFC	ILM Match	Total
2014	\$2,819,206							\$8,102,706
2015	\$2,845,825					\$284,583	\$3,130,408	\$8,444,540
2016	\$2,276,656				\$1,851,296	\$227,666	\$4,355,617	\$9,516,579
2017	\$3,251,504			\$1,061,752	\$1,892,570	\$325,150	\$6,530,976	\$10,016,074
2018	\$2,700,000	\$-	\$-	\$1,061,752	\$2,116,148	\$270,000	\$6,147,900	\$10,316,556
2019	\$2,797,720	\$-	\$-	\$1,061,752	\$2,194,819	\$279,772	\$6,334,063	\$10,626,053
2020	\$2,800,000	\$-	\$-	\$1,061,752	\$2,238,716	\$280,000	\$6,380,468	\$10,944,834
2021	\$2,800,000	\$-	\$-	\$1,061,752	\$2,283,490	\$280,000	\$6,425,242	\$11,273,180
2022	\$2,800,000	\$500,000	\$4,500,000	\$1,061,752	\$2,329,160	\$280,000	\$11,470,912	\$11,611,375
2023	\$2,800,000	\$-	\$-	\$1,061,752	\$2,375,743	\$280,000	\$6,517,495	\$11,959,716
2024	\$2,800,000	\$-	\$-	\$1,061,752	\$2,423,258	\$280,000	\$6,565,010	\$12,318,508
2025	\$2,800,000	\$-	\$-	\$1,061,752	\$2,471,723	\$280,000	\$6,613,475	\$12,688,063
2026	\$2,800,000	\$1,500,000	\$-	\$1,061,752	\$2,521,157	\$280,000	\$8,162,909	\$13,068,705
2027	\$2,800,000	\$1,000,000	\$-	\$1,061,752	\$2,571,581	\$280,000	\$7,713,333	\$13,460,766
2028	\$2,800,000	\$300,000	\$450,000	\$1,061,752	\$2,623,012	\$280,000	\$7,514,764	\$13,864,589
2029	\$2,800,000	\$309,000	\$463,500	\$1,061,752	\$2,675,472	\$280,000	\$7,589,724	\$14,280,527
2030	\$2,800,000	\$318,270	\$477,405	\$1,061,752	\$2,728,982	\$280,000	\$7,666,409	\$14,708,942
2031	\$2,800,000	\$327,818	\$491,727	\$1,061,752	\$2,783,561	\$280,000	\$7,744,859	\$15,150,211
2032	\$2,800,000	\$337,653	\$506,479	\$1,061,752	\$2,839,233	\$280,000	\$7,825,116	\$15,604,717
2033	\$2,800,000	\$347,782	\$521,673	\$1,061,752	\$2,896,017	\$280,000	\$7,907,225	\$16,072,858
2034	\$2,800,000	\$358,216	\$537,324	\$1,061,752	\$2,953,938	\$280,000	\$7,991,229	\$16,555,044
2035	\$2,800,000	\$368,962	\$553,443	\$1,061,752	\$3,013,016	\$280,000	\$8,077,174	\$17,051,696
2036	\$2,800,000	\$380,031	\$570,047	\$1,061,752	\$3,073,277	\$280,000	\$8,165,106	\$17,563,246
2037	\$2,800,000	\$391,432	\$587,148	\$1,061,752	\$3,134,742	\$280,000	\$8,255,074	\$18,090,144
2038	\$2,800,000	\$403,175	\$604,762	\$1,061,752	\$3,197,437	\$280,000	\$8,347,126	\$18,632,848
2039	\$2,800,000	\$415,270	\$622,905	\$1,061,752	\$3,261,386	\$280,000	\$8,441,313	\$19,191,834
2040	\$2,800,000	\$427,728	\$641,592	\$1,061,752	\$3,326,614	\$280,000	\$8,537,686	\$19,767,589
2041	\$2,800,000	\$440,560	\$660,840	\$1,061,752	\$3,393,146	\$280,000	\$8,636,298	\$20,360,616
2042	\$2,800,000	\$453,777	\$680,665	\$1,061,752	\$3,461,009	\$280,000	\$8,737,203	\$20,971,435
2043	\$2,800,000	\$467,390	\$701,085	\$1,061,752	\$3,530,229	\$280,000	\$8,840,457	\$21,600,578
2044	\$2,800,000	\$481,412	\$722,118	\$1,061,752	\$3,600,834	\$280,000	\$8,946,115	\$22,248,595
2045	\$2,800,000	\$495,854	\$743,781	\$1,061,752	\$3,672,850	\$280,000	\$9,054,238	\$22,916,053
Total	\$72,800,000	\$10,024,331	\$15,036,496	\$27,605,552	\$75,379,581	\$7,280,000	\$208,125,960	\$421,956,667

Aviation Financial Forecast Summary		
Revenue Band	Capital	O&M
2020-2025	\$43,972,601	\$70,795,676
2026-2030	\$38,647,139	\$69,383,528
2031-2035	\$39,545,603	\$80,434,526
2036-2040	\$41,746,306	\$93,245,660
2041-2045	\$44,214,311	\$108,097,277
Total	\$208,125,960	\$421,956,667

Financial Forecast: Bicycle and Pedestrian

FY	Capital					Total	
	Federal			Local			
	STB Geb	TAA Ny	TADA	L (Bike/Ped)	CoW Bond		
2014					\$213,132		
2015					\$213,132	\$213,132	
2016					\$213,132	\$213,132	
2017					\$213,132	\$213,132	
2018	\$-	\$-	\$244,000	\$61,000	\$213,132	\$518,132	
2019	\$2,238,000	\$18,000	\$314,000	\$717,600	\$701,272	\$3,988,872	
2020	\$1,492,000	\$150,000	\$841,000	\$545,400	\$701,272	\$3,729,672	
2021	\$1,492,000	\$-	\$225,000	\$354,400	\$701,272	\$2,772,672	
2022	\$1,492,000	\$-	\$225,000	\$354,400	\$701,272	\$2,772,672	
2023	\$1,492,000	\$-	\$225,000	\$354,400	\$701,272	\$2,772,672	
2024	\$1,492,000	\$-	\$225,000	\$354,400	\$701,272	\$2,772,672	
2025	\$1,492,000	\$-	\$225,000	\$354,400	\$701,272	\$2,772,672	
2026	\$1,492,000	\$-	\$-	\$298,400	\$701,272	\$2,491,672	
2027	\$1,492,000	\$-	\$-	\$298,400	\$701,272	\$2,491,672	
2028	\$1,417,400			\$369,280	\$701,272	\$2,487,952	
2029	\$1,459,922			\$380,358	\$701,272	\$2,541,552	
2030	\$1,503,720			\$391,769	\$701,272	\$2,596,761	
2031	\$1,548,831			\$403,522	\$701,272	\$2,653,625	
2032	\$1,595,296			\$415,628	\$701,272	\$2,712,196	
2033	\$1,643,155			\$428,097	\$701,272	\$2,772,524	
2034	\$1,692,450			\$440,940	\$701,272	\$2,834,661	
2035	\$1,743,223			\$454,168	\$701,272	\$2,898,663	
2036	\$1,795,520			\$467,793	\$701,272	\$2,964,585	
2037	\$1,849,386			\$481,827	\$701,272	\$3,032,484	
2038	\$1,904,867			\$496,281	\$701,272	\$3,102,420	
2039	\$1,962,013			\$511,170	\$701,272	\$3,174,455	
2040	\$2,020,873			\$526,505	\$701,272	\$3,248,650	
2041	\$2,081,500			\$542,300	\$701,272	\$3,325,072	
2042	\$2,143,945			\$558,569	\$701,272	\$3,403,786	
2043	\$2,208,263			\$575,326	\$701,272	\$3,484,861	
2044	\$2,274,511			\$592,586	\$701,272	\$3,568,369	
2045	\$2,342,746			\$610,364	\$701,272	\$3,654,382	
Total	\$45,123,621	\$150,000	\$1,966,000	\$11,560,683	\$18,233,068	\$77,033,372	

	Operations & Maintenance								
	City of Wilmington			Town of Leland		Town of Kure Beach	Town of Wrightsville Beach	New Hanover County	Total
FY	Trails	Sidewalks	Bike Lanes	Trails	Sidewalks				
2014	\$45,968								\$45,968
2015	\$47,347	\$100,000	\$91,560	\$2,000	\$20,000	\$2,000	\$1,500	\$35,000	\$299,407
2016	\$48,767	\$103,000	\$94,307	\$2,060	\$20,600	\$2,060	\$18,000	\$36,050	\$324,844
2017	\$50,230	\$106,090	\$97,136	\$2,122	\$21,218	\$2,122	\$15,000	\$37,132	\$331,050
2018	\$51,737	\$109,273	\$100,050	\$2,185	\$21,855	\$2,185	\$10,000	\$38,245	\$335,531
2019	\$53,290	\$112,551	\$103,052	\$2,251	\$22,510	\$2,251	\$11,125	\$39,393	\$346,422
2020	\$54,888	\$115,927	\$106,143	\$2,319	\$23,185	\$2,319	\$11,459	\$40,575	\$356,815
2021	\$56,535	\$119,405	\$109,327	\$2,388	\$23,881	\$2,388	\$11,803	\$41,792	\$367,519
2022	\$58,231	\$122,987	\$112,607	\$2,460	\$24,597	\$2,460	\$12,157	\$43,046	\$378,545
2023	\$59,978	\$126,677	\$115,985	\$2,534	\$25,335	\$2,534	\$12,521	\$44,337	\$389,901
2024	\$61,777	\$130,477	\$119,465	\$2,610	\$26,095	\$2,610	\$12,897	\$45,667	\$401,598
2025	\$63,630	\$134,392	\$123,049	\$2,688	\$26,878	\$2,688	\$13,284	\$47,037	\$413,646
2026	\$65,539	\$138,423	\$126,740	\$2,768	\$27,685	\$2,768	\$13,682	\$48,448	\$426,055
2027	\$67,506	\$142,576	\$130,543	\$2,852	\$28,515	\$2,852	\$14,093	\$49,902	\$438,837
2028	\$69,531	\$146,853	\$134,459	\$2,937	\$29,371	\$2,937	\$14,516	\$51,399	\$452,002
2029	\$71,617	\$151,259	\$138,493	\$3,025	\$30,252	\$3,025	\$14,951	\$52,941	\$465,562
2030	\$73,765	\$155,797	\$142,647	\$3,116	\$31,159	\$3,116	\$15,400	\$54,529	\$479,529
2031	\$75,978	\$160,471	\$146,927	\$3,209	\$32,094	\$3,209	\$15,862	\$56,165	\$493,915
2032	\$78,257	\$165,285	\$151,335	\$3,306	\$33,057	\$3,306	\$16,337	\$57,850	\$508,732
2033	\$80,605	\$170,243	\$155,875	\$3,405	\$34,049	\$3,405	\$16,828	\$59,585	\$523,994
2034	\$83,023	\$175,351	\$160,551	\$3,507	\$35,070	\$3,507	\$17,332	\$61,373	\$539,714
2035	\$85,514	\$180,611	\$165,368	\$3,612	\$36,122	\$3,612	\$17,852	\$63,214	\$555,906
2036	\$88,079	\$186,029	\$170,329	\$3,721	\$37,206	\$3,721	\$18,388	\$65,110	\$572,583
2037	\$90,722	\$191,610	\$175,438	\$3,832	\$38,322	\$3,832	\$18,940	\$67,064	\$589,760
2038	\$93,443	\$197,359	\$180,702	\$3,947	\$39,472	\$3,947	\$19,508	\$69,076	\$607,453
2039	\$96,247	\$203,279	\$186,123	\$4,066	\$40,656	\$4,066	\$20,093	\$71,148	\$625,677
2040	\$99,134	\$209,378	\$191,706	\$4,188	\$41,876	\$4,188	\$20,696	\$73,282	\$644,447
2041	\$102,108	\$215,659	\$197,457	\$4,313	\$43,132	\$4,313	\$21,317	\$75,481	\$663,780
2042	\$105,171	\$222,129	\$203,381	\$4,443	\$44,426	\$4,443	\$21,956	\$77,745	\$683,694
2043	\$108,327	\$228,793	\$209,483	\$4,576	\$45,759	\$4,576	\$22,615	\$80,077	\$704,205
2044	\$111,576	\$235,657	\$215,767	\$4,713	\$47,131	\$4,713	\$23,293	\$82,480	\$725,331
2045	\$114,924	\$242,726	\$222,240	\$4,855	\$48,545	\$4,855	\$23,992	\$84,954	\$747,091
Total	\$2,116,107	\$4,469,354	\$4,092,141	\$89,387	\$893,871	\$89,387	\$441,770	\$1,564,274	\$13,756,291

Bicycle and Pedestrian Financial Forecast Summary		
Revenue Band	Capital	O&M
2020-2025	\$43,972,601	\$70,795,676
2026-2030	\$38,647,139	\$69,383,528
2031-2035	\$39,545,603	\$80,434,526
2036-2040	\$41,746,306	\$93,245,660
2041-2045	\$44,214,311	\$108,097,277
 Total	\$208,125,960	\$421,956,667

Financial Forecast: Ferry and Water Transportation

	Capital				Operations & Maintenance	
	FY	FBP	Toll Revenues	STIP	Total	Highway Fund
2014	\$185,709	\$734,785				
2015	\$184,535	\$684,778			\$869,313	\$4,873,882
2016	\$206,254	\$881,967			\$1,088,221	
2017	\$201,503	\$795,953			\$997,456	
2018	\$207,548	\$851,186			\$1,058,734	\$5,081,698
2019	\$213,774	\$789,734	\$7,450,000		\$8,453,508	\$5,234,148
2020	\$220,187	\$813,426	\$3,250,000		\$4,283,613	\$5,391,173
2021	\$226,793	\$837,829			\$1,064,622	\$5,552,908
2022	\$233,597	\$862,963			\$1,096,560	\$5,719,495
2023	\$240,605	\$888,852			\$1,129,457	\$5,891,080
2024	\$247,823	\$915,518			\$1,163,341	\$6,067,813
2025	\$255,258	\$942,983			\$1,198,241	\$6,249,847
2026	\$262,915	\$971,273			\$1,234,188	\$6,437,342
2027	\$270,803	\$1,000,411			\$1,271,214	\$6,630,463
2028	\$278,927	\$1,030,423			\$1,309,350	\$6,829,377
2029	\$287,295	\$1,061,336			\$1,348,631	\$7,034,258
2030	\$295,914	\$1,093,176			\$1,389,090	\$7,245,286
2031	\$304,791	\$1,125,972			\$1,430,763	\$7,462,644
2032	\$313,935	\$1,159,751			\$1,473,685	\$7,686,523
2033	\$323,353	\$1,194,543			\$1,517,896	\$7,917,119
2034	\$333,053	\$1,230,379			\$1,563,433	\$8,154,633
2035	\$343,045	\$1,267,291			\$1,610,336	\$8,399,272
2036	\$353,336	\$1,305,310			\$1,658,646	\$8,651,250
2037	\$363,936	\$1,344,469			\$1,708,405	\$8,910,787
2038	\$374,854	\$1,384,803			\$1,759,657	\$9,178,111
2039	\$386,100	\$1,426,347			\$1,812,447	\$9,453,454
2040	\$397,683	\$1,469,137			\$1,866,821	\$9,737,058
2041	\$409,614	\$1,513,212			\$1,922,825	\$10,029,170
2042	\$421,902	\$1,558,608			\$1,980,510	\$10,330,045
2043	\$434,559	\$1,605,366			\$2,039,925	\$10,639,946
2044	\$447,596	\$1,653,527	\$15,598,646		\$17,699,769	\$10,959,144
2045	\$461,024	\$1,703,133			\$2,164,157	\$11,287,919
Total	\$8,488,898	\$31,360,038	\$18,848,646		\$58,697,582	\$207,846,116

Ferry and Water Transportation Financial Forecast Summary			
Revenue Band	Capital	O&M	
2020-2025	\$9,935,834	\$34,872,316	
2026-2030	\$6,552,473	\$34,176,725	
2031-2035	\$7,596,112	\$39,620,191	
2036-2040	\$8,805,976	\$45,930,660	
2041-2045	\$25,807,186	\$53,246,224	
 Total	\$58,697,582	\$207,846,116	

Financial Forecast: Freight and Freight Rail

 Capital	FR&RCSI			Operations & Maintenance*
	FY	RIAP	SIAP	
2014				\$-
2015		\$401,125	\$401,125	\$-
2016			\$-	\$-
2017		\$743,512	\$743,512	\$-
2018	\$200,000	\$635,000	\$835,000	\$-
2019	\$206,000	\$593,212	\$799,212	\$-
2020	\$212,180	\$611,009	\$823,189	\$-
2021	\$218,545	\$629,339	\$847,884	\$-
2022	\$225,102	\$648,219	\$873,321	\$-
2023	\$231,855	\$667,666	\$899,521	\$-
2024	\$238,810	\$687,696	\$926,506	\$-
2025	\$245,975	\$708,327	\$954,301	\$-
2026	\$253,354	\$729,576	\$982,930	\$-
2027	\$260,955	\$751,464	\$1,012,418	\$-
2028	\$268,783	\$774,008	\$1,042,791	\$-
2029	\$276,847	\$797,228	\$1,074,075	\$-
2030	\$285,152	\$821,145	\$1,106,297	\$-
2031	\$293,707	\$845,779	\$1,139,486	\$-
2032	\$302,518	\$871,152	\$1,173,670	\$-
2033	\$311,593	\$897,287	\$1,208,880	\$-
2034	\$320,941	\$924,205	\$1,245,147	\$-
2035	\$330,570	\$951,932	\$1,282,501	\$-
2036	\$340,487	\$980,490	\$1,320,976	\$-
2037	\$350,701	\$1,009,904	\$1,360,605	\$-
2038	\$361,222	\$1,040,201	\$1,401,424	\$-
2039	\$372,059	\$1,071,407	\$1,443,466	\$-
2040	\$383,221	\$1,103,550	\$1,486,770	\$-
2041	\$394,717	\$1,136,656	\$1,531,373	\$-
2042	\$406,559	\$1,170,756	\$1,577,315	\$-
2043	\$418,756	\$1,205,879	\$1,624,634	\$-
2044	\$431,318	\$1,242,055	\$1,673,373	\$-
2045	\$444,258	\$1,279,317	\$1,723,574	\$-
Total	\$8,180,185	\$23,556,244	\$31,736,429	\$-

* There is no federal funding for operations and maintenance (O&M). Funding for O&M on the state-supported network is provided by the State out of the highway fund. O&M is funded by private entities. No funding is available from the FRA.

Freight and Freight Rail Financial Forecast Summary

Revenue Band	Capital	O&M
2020-2025	\$5,324,722	N/A
2026-2030	\$5,218,511	N/A
2031-2035	\$6,049,684	N/A
2036-2040	\$7,013,242	N/A
2041-2045	\$8,130,270	N/A
 Total	\$31,736,429	N/A

Financial Forecast: Public Transportation

Capital	Federal Transit Administration				NCDOT			Local	
	Section 5339		Section 5307		STPDA	S	T (Transit)	L (Transit)	Total
	FY	FBUS	FEDT	FUZ	STBGDA				
2014									
2015									\$-
2016									\$-
2017									
2018	\$1,388,000	\$-	\$374,000	\$2,110,000	\$1,009,000	\$261,000	\$-	\$915,000	\$6,057,000
2019	\$1,400,000	\$-	\$374,000	\$-	\$-	\$169,000	\$-	\$220,000	\$2,163,000
2020	\$3,548,000	\$-	\$374,000	\$-	\$-	\$349,000	\$-	\$400,000	\$4,671,000
2021	\$260,000	\$-	\$50,000	\$-	\$-	\$26,000	\$-	\$36,000	\$372,000
2022	\$-	\$-	\$50,000	\$-	\$-	\$-	\$-	\$10,000	\$60,000
2023	\$-	\$-	\$104,000	\$-	\$-	\$-	\$-	\$6,000	\$126,000
2024	\$-	\$-	\$50,000	\$-	\$-	\$-	\$-	\$10,000	\$60,000
2025	\$-	\$-	\$50,000	\$-	\$-	\$-	\$-	\$10,000	\$60,000
2026	\$-	\$564,000	\$50,000	\$-	\$-	\$-	\$-	\$73,000	\$83,000
2027	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
2028	\$659,600	\$56,400	\$147,600			\$80,500	\$20,400	\$22,810	\$987,310
2029	\$679,388	\$58,092	\$152,028			\$82,915	\$21,012	\$23,394	\$1,016,929
2030	\$699,770	\$59,835	\$156,589			\$85,402	\$21,642	\$24,199	\$1,047,437
2031	\$720,763	\$61,630	\$161,287			\$87,965	\$22,292	\$24,925	\$1,078,860
2032	\$742,386	\$63,479	\$166,125			\$90,603	\$22,960	\$25,573	\$1,111,226
2033	\$764,657	\$65,383	\$171,109			\$93,322	\$23,649	\$26,443	\$1,144,563
2034	\$787,597	\$67,345	\$176,242			\$96,121	\$24,359	\$27,236	\$1,178,900
2035	\$811,225	\$69,365	\$181,529			\$99,005	\$25,089	\$28,053	\$1,214,267
2036	\$835,562	\$71,446	\$186,975			\$101,975	\$25,842	\$28,895	\$1,250,695
2037	\$860,628	\$73,589	\$192,585			\$105,034	\$26,617	\$29,762	\$1,288,216
2038	\$886,447	\$75,797	\$198,362			\$108,185	\$27,416	\$30,655	\$1,326,862
2039	\$913,041	\$78,071	\$204,313			\$111,431	\$28,238	\$31,574	\$1,366,668
2040	\$940,432	\$80,413	\$210,442			\$114,774	\$29,086	\$32,522	\$1,407,668
2041	\$968,645	\$82,825	\$216,756			\$118,217	\$29,958	\$33,497	\$1,449,898
2042	\$997,704	\$85,310	\$223,258			\$121,763	\$30,857	\$34,502	\$1,493,395
2043	\$1,027,635	\$87,869	\$229,956			\$125,416	\$31,783	\$35,537	\$1,538,197
2044	\$1,058,464	\$90,505	\$236,855			\$129,179	\$32,736	\$36,603	\$1,584,343
2045	\$1,090,218	\$93,221	\$243,960			\$133,054	\$33,718	\$37,701	\$1,631,373
Total	\$19,252,162	\$1,884,574	\$4,183,971	\$-	\$-	\$2,259,862	\$556,654	\$1,099,083	\$29,236,306

Operations & Maintenance (continued on Page 138)										NCDOT				Local (continued on Page 138)	
FY	Federal Transit Administration									State	STBGDA	STRDA	Local	NHC DOA	NHC DSS (Van)
	Section 5310	Section 5303/04	Section 5317	Section 5311	Section 5307	Section 5316	SMAP	JARC	FNU	FNF	FUZ				
2014														\$70,000	\$500,000
2015														\$72,100	\$515,000
2016														\$74,263	\$530,450
2017														\$76,491	\$546,364
2018	\$231,000	\$384,000	\$179,000	\$218,000	\$3,005,000	\$184,000	\$845,000	\$14,000	\$601,000	\$135,000	\$3,681,000	\$78,786	\$562,754		
2019	\$242,000	\$384,000	\$-	\$218,000	\$2,402,000	\$-	\$845,000	\$14,000	\$1,000,000	\$-	\$2,933,000	\$600,000	\$600,000		
2020	\$242,000	\$384,000	\$-	\$218,000	\$2,482,000	\$-	\$845,000	\$24,000	\$1,000,000	\$-	\$2,943,000	\$618,000	\$618,000		
2021	\$116,000	\$384,000	\$-	\$218,000	\$2,151,000	\$-	\$845,000	\$14,000	\$1,000,000	\$-	\$2,775,000	\$6,365	\$636,540		
2022	\$116,000	\$384,000	\$-	\$218,000	\$2,151,000	\$-	\$845,000	\$14,000	\$1,000,000	\$-	\$2,775,000	\$6,556	\$655,636		
2023	\$189,400	\$384,000	\$-	\$218,000	\$2,151,000	\$-	\$845,000	\$14,000	\$1,000,000	\$-	\$2,775,000	\$6,753	\$675,305		
2024	\$195,082	\$384,000	\$-	\$218,000	\$2,390,333	\$-	\$845,000	\$15,667	\$1,000,000	\$-	\$2,980,333	\$6,956	\$695,564		
2025	\$200,934	\$395,520	\$-	\$218,000	\$2,462,043	\$-	\$870,350	\$16,137	\$1,000,000	\$-	\$3,069,743	\$7,164	\$716,431		
2026	\$206,962	\$407,386	\$-	\$218,000	\$2,535,905	\$-	\$896,461	\$16,621	\$1,000,000	\$-	\$3,161,836	\$7,379	\$737,924		
2027	\$213,171	\$419,607	\$-	\$218,000	\$2,611,982	\$-	\$923,354	\$17,119	\$1,000,000	\$-	\$3,256,691	\$7,601	\$760,062		
2028	\$219,567	\$432,195			\$2,690,341		\$951,055	\$17,633	\$1,000,000		\$3,354,391	\$7,829	\$782,864		
2029	\$226,154	\$445,161			\$2,771,051		\$979,587	\$18,162	\$1,000,000		\$3,455,023	\$8,063	\$806,350		
2030	\$232,938	\$458,516			\$2,854,183		\$1,008,974	\$18,707	\$1,000,000		\$3,558,674	\$8,305	\$830,540		
2031	\$239,926	\$472,272			\$2,939,808		\$1,039,243	\$19,268	\$1,000,000		\$3,665,434	\$8,555	\$855,457		
2032	\$247,124	\$486,440			\$3,028,003		\$1,070,421	\$19,846	\$1,000,000		\$3,775,397	\$8,811	\$881,120		
2033	\$254,538	\$501,033			\$3,118,843		\$1,102,533	\$20,441	\$1,000,000		\$3,888,659	\$9,076	\$907,554		
2034	\$262,174	\$516,064			\$3,212,408		\$1,135,609	\$21,055	\$1,000,000		\$4,005,319	\$9,348	\$934,780		
2035	\$270,039	\$531,546			\$3,308,780		\$1,169,678	\$21,686	\$1,000,000		\$4,125,478	\$9,628	\$962,824		
2036	\$278,140	\$547,492			\$3,408,044		\$1,204,768	\$22,337	\$1,000,000		\$4,249,243	\$9,917	\$991,709		
2037	\$286,484	\$563,917			\$3,510,285		\$1,240,911	\$23,007	\$1,000,000		\$4,376,720	\$10,215	\$1,021,460		
2038	\$295,079	\$580,834			\$3,615,594		\$1,278,138	\$23,697	\$1,000,000		\$4,508,022	\$10,521	\$1,052,104		
2039	\$303,931	\$598,259			\$3,724,061		\$1,316,482	\$24,408	\$1,000,000		\$4,643,262	\$10,837	\$1,083,667		
2040	\$313,049	\$616,207			\$3,835,783		\$1,355,977	\$25,140	\$1,000,000		\$4,782,560	\$11,162	\$1,116,177		
2041	\$322,441	\$634,693			\$3,950,857		\$1,396,656	\$25,895	\$1,000,000		\$4,926,037	\$11,497	\$1,149,662		
2042	\$332,114	\$653,734			\$4,069,382		\$1,438,556	\$26,671	\$1,000,000		\$5,073,818	\$11,842	\$1,184,152		
2043	\$342,077	\$673,346			\$4,191,464		\$1,481,713	\$27,472	\$1,000,000		\$5,226,033	\$12,197	\$1,219,676		
2044	\$352,340	\$693,547			\$4,317,208		\$1,526,164	\$28,296	\$1,000,000		\$5,382,814	\$12,563	\$1,256,267		
2045	\$362,910	\$714,353			\$4,446,724		\$1,571,949	\$29,145	\$1,000,000		\$5,544,298	\$12,940	\$1,293,955		
Total	\$6,620,576	\$13,262,124	\$-	\$872,000	\$81,928,084	\$-	\$29,183,579	\$544,410	\$26,000,000	\$-	\$102,277,784	\$238,258	\$23,825,780		

Operations & Maintenance (continued from Page 137)

Local (continued from Page 137)

FY	NHC DSS (Work First)			NHC ROAP			Other Agencies			City of Wilmington			NHC			Brunswick Consortium			UNCW			Passenger Fares			Wave			Other Income			Total		
	NHC DSS (Work First)	NHC ROAP	Other Agencies	City of Wilmington	NHC	Brunswick Consortium	UNCW	Passenger Fares																									
2014																																	
2015																																	
2016																																	
2017																																	
2018																																	
2019	\$10,000	\$41,040	\$33,896	\$1,404,155	\$321,229	\$97,471	\$782,800	\$1,005,000	\$164,002	\$12,503,593																							
2020	\$10,300	\$42,271	\$34,913	\$1,446,280	\$330,866	\$100,395	\$806,284	\$1,035,150	\$168,922	\$12,737,561																							
2021	\$10,609	\$43,539	\$35,960	\$1,489,668	\$340,792	\$103,407	\$830,473	\$1,066,205	\$173,990	\$12,240,548																							
2022	\$10,927	\$44,846	\$37,039	\$1,534,358	\$351,016	\$106,509	\$855,387	\$1,098,191	\$179,209	\$12,382,674																							
2023	\$11,255	\$46,191	\$38,150	\$1,580,389	\$361,546	\$109,704	\$881,048	\$1,131,136	\$184,586	\$12,602,464																							
2024	\$11,593	\$47,577	\$39,295	\$1,627,800	\$372,392	\$112,996	\$907,480	\$1,165,070	\$190,123	\$12,987,262																							
2025	\$11,941	\$49,004	\$40,474	\$1,676,635	\$383,564	\$116,385	\$934,704	\$1,200,023	\$195,827	\$13,346,879																							
2026	\$12,299	\$50,474	\$41,688	\$1,726,934	\$395,071	\$119,877	\$962,745	\$1,236,023	\$201,702	\$13,717,286																							
2027	\$12,668	\$51,988	\$42,938	\$1,778,742	\$406,923	\$123,473	\$991,628	\$1,273,104	\$207,753	\$14,098,804																							
2028	\$13,048	\$53,548	\$44,227	\$1,832,104	\$419,131	\$127,178	\$1,021,376	\$1,311,297	\$213,985	\$14,491,768																							
2029	\$13,439	\$55,154	\$45,553	\$1,887,067	\$431,705	\$130,993	\$1,052,018	\$1,350,636	\$220,405	\$14,896,522																							
2030	\$13,842	\$56,809	\$46,920	\$1,943,679	\$444,656	\$134,923	\$1,083,578	\$1,391,155	\$227,017	\$15,313,417																							
2031	\$14,258	\$58,513	\$48,328	\$2,001,989	\$457,996	\$138,970	\$1,116,086	\$1,432,890	\$233,828	\$15,742,820																							
2032	\$14,685	\$60,269	\$49,777	\$2,062,049	\$471,736	\$143,139	\$1,149,568	\$1,475,876	\$240,842	\$16,185,104																							
2033	\$15,126	\$62,077	\$51,271	\$2,123,910	\$485,888	\$147,434	\$1,184,055	\$1,520,153	\$248,068	\$16,640,657																							
2034	\$15,580	\$63,939	\$52,809	\$2,187,628	\$500,464	\$151,857	\$1,219,577	\$1,565,757	\$255,510	\$17,109,877																							
2035	\$16,047	\$65,857	\$54,393	\$2,253,257	\$515,478	\$156,412	\$1,256,164	\$1,612,730	\$263,175	\$17,593,173																							
2036	\$16,528	\$67,833	\$56,025	\$2,320,854	\$530,943	\$161,105	\$1,293,849	\$1,661,112	\$271,070	\$18,090,969																							
2037	\$17,024	\$69,868	\$57,706	\$2,390,480	\$546,871	\$165,938	\$1,332,665	\$1,710,945	\$279,202	\$18,603,698																							
2038	\$17,535	\$71,964	\$59,437	\$2,462,194	\$563,277	\$170,916	\$1,372,645	\$1,762,274	\$287,578	\$19,131,809																							
2039	\$18,061	\$74,123	\$61,220	\$2,536,060	\$580,175	\$176,043	\$1,413,824	\$1,815,142	\$296,206	\$19,675,763																							
2040	\$18,603	\$76,346	\$63,057	\$2,612,142	\$597,581	\$181,325	\$1,456,239	\$1,869,596	\$305,092	\$20,236,036																							
2041	\$19,161	\$78,637	\$64,948	\$2,690,506	\$615,508	\$186,765	\$1,499,926	\$1,925,684	\$314,245	\$20,813,117																							
2042	\$19,736	\$80,996	\$66,897	\$2,771,221	\$633,973	\$192,367	\$1,544,924	\$1,983,454	\$323,672	\$21,407,510																							
2043	\$20,318	\$83,426	\$68,904	\$2,854,358	\$652,992	\$198,138	\$1,591,271	\$2,042,958	\$333,382	\$22,019,736																							
2044	\$20,938	\$85,929	\$70,971	\$2,939,989	\$672,582	\$204,083	\$1,639,009	\$2,104,247	\$343,384	\$22,650,328																							
2045	\$21,566	\$88,507	\$73,100	\$3,028,188	\$692,760	\$210,205	\$1,688,180	\$2,167,374	\$353,685	\$23,299,838																							
Total	\$397,096	\$1,629,683	\$1,345,998	\$557,58480	\$12,755,886	\$3,870,538	\$31,084,701	\$39,908,182	\$6,512,459	\$433,015,618																							

Public Transportation Financial Forecast Summary		
Revenue Band	Capital	O&M
2020-2025	\$5,349,000	\$76,297,388
2026-2030	\$3,821,676	\$72,517,797
2031-2035	\$5,727,816	\$83,271,632
2036-2040	\$6,640,108	\$95,738,274
2041-2045	\$7,697,706	\$110,190,528
 Total	\$29,236,306	\$438,015,618

Financial Forecast: Roadway

Capital		Federal						State			Total
		FY	HSIP	TA	NHP	BOND R	BGDA	BGAN	BGS200	O (Highway)	
2014	\$650,000										\$1,072,153
2015	\$-										\$1,072,153
2016	\$-										\$1,072,153
2017	\$-										\$1,072,153
2018	\$-		\$-	\$-	\$-	\$-	\$-	\$-	\$31,188,000	\$1,072,153	\$-
2019	\$1,375,000	\$3,200,000	\$18,780,000	\$-	\$492,000	\$3,912,000	\$-	\$800,000	\$79,379,000	\$1,097,751	\$32,260,153
2020	\$650,000	\$-	\$18,780,000	\$-	\$492,000	\$20,500,000	\$-	\$-	\$47,104,000	\$1,097,751	\$411,000
2021	\$-		\$18,780,000	\$-	\$492,000	\$-	\$-	\$-	\$87,114,000	\$1,097,751	\$156,000
2022	\$-		\$39,142,000	\$-	\$492,000	\$-	\$-	\$37,750,000	\$-	\$1,097,751	\$2,622,000
2023	\$-		\$36,842,000	\$-	\$492,000	\$-	\$-	\$37,150,000	\$-	\$1,097,751	\$186,000
2024	\$-		\$45,792,000	\$-	\$492,000	\$-	\$-	\$113,891,000	\$1,097,751	\$186,000	\$161,498,751
2025	\$-		\$29,075,000	\$-	\$492,000	\$-	\$-	\$25,533,000	\$-	\$1,097,751	\$123,588,751
2026	\$-		\$11,390,000	\$-	\$492,000	\$-	\$-	\$25,533,000	\$-	\$1,097,751	\$39,466,751
2027	\$-		\$-	\$-	\$492,000	\$-	\$-	\$25,533,000	\$-	\$1,097,751	\$45,966,751
2028	\$202,500		\$21,849,100	\$1,152,000	\$442,800	\$2,441,200	\$15,149,900	\$80,000	\$64,284,800	\$1,097,751	\$433,500
2029	\$208,575		\$22,504,573		\$456,084	\$2,514,436	\$15,604,397	\$82,400	\$66,213,344	\$1,097,751	\$446,505
2030	\$214,832		\$23,179,710		\$469,767	\$2,589,869	\$16,072,529	\$84,872	\$68,199,744	\$1,097,751	\$112,368,974
2031	\$221,277		\$23,875,101		\$483,860	\$2,667,565	\$16,554,705	\$87,418	\$70,245,737	\$1,097,751	\$473,697
2032	\$227,916		\$24,591,355		\$498,375	\$2,747,592	\$17,051,346	\$90,041	\$72,353,109	\$1,097,751	\$487,908
2033	\$234,753		\$25,329,095		\$513,327	\$2,830,020	\$17,562,886	\$92,742	\$74,523,702	\$1,097,751	\$502,545
2034	\$241,796		\$26,088,968		\$528,726	\$2,914,920	\$18,089,773	\$95,524	\$76,759,413	\$1,097,751	\$517,622
2035	\$249,049		\$26,871,637		\$544,588	\$3,002,368	\$18,632,466	\$98,390	\$79,062,195	\$1,097,751	\$533,150
2036	\$256,521		\$27,677,786		\$560,926	\$3,092,439	\$19,191,440	\$101,342	\$81,434,061	\$1,097,751	\$549,145
2037	\$264,217		\$28,508,120		\$577,754	\$3,185,212	\$19,767,183	\$104,382	\$83,877,083	\$1,097,751	\$565,619
2038	\$272,143		\$29,363,363		\$595,086	\$3,280,769	\$20,360,199	\$107,513	\$86,393,396	\$1,097,751	\$582,588
2039	\$280,307		\$30,244,264		\$612,939	\$3,379,192	\$20,971,005	\$110,739	\$88,985,198	\$1,097,751	\$600,065
2040	\$288,717		\$31,151,592		\$631,327	\$3,480,567	\$21,600,135	\$114,061	\$91,654,753	\$1,097,751	\$618,067
2041	\$297,378		\$32,096,140		\$650,267	\$3,584,985	\$22,248,139	\$117,483	\$94,404,396	\$1,097,751	\$636,609
2042	\$306,299		\$33,048,724		\$669,775	\$3,692,534	\$22,915,583	\$121,007	\$97,236,528	\$1,097,751	\$655,708
2043	\$315,488		\$34,040,186		\$689,868	\$3,803,310	\$23,603,051	\$124,637	\$100,153,624	\$1,097,751	\$675,379
2044	\$324,953		\$35,061,391		\$710,564	\$3,917,409	\$24,311,142	\$128,377	\$103,158,232	\$1,097,751	\$695,640
2045	\$334,702		\$36,113,233		\$731,881	\$4,034,932	\$25,040,476	\$132,228	\$106,252,979	\$1,097,751	\$716,509
Total	\$5,391,423	\$-	\$711,295,340	\$1,152,000	\$14,303,912	\$77,659,320	\$506,225,354	\$1,873,155	\$2037,473,295	\$28541,522	\$3,393,214,479

Roadway Financial Forecast Summary					
FY	NHPIM	State		Capital	O&M
		Federal	Div 3 Road Maintenance		
2014	\$3,297,144		\$8,098,222	\$3,598,458	\$14,993,824
2015	\$4,621,323	\$4,083,830		\$3,633,638	\$12,338,791
2016	\$4,694,755	\$5,369,889		\$3,651,527	\$13,716,171
2017	\$4,111,265	\$5,600,253		\$3,684,697	\$13,356,215
2018	\$-	\$4,475,781	\$5,017,991	\$3,459,976	\$12,953,748
2019	\$1,400,000	\$4,475,781	\$5,017,991	\$3,385,587	\$14,279,358
2020	\$-	\$4,475,781	\$5,017,991	\$3,487,154	\$12,980,926
2021	\$-	\$4,475,781	\$5,017,991	\$3,591,769	\$13,085,541
2022	\$10,538,000	\$4,475,781	\$5,017,991	\$3,699,522	\$23,731,294
2023	\$-	\$4,475,781	\$5,017,991	\$3,810,508	\$13,304,279
2024	\$11,200,000	\$4,475,781	\$5,017,991	\$3,924,823	\$24,618,595
2025	\$-	\$4,475,781	\$5,017,991	\$4,042,568	\$13,536,339
2026	\$14,385,000	\$4,475,781	\$5,017,991	\$4,163,845	\$28,042,616
2027	\$-	\$4,475,781	\$5,017,991	\$4,288,760	\$13,782,532
2028	\$3,752,300	\$4,475,781	\$876,900	\$4,417,423	\$13,522,404
2029	\$3,864,869	\$4,610,054	\$903,207	\$4,549,945	\$13,928,076
2030	\$3,980,815	\$4,748,356	\$930,303	\$4,686,444	\$14,345,918
2031	\$4,100,240	\$4,890,807	\$958,212	\$4,827,037	\$14,776,295
2032	\$4,223,247	\$5,037,531	\$986,959	\$4,971,848	\$15,219,584
2033	\$4,349,944	\$5,188,657	\$1,016,567	\$5,121,004	\$15,676,172
2034	\$4,480,442	\$5,344,316	\$1,047,064	\$5,274,634	\$16,146,457
2035	\$4,614,856	\$5,504,646	\$1,078,476	\$5,432,873	\$16,650,851
2036	\$4,753,301	\$5,669,785	\$1,110,831	\$5,595,859	\$17,129,776
2037	\$4,895,900	\$5,839,879	\$1,144,156	\$5,763,735	\$17,643,669
2038	\$5,042,777	\$6,015,075	\$1,178,480	\$5,936,647	\$18,172,980
2039	\$5,194,061	\$6,195,527	\$1,213,835	\$6,114,746	\$18,718,169
2040	\$5,349,883	\$6,381,393	\$1,250,250	\$6,298,189	\$19,279,714
2041	\$5,510,379	\$6,572,835	\$1,287,757	\$6,487,134	\$19,858,105
2042	\$5,675,690	\$6,770,020	\$1,326,390	\$6,681,748	\$20,453,849
2043	\$5,845,961	\$6,973,121	\$1,366,182	\$6,882,201	\$21,067,464
2044	\$6,021,340	\$7,182,314	\$1,407,167	\$7,088,667	\$21,699,488
2045	\$6,201,980	\$7,397,784	\$1,449,382	\$7,301,327	\$22,350,473
Total	\$123,980,986	\$140,604,127	\$60,676,046	\$134,440,406	\$459,701,564

Operations & Maintenance		Roadway Financial Forecast Summary			
FY	NHPIM	Div 3 Road Maintenance	Div 3 Contract Resurfacing	Powell Bill	Total
2014	\$3,297,144		\$8,098,222	\$3,598,458	\$14,993,824
2015	\$4,621,323	\$4,083,830		\$3,633,638	\$12,338,791
2016	\$4,694,755	\$5,369,889		\$3,651,527	\$13,716,171
2017	\$4,111,265	\$5,600,253		\$3,684,697	\$13,356,215
2018	\$-	\$4,475,781	\$5,017,991	\$3,459,976	\$12,953,748
2019	\$1,400,000	\$4,475,781	\$5,017,991	\$3,385,587	\$14,279,358
2020	\$-	\$4,475,781	\$5,017,991	\$3,487,154	\$12,980,926
2021	\$-	\$4,475,781	\$5,017,991	\$3,591,769	\$13,085,541
2022	\$10,538,000	\$4,475,781	\$5,017,991	\$3,699,522	\$23,731,294
2023	\$-	\$4,475,781	\$5,017,991	\$3,810,508	\$13,304,279
2024	\$11,200,000	\$4,475,781	\$5,017,991	\$3,924,823	\$24,618,595
2025	\$-	\$4,475,781	\$5,017,991	\$4,042,568	\$13,536,339
2026	\$14,385,000	\$4,475,781	\$5,017,991	\$4,163,845	\$28,042,616
2027	\$-	\$4,475,781	\$5,017,991	\$4,288,760	\$13,782,532
2028	\$3,752,300	\$4,475,781	\$876,900	\$4,417,423	\$13,522,404
2029	\$3,864,869	\$4,610,054	\$903,207	\$4,549,945	\$13,928,076
2030	\$3,980,815	\$4,748,356	\$930,303	\$4,686,444	\$14,345,918
2031	\$4,100,240	\$4,890,807	\$958,212	\$4,827,037	\$14,776,295
2032	\$4,223,247	\$5,037,531	\$986,959	\$4,971,848	\$15,219,584
2033	\$4,349,944	\$5,188,657	\$1,016,567	\$5,121,004	\$15,676,172
2034	\$4,480,442	\$5,344,316	\$1,047,064	\$5,274,634	\$16,146,457
2035	\$4,614,856	\$5,504,646	\$1,078,476	\$5,432,873	\$16,650,851
2036	\$4,753,301	\$5,669,785	\$1,110,831	\$5,595,859	\$17,129,776
2037	\$4,895,900	\$5,839,879	\$1,144,156	\$5,763,735	\$17,643,669
2038	\$5,042,777	\$6,015,075	\$1,178,480	\$5,936,647	\$18,172,980
2039	\$5,194,061	\$6,195,527	\$1,213,835	\$6,114,746	\$18,718,169
2040	\$5,349,883	\$6,381,393	\$1,250,250	\$6,298,189	\$19,279,714
2041	\$5,510,379	\$6,572,835	\$1,287,757	\$6,487,134	\$19,858,105
2042	\$5,675,690	\$6,770,020	\$1,326,390	\$6,681,748	\$20,453,849
2043	\$5,845,961	\$6,973,121	\$1,366,182	\$6,882,201	\$21,067,464
2044	\$6,021,340	\$7,182,314	\$1,407,167	\$7,088,667	\$21,699,488
2045	\$6,201,980	\$7,397,784	\$1,449,382	\$7,301,327	\$22,350,473
Total	\$123,980,986	\$140,604,127	\$60,676,046	\$134,440,406	\$459,701,564

Sources:

- FTA: Capital Investment Grants Program. About the Program
<https://www.transit.dot.gov/funding/grant-programs/capital-investments/about-program>



APPENDIX F: Aviation Element

Current Trends

Following the great recession, the aviation industry as a whole experienced an unprecedented period of consolidation, with three major mergers in five years. The result of these efforts has been eight straight years of profitability for United States airlines, with the hope that airlines are evolving from a highly cyclical industry to a more stable one. Another trend in the industry is a shift towards major airlines as opposed to regional ones. From 2007 to 2017, major airlines saw a 12% passenger increase, while regional airlines experienced a 3% decrease. This is because larger airlines are able to negotiate more favorable contracts with airports, and have more capital to maintain and renovate their fleets. Larger planes are also trending, as they allow carriers to increase capacity without increasing flights, thus leading to higher profits. The outlook for commercial aviation is stable to optimistic. While the number of planes isn't expected to increase, flight hours are expected to increase about 1% each year. This can be attributed to modest gas prices and a general upturn in the economy. Military aviation is expected to remain constant, as the military is more or less resistant to changes in the economy. General aviation has shown a steady decline since the recession and has yet to bounce back.

Wilmington International Airport (ILM) is a significant contributor to the Wilmington Urban Area's transportation system as the largest airport in the southeast region and fifth largest in the state. ILM supports three types of aviation operations: commercial aviation (travel and cargo), general aviation (private aircraft), and military aviation. Despite being a relatively small airport, ILM is still subject to international and regional trends including consolidation, increases in major airlines, and changes in plane size. The robust business market that ILM serves, along with regional population growth, has fueled further expansion at ILM.

ILM has seen an increase in enplanements over recent years, from about 770,000 in 2015 to over 1,000,000 in 2019. ILM has also added flights to Washington Dulles, Chicago O'Hare, and Boston in recent years. It will be important for ILM to maintain its facilities to meet Federal Aviation Administration (FAA) standards with expected increases in enplanements and the shift towards larger planes. These operational and infrastructure changes reflect a trend towards increased capacity in order to accommodate larger peaks in the schedule. Another trend in recent years is decreased parking revenue due to the prevalence of Transportation Network Companies (TNCs) such as Uber and Lyft. However, ILM has largely been insulated from sharp reductions in

parking revenue and the significant increase in overall traffic has presented a need for additional parking at ILM and is a major priority.



History of Wilmington International Airport and Existing Conditions

ILM was founded in the 1920s, with the original facilities constructed during World War II. After the War, the airport was deeded to New Hanover County. In 1987, New Hanover County created the New Hanover County Airport Authority to manage and operate the airport. The New Hanover County Airport Authority is the Airport Sponsor recognized by the FAA for ILM. The airport is leased to the Airport Authority by New Hanover County through the year 2049. The New Hanover County Airport Authority was initially made up of five board members, but was expanded in 2013 to include two additional members for a total of seven.

ILM is the only location for scheduled commercial air services in the region, offering nine non-stop flights that connect to over 300 destinations. The services ILM provides include:

- Commercial Aviation
 - Freight
 - Customs
- General Aviation
 - Freight
 - Customs
- Military Aviation

Based on the projections of aeronautical activity made in the ILM 2018 Airport Layout Plan (ALP) Update, ILM is expected to see growth in both operations and based aircraft over the ALP's 20-year planning horizon. A forecast for each of the services provided is shown in the table on the opposite page.

Aviation Forecasts Summary							
Year	Air Carrier/ Taxi Operations	General Aviation Operations	Military Operations	Total Operations (Preferred)	Total 2016 FAA TAF Forecasts	Annual Instrument Approaches	Based Aircraft
2021	17,806	29,750	5,944	53,500	50,958	5,350	119
2026	19,227	32,500	5,944	57,671	52,666	5,767	130
2036	22,420	39,000	5,944	67,364	56,660	6,736	156

Source: TBI Calculations, 2013 ILM Terminal Area Study, 2016 FAA TAF (Terminal Area Forecast)

Location

ILM, and the area immediately surrounding ILM, are in the coastal plain of North Carolina. ILM is located approximately four miles from Interstate 40 and less than two miles from US17 and US74/76 in New Hanover County, directly north of the Wilmington city limits. In relation to other major cities in North and South Carolina, ILM is located approximately 85 miles north of Myrtle Beach, South Carolina; approximately 130 miles southeast of Raleigh, North Carolina; and approximately 200 miles east of Charlotte, North Carolina.

Federal Aviation Administration Status

The National Plan of Integrated Airport Systems (NPIAS) includes airports that are significant to the national air transportation system. The NPIAS is maintained by the FAA on a continual basis and is published every two years in accordance with federal standards. ILM is currently categorized as one of the largest Non-Hub, Primary Airports and is one of ten Primary Commercial Service Airports in North Carolina. With current growth trends, ILM could move to the Small Hub classification in coming years.

Infrastructure

Made up of runways, taxiways, and aprons, the airside facilities include the primary airport infrastructure that supports airport operations. ILM has two runways: Runway 6-24 and Runway 17-35. Oriented northeast/southwest, Runway 6-24 is the airport's primary runway and is 8,016 feet long by 150 feet wide with 25-foot wide paved shoulders. Oriented north/south, Runway 17-35 is the secondary runway at ILM. It is 7,754 feet long by 150 feet wide with 20-foot wide paved shoulders. ILM has a sophisticated taxiway system with two full parallel taxiways and several stub or connecting taxiways that serve the primary and secondary runways. ILM has several aircraft aprons utilized for aircraft movement and parking along with navigational aids for pilots.

Landside facilities at the airport complement the airside facilities and include passenger terminals, aircraft hangars, fuel storage facilities, airport access roads, and automobile parking. Support facilities needed for the operation and maintenance of the airport such as equipment storage, maintenance buildings, and the Airport Fire and Rescue Department are also considered landside facilities. In FY 2019, ILM served 1,075,963 revenue passengers. In order to help accommodate growth and provide an exceptional airport experience, the terminal is undergoing an expansion to increase capacity and provide cosmetic improvements. The \$60 million project, which will be completed by 2022, includes renovations and repairs to portions of the existing facility, roof replacement, and 60,000 square feet in additional terminal space.

Safety is of the highest priority in the aviation industry. Airport security serves to protect passengers, staff, aircraft, and airport property from accidental/malicious harm, crime, and other threats. To protect ILM from outside threats, fencing separates the secure airfield, or Air Operations Area (AOA), from non-secure landside areas. Other security measures include a centrally-monitored camera network and an access control system featuring biometric readers on Security Identification Display Area (SIDA) doors.

Commercial Services

ILM is served by Delta, American Airlines, and United Airlines. Non-stop flights are available daily to LaGuardia Airport (LGA), Hartsfield-Jackson Atlanta International Airport (ATL), Philadelphia International Airport (PHL), Charlotte Douglas International Airport (CLT), Ronald Reagan Washington National Airport (DCA), Dallas/Fort Worth International Airport (DFW), Washington Dulles International Airport (IAD), and Chicago O'Hare International Airport (ORD). Non-stop flights to Boston's Logan International Airport (BOS) are available seasonally. In addition to providing the only scheduled commercial air service in New Hanover County, ILM also accommodates general aviation and air charter services.

A top priority of ILM has been to expand its non-stop flight destinations to provide more travel options for customers in the region. Origin-destination studies of travelers' flight patterns to and from ILM have helped the airport identify priority destinations traveled to and from by ILM customers that are not currently served by direct flights.

ILM Non-Stop Destinations		
Airport Code	City	Airline
ATL	Atlanta	Delta
BOS	Boston*	American
CLT	Charlotte	American
ORD	Chicago O'Hare	United
ORD	Chicago O'Hare*	American
DFW	Dallas Fort Worth	American
LGA	New York City	American
LGA	New York City*	Delta
PHL	Philadelphia	American
DCA	Washington DC	American
IAD	Washington Dulles	United



*Seasonal, subject to change

Source: flyilm.com/airlines-at-ilm

- 9 Non-stop Destinations
- 7 International Gateways
- 310 Destinations Worldwide (with One Stop)



WILMINGTON AIRPORT'S TOP 20 ORIGIN-DESTINATION MARKETS Passengers per day each way



*Includes co-market airports

Source: U.S. Department of Transportation accessed via DiioMi; Ailevon Pacific Aviation Consulting analysis

General Aviation

Currently, General Aviation (GA) facilities are located in two main areas of the airport property. The first is located north of the passenger terminal, and includes the GA Terminal, which provides core aircraft, pilot, and charter passenger services. The second GA area is located across the runways, on the east side of the property. Other GA facilities include public hangars, airfield maintenance equipment storage, a fuel farm, and a full-service Fixed Base Operator (FBO). The FAA Airport Surveillance Radar (ASR) is located in this area, along with additional hangars.

Military

According to the ILM 2018 ALP Update, military operations at ILM have averaged around 5,600 each year since 2006. In 2015, about 12% (5,944) of all airport operations were military. It is difficult to forecast military operations at ILM for a couple of reasons:

- For national security purposes, the Department of Defense (DOD) releases very little information regarding planned aviation activity—the FAA's Terminal Area Forecast (TAF) projects military operations at current levels unless the FAA has special knowledge of an upcoming change (i.e. a base closing); and
- Military operations are typically scheduled based on available budget and the judgement of military officials.

While military operations do not affect dimensional standards at ILM, they contribute to practice IFR (Instrument Flight Rules) approaches and are included in instrument approach forecasts.

Cargo

American Airlines utilizes passenger aircraft to transport cargo. The handling of this “belly cargo” currently occurs in the terminal area at ILM. In fiscal year 2019, 2.7 million pounds of cargo, including freight, mail, and express deliveries, passed through the airport. Continued growth of these services is expected and may require additional investments. The ILM 2018 ALP Update states that the FBO has reported interest in a longer runway for specialized cargo operations, but, at the time that plan was prepared, no formal request had been made to the airport. There is also a growing need for a larger dedicated cargo facility to move airline belly cargo.

US Customs and Border Protection

The International Terminal, which includes a full service US Customs and Border Protection Federal Inspection Station (FIS), is located north of the GA Terminal. In addition to clearing international flights, this state-of-the-art facility also supports the United States Department of Agriculture (USDA) and US Citizenship and Immigration Services (USCIS). ILM is the only east coast location north of Jacksonville, Florida where planes returning from south of 30 degrees North Latitude are permitted to land to clear US Customs under federal law, without special exemption. In fiscal year 2019, 5,701 passengers were cleared through US Customs at ILM. This is a unique service offered by ILM and planned improvements and development reflect a desire to maintain these facilities.

Business Park

ILM is actively promoting and receiving interest from both aviation and non-aeronautical companies on nearly 230 acres of available landside area for development as business office, hotel, air cargo, and commercial use. Rail access has been a key factor in the growing interest in business park development, as reported by the airport. The business park offers access to rail via the CSX Railway located between the airport and Blue Clay Road. Hall Drive provides a track crossing from Blue Clay Road into the ILM Business Park.

Aviation Modal Subcommittee

In order to analyze and propose recommendations for the development of aviation in the Wilmington Urban Area, the WMPO contacted subject matter experts in the field to form an Aviation Subcommittee. Specifically, the WMPO worked with the following organizations to develop the recommendations in this element:

- Citizens Advisory Committee (CAC)
- ILM
- ILM Pilot’s Association
- ILM General Aviation
- NCDOT Division 3
- NCDOT Division of Aviation
- NCDOT Transportation Planning
- Greater Wilmington Chamber of Commerce

During Aviation Subcommittee meetings, WMPO staff initiated group discussions by presenting pertinent

facts, relevant information, and public survey results related to the current and future state of aviation throughout the Wilmington region. Under the direction of the CAC, WMPO staff worked with the Aviation Subcommittee to develop recommendations for the following components of this element:

- Goals and Objectives
- Project Scoring Criteria
- Policies

Aviation Modal Goals and Objectives

Goals and objectives for the development of this element were created over a series of Aviation Subcommittee meetings and serve three distinct purposes within this element. First, the goals and objectives guided the overall development of the element. Second, the goals and objectives were used as the criteria on which to base the scoring of aviation projects in order to determine which projects were of greatest funding priority. Finally, the goals and objectives guided the development of policies which will ultimately be used to guide action on aviation issues in the Wilmington region over the next 25 years. The mode-specific goals and objectives were reviewed by the CAC, Technical Coordinating Committee (TCC), and WMPO Board, alongside the overall MTP vision and goals, before being utilized in the development of Cape Fear Moving Forward 2045.

The goals and objectives for aviation can be found below and continued on the following page.

Goal A: Economic Development

Objectives:

1. Improve commercial aviation service for business travelers
2. Maintain opportunities for freight rail service to ILM
3. Serve the needs particular to the region's target industries, such as:
 - A. Tourism
 - B. Film
 - C. Fintech/IT
 - D. Pharma
 - E. Military
 - F. Logistics and Industry
4. Develop aviation infrastructure to encourage additional commercial carrier, general aviation, and freight services

Goal B: Regional Accessibility

Objectives:

1. Provide additional direct flight services to and from business centers and/or hubs
2. Lower fare costs and maximize market shares for ILM in the region
3. Provide multimodal transportation services to and from ILM to meet the needs of the area's target industries, such as:
 - A. Tourism
 - B. Film

- C. Fintech/IT
 - D. Pharma
 - E. Military
 - F. Logistics and Industry
4. Coordinate with roadway network projects that support the development of ILM to include accommodations necessary for truck/rail freight transportation to/from site
 5. Support international cargo operations, utilizing ILM's free trade zone status
 6. Support the reinstatement of the Wallace to Castle Hayne corridor for future freight rail service

Goal C: Physical Infrastructure

Objectives:

1. Encourage fiscally responsible business practices and projects in order to lower facility operating costs and maximize market shares for ILM in the region
2. Coordinate with roadway network projects that support the development of ILM to include accommodations necessary for passenger/truck/rail freight transportation to/from site
3. Develop infrastructure to support freight rail service to ILM and the reinstatement of the Wallace to Castle Hayne corridor
4. Provide facilities that support the area's target industries, such as:
 - A. Tourism
 - B. Film
 - C. Fintech/IT
 - D. Pharma
 - E. Military
 - F. Logistics and Industry
5. Prioritize smart growth for future land acquisition or encroachment needs or noise compatibility
6. Develop infrastructure to encourage aviation business development
7. Provide facilities to support new and innovative transportation technologies, to and from ILM
8. Increase resiliency of airport facilities to mitigate the impacts of flooding

Goal D: Modal Integration

Objectives:

1. Increase transportation mode choice to ILM, the Business Park, and terminal areas
2. Accommodate facilities necessary for truck/rail freight service and transportation to/from ILM
3. Provide facilities to support new and innovative transportation technologies, to and from ILM

Goal E: Coordination with ILM's Long Range Planning and Prioritization

Objectives:

1. Integrate current ILM Master Plan and ALP into Cape Fear Moving Forward 2045
2. Recognize and support the opportunities for new and innovative transportation technologies

Project Scoring Criteria

To create a ranked list of the proposed aviation projects, the subcommittee developed criteria by assigning a value to objective attributes with identifiable and measurable metrics. To maintain transparency of the process, it was important that metrics were data-driven. This process should allow for replication of point assignments using available quantitative and qualitative datasets.

Aviation projects were awarded the score value based on a “yes/no” or “presence/absence” judgment after reviewing the project scopes and descriptions developed by the subcommittee. Projects meeting the metric of any single attribute or combination of multiple attributes listed for a given criteria qualify for the points assigned. The scoring criteria utilized by the Aviation Subcommittee can be found on the following page.

Each project could receive up to 125 points. The total score of each project was normalized to create a ranked list of projects. The ranked list was the basis for the fiscal constraint analysis used to determine which projects are anticipated to receive funding in this region between 2020 and 2045, as discussed in Appendix E, Financial Element.

The subcommittee recognized the importance of future analysis through the NCDOT Prioritization process and the potential for project refinement by WMPO jurisdictions, partners, and community stakeholders.

Aviation Scoring System

Scale	Goal	Criteria	Attribute	Score
25	Economic Development	Business park improvements	Improvements that have a positive impact on the business park	10
		Improve international/domestic trade and commerce facilities	Project increases efficiency or infrastructure of commerce facilities	5
		General Aviation Improvements	Projects that improve general aviation operations	10
25	Regional Accessibility	Runway and taxiway/taxi lane improvements and expansion	Expansion or improvement of runway or taxiway at ILM	10
		Roadway improvements leading to and within airport	Improvements to parking, roads, and intersections around ILM	10
		General aviation apron, hangar, and facility improvements	Projects that specifically make improvements to general aviation apron, hangar, and facilities	5
60	Physical Infrastructure	Apron and taxiway expansion or maintenance	Project expands or maintains aprons or taxiways at the airport	10
		Parking expansion and maintenance	Project expands or improves parking at ILM	10
		Improvements to commercial runway	Project improves runways specifically	10
		Commercial aviation improvements	Project makes improvements specifically to commercial aviation	10
		General aviation improvements	Project makes improvements specifically to general aviation	10
		Safety Improvements	Project improves safety through technology, visibility, or security of ILM property	10
5	Modal Integration	Improve access to cargo facilities or capacity	Project improves efficiency or facilities related to cargo	5
10	Coordination with ILM's long range planning and prioritization	Real estate purchase to maintain access and expand facilities	Expansion of ILM property through real estate purchase for future facilities	5
		Support GIS Integration	Projects uses GIS to map utilities and facilities at ILM	5

Policies

The policies below were developed by the Aviation Subcommittee based on the goals and objectives of this element. Aviation policies will be used to guide action on aviation issues in the Wilmington Urban Area. Each policy was reviewed through public outreach and by the CAC, TCC, and WMPO Board before being included in Cape Fear Moving Forward 2045

The WMPO will work with member agencies to do the following:

- Support ILM operations and equitable infrastructure improvements identified in ILM master plan.
- Identify and assist ILM in expansion of services and direct routes that benefit the region's target industries and public users.
- Improve access to and from ILM for all modes of transportation in coordination with local, state, and federal agencies.
- Identify, promote, and market the aviation-related business opportunities of ILM.
- Support the incorporation of new and innovative transportation technologies to and within ILM.

Fiscally-Constrained Aviation Project List

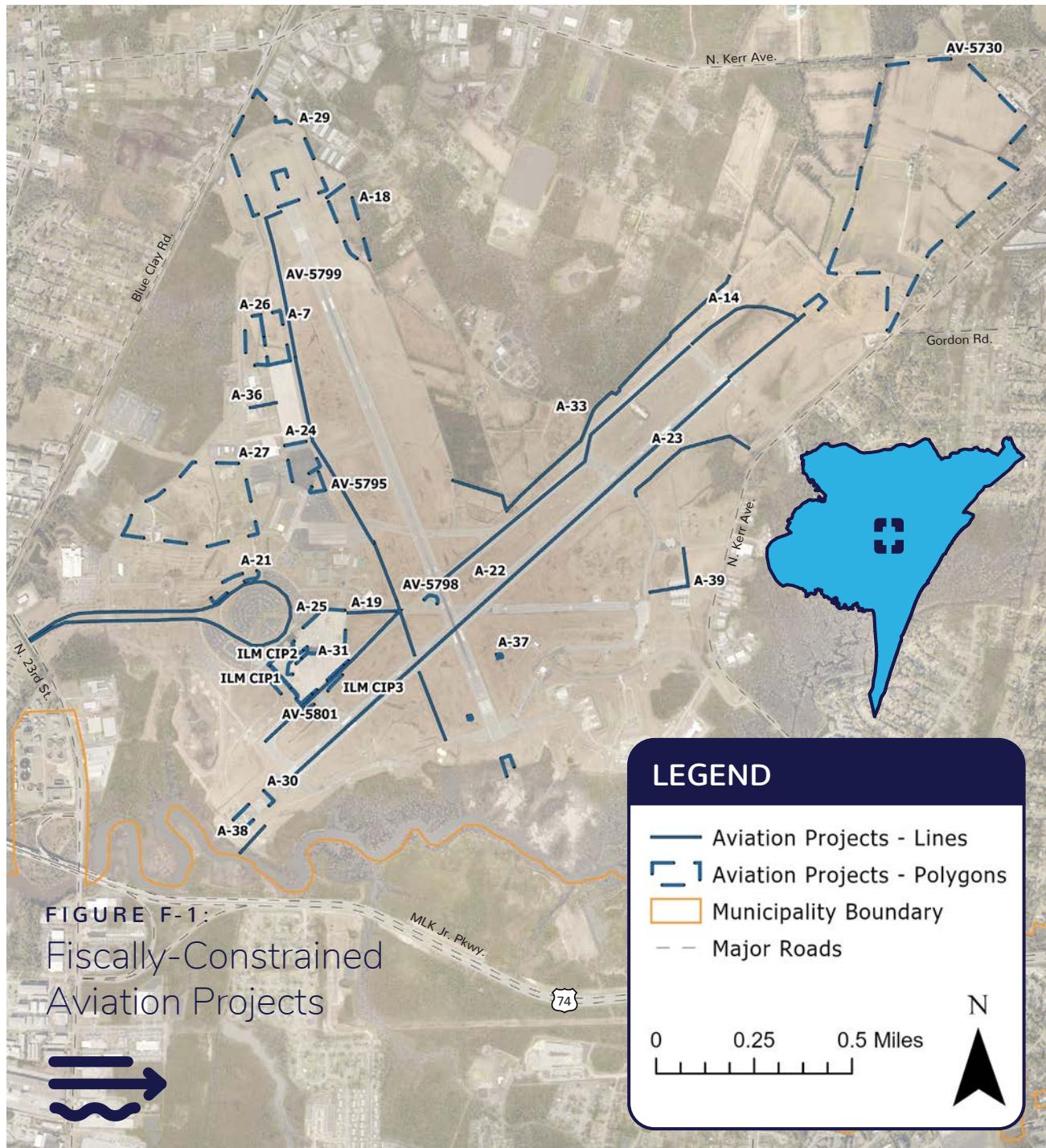
 Fiscally-constrained, Programmed in 2018-2027 STIP, 2020-2029 STIP

 Fiscally-constrained projects

* Not shown on map for clarity

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
1	ILM CIP1	Terminal Improvements Part 3 (Construction)	2020	\$16,400,000
2	ILM CIP2	Air Carrier Expansion	2025	\$4,000,000
3	ILM CIP3	Taxiway B Improvements adjacent to Terminal Apron and Rename Taxiways	2025	\$7,000,000
4	AV-5730	Extend Runway 6-24 (Phase I)	2025	\$5,000,000
5	AV-5795	Expand the General Aviation Apron	2025	\$500,000
6	AV-5801	Expansion of Carrier Apron	2025	\$500,000
7	AV-5798	Taxiway Improvements	2030	\$500,000
8	AV-5799	Widen North-South Taxiway System	2030	\$500,000
9	AV-5796	Increase Width of all Taxiways*	2030	\$500,000
10	A-21	Expand Air Carrier Auto Parking	2025	\$4,878,770
11	A-22	Rehabilitate Runway 6-24 and Taxiway B	2025	\$16,482,957
12	A-23	Perimeter Road Improvements (Phase II)	2025	\$1,532,190
13	A-25	Overlay Airport Boulevard, Building Circulation, and Surrounding Roadways	2025	\$1,334,708
14	A-33	Perimeter Road Improvements (Phase I)	2025	\$1,433,024
15	A-36	2nd GA Hangar Aircraft Taxi Lane (North GA #2)	2025	\$1,738,911
16	A-24	Airline and Customs Apron - Clean/Seal Joints and Repair Pavements	2030	\$1,381,511
17	A-29	Runway 17/35 Extension and Safety Area Improvements	2030	\$9,032,362
18	A-31	Roadway 17/35 Taxiway System Maintenance, Overlay, and Widening	2030	\$6,870,447
19	A-7	GA Apron Development (Phase II)	2030	\$2,012,039
20	A-14	Extend Runway 24 (Phase II of IV)	2035	\$10,163,971
21	A-26	Northside FBO #2 GA Apron and Hangar Development (Phase I)	2035	\$14,041,878
22	A-19	Apron Maintenance	2035	\$2,593,989
23	A-30	Upgrade Visual Approach Aids & Runway Lighting	2035	\$397,818
24	A-37	Runway 35 Wind Cone/PAPI Replacement	2035	\$778,984
25	A-39	1st Paved Aircraft Taxi Lane (East Ramp Lane #1)	2040	\$8,232,816

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
26	A-18	Land Acquisition for ASR Site Relocation	2040	\$1,639,143
27	A-38	Emergency Boat Ramp Access Launch Rwy 6	2040	\$180,611
28	A-27	Map Utilities and Provide GIS Airport Interface	2040	\$257,508



Fiscally-Constrained Aviation Project Descriptions

Terminal Improvements Part 3 (Construction)	ILM CIP1
Description: The third phase of this project encompasses the gate area, the TSA checkpoint, and baggage claim. The expanded gate area will include 4 new gates, each with new passenger loading bridges and seating areas. This phase will also expand the TSA checkpoint and includes enhancements to the baggage claim area.	
Air Carrier Expansion	ILM CIP2
Description: This project will expand the Air Carrier Apron in support of the proposed terminal expansion project.	
Taxiway B Improvements adjacent to Terminal Apron and Rename Taxiways	ILM CIP3
Description: This project will remediate potential “hot spots” at the Terminal Apron by relocating Taxiway B at Air Carrier Apron, removing Taxiway F, and removing a portion of Taxiway J.	
Extend Runway 6-24 (Phase I)	AV-5730
Description: This is the first phase of a four-phase project to extend Runway 6-24 and complete the Instrument Landing Systems (ILS) approach to Runways 6 and 24. Installation of a glideslope, localizer antenna, and Medium-intensity Approach Landing System (MALS) is included for both runway ends.	
Expand the General Aviation Apron	AV-5795
Description: This project will expand the GA Apron, converting the grassed area to paved surfacing to accommodate additional tie down space for aircraft.	
Expansion of Carrier Apron	AV-5801
Description: This project will expand the Air Carrier Apron in support of the proposed terminal expansion project.	
Taxiway Improvements	AV-5798
Description: This project will remediate potential “hot spots” at the Terminal Apron by relocating Taxiway B at Air Carrier Apron, removing Taxiway F, and removing a portion of Taxiway J.	

Widen North-South Taxiway System

AV-5799

Description: This project supports the airport's plan to widen the North-South taxiway system to make the width consistent throughout. Currently, taxiway system width ranges from 51 to 75 feet. This project will also add shoulders and keep the taxiway lights on pavement in order to reduce mowing and maintenance requirements.

Increase Width of all Taxiways

AV-5796

Description: This project will increase the width of all taxiways to 75' in order to accommodate all aircraft that utilize ILM.

Expand Air Carrier Auto Parking

A-21

Description: This project will expand the air-carrier terminal area auto parking lots. Approximately 430 auto spaces will be added for long-term and employee parking.

Rehabilitate Runway 6-24 and Taxiway B

A-22

Description: This pavement maintenance project will rehabilitate Runway 6-24 and Taxiway B pavements.

Perimeter Road Improvements (Phase II)

A-23

Description: This is the second phase of a two-phase project that will improve safety by relocating the airport's vehicle perimeter road outside NAVAID critical areas and Object Free Areas. The road will be an all-weather road allowing traffic to be separated from aircraft movement areas.

Overlay Airport Boulevard, Building Circulation, and Surrounding Roadways

A-25

Description: Overlay Airport Blvd and ILM roadways leading to N 23rd Street.

Perimeter Road Improvements (Phase I)

A-33

Description: This is the first phase of a two-phase project that will improve safety by relocating the airport's vehicle perimeter road outside NAVAID critical areas and Object Free Areas. The road will be all-weather road allowing traffic to be separated from aircraft movement areas.

2nd GA Hangar Aircraft Taxi Lane (North GA #2)**A-36**

Description: This project will construct a new hangar taxi lane to provide access into development hangar leasehold areas per ILM's ALP.

Airline and Customs Apron - Clean/Seal Joints and Repair Pavements**A-24**

Description: This project will clean, seal, and repair joints and concrete pavement sections of the Air Carrier and Customs Aprons.

Runway 17/35 Extension and Safety Area Improvements**A-29**

Description: This project extends Runway 17 and displaces Runway 35 900' to provide a standard Runway Safety Area (RSA). The project will also relocate the Approach Lighting System (ALS) and localizer equipment on Runway 35.

Roadway 17/35 Taxiway System Maintenance, Overlay, and Widening**A-31**

Description: This project will rehabilitate and widen Taxiway 'A' from the intersection with Taxiway 'C' to the existing Runway 35 end. Taxiways 'H' and 'F' will also be rehabilitated and widened to 75'.

GA Apron Development (Phase II)**A-7**

Description: This project is the second phase of the general aviation apron development.

Extend Runway 24 (Phase II)**A-14**

Description: This is the second phase of a four-phase project to extend Runway 6-24 and complete the Instrument Landing Systems (ILS) approach to Runways 6 and 24. Installation of a glideslope, localizer antenna, and Medium-intensity Approach Landing System (MALS) is included for both runway ends.

Northside FBO #2 GA Apron and Hangar Development (Phase I)**A-26**

Description: This project will remove six buildings (39, 40, 41, 42, 43, and 45), construct aircraft hangars, expand the aircraft parking apron, install an updated fuel facility, and develop auto parking and related access.

Apron Maintenance

A-19

Description: This project consists of routine maintenance on the Air Wilmington Apron.

Upgrade Visual Approach Aids & Runway Lighting

A-30

Description: This project will upgrade Runway 6, 17, and 24 Visual Approach Slope Indicators (VASIs) to Precision Approach Path Indicators (PAPIs). It will also change the pilot-activated runway lighting switch from Runway 17/35 to 6/24 using the Common Traffic Advisory Frequency (CTAF).

Runway 35 Wind Cone/PAPI Replacement

A-37

Description: This project will be designed and constructed to replace the Runway 35 wind cone due to its useful lifespan. The PAPIs and Power Supply Unit (PSU) needs to be relocated outside the Runway Safety Area (RSA) per FAA Standards.

1st Paved Aircraft Taxi Lane (East Ramp Lane #1)

A-39

Description: This project will construct a new hangar taxi lane to provide access into development hangar leasehold area per ILM's Airport Layout Plan.

Land Acquisition for ASR Site Relocation

A-18

Description: This project acquires land for the eventual relocation of the Airport Surveillance Radar (ASR) to a new site.

Emergency Boat Ramp Access Launch Rwy 6

A-38

Description: This project will provide a concrete water access ramp along with a dock for the ARFF (Air Rescue and Fire Fighting) Team's rescue boat to provide life safety in the event of an aircraft crash emergency in Smith Creek.

Map Utilities and Provide GIS Airport Interface

A-27

Description: This project involves mapping all utilities within the ILM right-of-way to be used as a future planning tool.

Aviation Complete Project List

Project ID	Project Name
AV-5796	Increase Width of all Taxiways
AV-5798	Taxiway Improvements
AV-5801	Expand Air Carrier Apron
AV-5795	Expand General Aviation Apron
AV-5799	Widen North-South Taxiway System
A-6	Various Improvements
A-7	GA Apron Development Phase II
AV-5702	Pipe Ditch in FBO #2 Area Direct to EDDB and Rehab GA Apron Ramp North
AV-5730	Extend Runway 24 - Phase I of IV
A-10	Terminal Improvements Phase II Design & Construction
A-11	Rehab GA Apron Ramp North; Pipe Ditch in FBO #2; Direct to EDDB
A-12	Taxiway A and H Widening and Paved Shoulders
A-13	BCA/EA for Runway 24 Extension
A-14	Extend Runway 24 - Phase II of IV
A-15	Design and Construction of Boat Launch for Water Access
A-16	Map of Airport Utilities
A-17	Complete Runway 6-24 ILS/ALS
A-18	Land Acquisition for ASR Site Relocation
A-19	Apron Maintenance
A-20	Northside GA FBO/Hangar Development, FBO #1 (Phase I)
A-21	Expand Air Carrier Auto Parking
A-22	Rehabilitate Runway 6-24 and Taxiway B
A-23	Perimeter Road Development (Phase II)
A-24	Airline and Customs Apron - Clean/Seal Joints and Repair Pavements
A-25	Overlay Airport Boulevard, Building Circulation, and Surrounding Roadways
A-26	Northside FBO #2 GA Apron and Hangar Development (Phase I)
A-27	Map Utilities and Provide GIS Airport Interface
A-28	Clear Trees/Vegetation for ATC-Runway 24 Line-Of-Site
A-29	Runway 17/35 Extension and Safety Area Improvements
A-30	Upgrade Visual Approach Aids and Runway Lighting
A-31	Roadway 17/35 Taxiway System Maintenance, Overlay, and Widening

Project ID	Project Name
A-32	Relocate Airport Beacon
A-33	Perimeter Road Improvements (Phase I)
AV-5885	Runway 6-24 Pavement Rehabilitation
A-35	Taxiway B Extension at Runway 24 Approach
A-36	2nd GA Hangar Aircraft Taxi Lane (North GA #2)
A-37	Runway 35 Wind Cone/PAPI Replacement
A-38	Emergency Boat Ramp Access Launch Rwy 6
A-39	1st Paved Aircraft Taxi Lane (East Ramp Lane #1)
A-40	T-Hangar Aircraft Taxi Lanes (East Ramp Lane #2)
A-41	Taxiway J Improvements
A-42	Additional Airline Service
A-43	Business Traveler Parking and/or Long Term Valet
A-44	Air Service to Raleigh
A-45	Lavatory Disposal Facilities
A-46	Fuel Farm

Sources:

- Cape Fear Transportation 2040 MTP (2015)
- Cape Fear Commutes 2035 MTP (2010)
- North Carolina 2018-2027 STIP (2017)
- North Carolina 2020-2029 STIP (2019)
- FAA Aerospace Forecast Fiscal Years 2018-2038 (2017)
- Wilmington International Airport ALP Update and Narrative (2018)
- ILM Master Plan Parts A-C (2005)

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APPENDIX G: Bicycle and Pedestrian Element

Current Trends

National trends have shown a commitment to making walking and bicycling a safer and more accessible transportation option for everyone. Since 1994, the share of trips made by pedestrians and bicyclists has risen from 7.9% to 11.5%. In this same time-frame, funding has increased from \$113 million to \$1.2 billion in 2009 and \$820 million in 2014. With more citizens choosing to walk and bike, there has been a growing concern for safety and, with that, a need for continued funding. Between 2003 and 2017, the percentage of traffic fatalities represented by pedestrians and bicyclists increased from 12.6% to 18.2%.

The increased investment in bicycle and pedestrian facilities at the national level has had a trickledown effect at the state and local levels. North Carolina's first statewide bicycle and pedestrian plan, *Bicycling and Walking in North Carolina: A Long-Range Transportation Plan*, was drafted and adopted in 1996. Since then, there have been many plans and programs implemented across the state to promote bicycle and pedestrian infrastructure.

Complete Streets

One emerging trend in North Carolina is the implementation of complete streets. NCDOT's "Complete Streets" policy, initially adopted in 2009 and updated in 2019, requires the consideration and incorporation of multimodal facilities in the design and construction of new transportation projects as well as improvements to existing transportation infrastructure. The policy is part of a national movement—NCDOT's policy was based on the Complete Streets Act of 2009, which recognized the significant influence of street design on public health, safety, the environment, economic vitality, and quality of life. The Act directed state departments of transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to adopt policies supporting innovative and inclusive transportation planning and to apply them to federally funded transportation projects. The WMPO Board adopted its "Complete Streets" policy in 2009, requiring all transportation projects within the WMPO's planning boundary to be designed in a balanced, responsible, and equitable way in order to accommodate and encourage travel by bicyclists, public transportation vehicles and their passengers, and pedestrians of all ages and abilities.

WalkBikeNC

In 2013, the NC Board of Transportation adopted WalkBikeNC, a comprehensive statewide plan for improving bicycling and walking conditions across North Carolina. This plan focused on five main principles: mobility, safety, health, the economy, and the environment. WalkBikeNC looks at how investments in sidewalks, bike lanes, and greenways benefit communities at relatively low costs. WalkBikeNC also considers statewide connectivity via East Coast Greenway and various North Carolina Bike Routes.

Local Trends

Bicycle and pedestrian improvements have been a high priority within the Wilmington region and have seen continued support from citizens and stakeholders. The success of the 2014 Wilmington Transportation Bond shows the financial commitment that citizens have made to improving the safety and connectivity of these facilities, with many roadway projects including bicycle and pedestrian elements in their design. WMPO member jurisdictions have also taken advantage of Direct Attributable Funds. As a Transportation Management Area (TMA), the WMPO receives federally distributed allocations of Surface Transportation Block Grant Program Direct Attributable (STBGP-DA) funds and Transportation Alternative Set Aside (TASA) funds annually. Both STBGP and TASA funds may be used for bicycle and pedestrian infrastructure projects. Member jurisdictions may apply to fund their projects this way through a competitive process, which requires a twenty percent local match in funding. In order to receive these funds, projects must be identified in the MTP, meet federal and state guidelines, and be completed within ten years. Examples of projects that have utilized Direct Attributable funds include Wrightsville Beach's Coral Drive sidewalks, Wilmington's Park Avenue multi-use path (MUP), and Carolina Beach's Island Greenway. Many communities within the WMPO planning boundary have taken additional steps towards improving bicycle and pedestrian facilities by adopting plans to guide infrastructure investments and allow for further funding. The WMPO has currently adopted the following bicycle and pedestrian plans:

- Carolina Beach Pedestrian Plan (2017)
- Leland Pedestrian Plan (2016)
- River to Sea Bikeway Master Plan (2013)
- Wilmington-New Hanover County Comprehensive Greenway Plan (2013)
- Cross-City Trail Master Plan (2012)
- Carolina Beach Bicycle Multi-Use Transportation Plan (2011)
- Pelican Drive/Salisbury Street Bicycle Plan for the Town of Wrightsville Beach (2009)
- Walk Wilmington: A Comprehensive Pedestrian Plan (2009)
- Comprehensive Bicycle Plan for Leland (2008)

As part of the planning process for Cape Fear Moving Forward 2045, public outreach was conducted through open houses and marketing campaigns to gather feedback from citizens. The responses revealed a desire for a variety of transportation options within the region, with over 60 percent rating alternative transportation options as an important factor when deciding where to live. Seventy-five percent of respondents stated that they would let their children walk or bicycle to school if conditions were safe and convenient. When assessing current barriers preventing people from walking and bicycling more, the most commonly noted improvements needed were more sidewalks and multi-use paths, safer intersections, and safer connections. In addition to providing opportunities for recreation and leisure, these facilities are a necessity for many residents of the

Wilmington Urban Area who depend on this mode of travel for the majority of their trips. In order to provide insight to planners on bicycle and pedestrian needs and to advocate for bicycle and pedestrian improvements in the region, the WMPO formed the Bicycle and Pedestrian Advisory Committee (BPAC) in 2006. This committee has representation from each member jurisdiction and was involved throughout the project prioritization process of this plan.

Technology

Technology is changing the bicycle and pedestrian landscape through shared mobility, micromobility, and easier access through the use of smartphones. Bike and scooter share programs in urban areas offer alternative transportation options for residents who want to make short-distance trips without a vehicle. Many of these trips begin and end with a few taps on a smartphone screen. The implementation of the “share economy” has been controversial in some areas due to safety concerns and the aesthetics of parking dockless bikes or scooters in the right-of-way. Shared stand-up electric scooters (e-scooters) have become a popular addition to the micromobility scene in recent years. Many of these scooter share programs have caused problems in US cities, with users leaving scooters in hazardous locations in the right-of-way or on private property, or riding the scooters in inappropriate or dangerous roads. New municipal ordinances and better relationships with vendors are improving the regulation of shared bike and e-scooter use. The City of Wilmington has shown interest in implementing a bike share program for its residents and visitors. City staff and leadership believe that a bike share program will benefit the City by offering an alternative to single-occupancy vehicles (SOVs) for short-distance trips, reducing parking demand, and potentially alleviating traffic congestion. Additionally, the increase in shared mobility programs across the United States is leading to the design and construction of more “complete streets,” which include MUPs, sidewalks, and marked crosswalks, rather than roads that only accommodate cars. Electric bicycles (e-bikes) are also growing in popularity. With an electric component that requires less pedal effort than a traditional bicycle, e-bikes can help the user reach speeds of 25-28 miles per hour and go farther without fatigue. E-bikes are being used primarily by commuting adults and in hilly areas. These technologies are enabling citizens to become less dependent on motor vehicles by utilizing healthier, sustainable methods of transportation.

Existing Conditions in the Region

Multi-Use Paths

MUPs combine bicycle and pedestrian infrastructure and are separated from motor vehicle traffic, offering ideal comfort and increased safety for users. When planned accordingly, MUPs can create convenient connections between community destinations, utilizing routes along existing roadways or traveling through parks, neighborhoods, shopping centers, and more. There are currently 35.6 miles of MUPs within the WMPO planning boundary. The following are examples of completed multi-use paths in the region:

Gary Shell Cross-City Trail

The Cross-City Trail runs from the Heide-Trask Drawbridge to James EL Wade Park, paralleling Eastwood Road, Mallard Street, Reigel Road, Wagoner Drive, Randall Parkway, Rosemont Avenue, Park Avenue Independence Boulevard, South 17th Street, Waltmoor Road, and Bethel Road. This trail serves as a route for commuting and leisure, but also provides a destination for tourism.

Central College Road Trail

Work on the 1.3-mile Central College Trail began in May 2018 and was completed in late 2019. This MUP, funded by the 2014 Wilmington Transportation Bond, travels along the west side of South College Road between 17th Street/Waltmoor Drive and Holly Tree Road. It connects to the Gary Shell Cross City Trail at 17th Street and will provide a future connection to the planned Greenville Loop Trail. The Central College Trail allows for safe walking and biking along South College Road and connects Pine Valley and other neighborhoods to the retail center located at the intersection of South College Road and 17th Street.

Island Greenway

Completed in the Spring of 2019, Carolina Beach's Island Greenway is a safe and convenient MUP located on the west side of the Town. Beginning at Mike Chappell Park, the Island Greenway offers scenic views as it travels south to Alabama Avenue. This project was built utilizing WMPO Direct Attributable funds and is part of the larger Island Greenway System, offering connections to Carolina Beach State Park as well as the Carolina Beach Pier and Boardwalk.

Future Multi-Use Paths

Planning has begun for various future MUPs to be funded by the 2014 Wilmington Transportation Bond. The Kerr Avenue Trail is a proposed 0.7-mile MUP along South Kerr Avenue that will provide a safe pedestrian route from the University of North Carolina at Wilmington (UNCW) campus and South College Road to commercial and residential areas along South Kerr Avenue and Randall Parkway. NCDOT's Kerr Avenue improvement project, which was completed in the Fall of 2019, added over a mile of bike lanes and sidewalks along Kerr Avenue from Randall Parkway to Martin Luther King Jr Parkway—the future Kerr Avenue Trail will connect to these new facilities. The Greenville Loop Road MUP is a proposed 4.3-mile path that will run the entire length of Greenville Loop Road, connecting neighborhoods to Bradley Creek Elementary School as well as the commercial areas at either end of Greenville Loop. Additionally, it will tie into the existing network of MUPs by connecting to the South College Trail and Cross-City Trail. The Masonboro Loop Trail is a proposed 1.4-mile MUP that will run along Masonboro Loop Road from Navaho Trail to Pine Grove Drive, connecting nearby neighborhoods to Parsley Elementary School, while providing safe bicycle and pedestrian access to commercial areas as well.

East Coast Greenway and Bicycle Highways

East Coast Greenway

The urban counterpart to the Appalachian Trail, the East Coast Greenway includes a 3,000-mile "spine" route from Calais, Maine to Key West, Florida with additional complimentary and scenic routes. Within the Wilmington Urban Area, the East Coast Greenway Spine Corridor is identified to follow US421, the Wilmington Riverwalk, Greenfield Lake Trail, South 17th Street, Independence Boulevard, River Road, Dow Road, Carolina Beach Island Greenway, Alabama Avenue, South Lake Park Boulevard, and South Fort Fisher Boulevard to the Fort Fisher-Southport Ferry. The East Coast Greenway Coastal Corridor is proposed to follow the Hampstead Bypass, Military Cutoff Road extension, Military Cutoff Trail, and Cross-City Trail to the Cameron Art Museum.

North Carolina Bicycling Highway 3 (Ports of Call)

NC 3 is an approximately 300-mile route from South Carolina to Virginia. Traveling along the Pamlico and Albemarle sounds, this route includes all of the most significant Colonial Era ports—Southport, Wilmington, New Bern, Bath, and Edenton. Points of interest in the Wilmington region include Fort Fisher State Historic Site and Carolina Beach State Park. Within the WMPO planning boundary, this route follows US421 on Pleasure Island (on-road bicycle lanes), River Road (on-road bicycle lanes), Burnett Boulevard, Central Avenue, Greenfield Lake Trail (MUP), Willard Street, 5th Avenue, Castle Street, Front Street, North 23rd Street, and Blue Clay Road.

North Carolina Bicycling Highway 5 (Cape Fear Run)

NC 5 runs approximately parallel to the Cape Fear River from just outside of the Triangle, in Apex, through the southeastern coastal plain, to the coast. Points of interest in the Wilmington region include the USS North Carolina Battleship Memorial, Carolina Beach State Park, and Fort Fisher State Historic Site. Within the WMPO planning boundary, this route follows US421 on Pleasure Island (on-road bicycle lanes), River Road (on-road bicycle lanes), Burnett Boulevard, Central Avenue, Greenfield Lake Trail (MUP), Willard Street, 5th Avenue, Castle Street, Front Street, the Isabel Holmes Bridge, and US421 north of downtown Wilmington.

Bicycle Facilities

Bicycle facilities encourage cycling by offering improved comfort for riders through increased roadway width and further separation between cars and cyclists. In North Carolina, cars must pass at least two feet to the left when overtaking a cyclist, unless in a no passing zone. In a no passing zone, cars must allow at least four feet or completely enter the left lane of the highway. Offering cyclists dedicated roadway through increased shoulder width or bike lanes provides increased safety for both cyclists and drivers. There are currently 56 miles of dedicated bike lanes, 36 miles of MUPs, and 5 miles of sharrows (shared lane markings) within the WMPO planning boundary. This is a centerline number that may represent roadways that have bike lanes on either one side or both sides. Other improvements proposed in this plan include:

On-Road Wide Outside Lane

For this type of facility, which is a standard on NCDOT roadways with urban areas, the right-most lane of roadway is 14 feet wide or more in order to accommodate motor vehicles and bicycles in the same shared travel lane. Example: Market Street between Colonial Drive and New Centre Drive

On-Road Paved Shoulder

Paved shoulders exist to the right of motor vehicle travel lanes and are delineated by a solid white line. NCDOT defines a paved shoulder as “the portion of the roadway contiguous with travel lanes that accommodates stopped vehicles, emergency vehicles, and reduces frequency of pavement maintenance.” Paved shoulders may be used by bicyclists and eventually transitioned into a designated bicycle lane.

On-Road Bicycle Lane

An on-road bicycle lane is a marked travel lane designed specifically for the use of bicyclists. Bicycle lanes are

a minimum of four feet wide, not including the concrete gutter, unless adjacent to on-street parking or on a roadway without curb and gutter. In these cases, bicycle lanes should be a minimum of six feet wide. Bicycle lanes are designed to limit conflicts between bicyclists and motor vehicles at driveways and side streets. Example: MacMillan Avenue between Hamilton Drive and Cedar Avenue

Bicycle Boulevard

A bicycle boulevard is a local, low-speed, low-volume roadway which has been optimized for use by bicyclists. Bicycle boulevards typically include bicycle parking, wayfinding signage, improved pedestrian and bicycle crossings at major roadways, shared lane pavement markings, speed limit reductions, traffic calming devices, and diversion of through-traffic. Example: Ann Street between S Front Street and S 15th Street

Off-Road MUP

An MUP is an eight- to twelve-foot-wide paved asphalt path for use by pedestrians and bicyclists. MUPs can be located within conservation areas, easements, parks, roadway rights-of-way, and public lands. Example: Belville Riverwalk and Trails

Pedestrian Facilities

The walking environment is the base from which all residents, employees, and visitors experience the region. The region's pedestrian network is vital to everyone, regardless of his or her transportation choice. There are currently 75 miles of sidewalks with 560 marked crosswalks within the WMPO planning boundary. Projects included in Cape Fear Moving Forward 2045 that improve safety and convenience for pedestrians in the region include:

Sidewalk

A sidewalk is a concrete walkway adjacent to a roadway for use by pedestrians. Sidewalks are typically five to eight feet wide. Example: US17 BUS/S 3rd Street between Market Street and Willard Street

MUP

An MUP is an eight- to twelve-foot-wide paved asphalt path for use by pedestrians and bicyclists. MUPs can be located within conservation areas, easements, parks, roadway rights-of-way, and public lands. Example: Brunswick Forest Parkway Side Path in Leland

Signalized Pedestrian Crossing

A signalized pedestrian crossing consists of a marked crosswalk with pedestrian signal heads located at an intersection with a traffic control signal. Signalized pedestrian crossings are actuated with push-buttons or concurrent with the parallel green phase during every signal cycle. Example: Intersection of Village Road and Fairview Road in Leland.

Mid-Block Pedestrian Crossing

A mid-block pedestrian crossing consists of a marked crosswalk at a location other than an intersection with a traffic control signal. Mid-block pedestrian crossings may or may not have warning lights or other devices.

Example: Causeway Drive at N Channel Drive in Wrightsville Beach

Bicycle and Pedestrian Modal Subcommittee

In order to analyze and propose recommendations for the development of bicycle and pedestrian facilities in the Wilmington Urban Area, the WMPO contacted subject matter experts in bicycle and pedestrian planning, bicycling and pedestrian safety, and bicycle and pedestrian advocacy to form a Bicycle and Pedestrian Subcommittee. Specifically, the WMPO worked with the following organizations to develop the recommendations in this element:

- Citizens Advisory Committee (CAC)
- WMPO Bicycle and Pedestrian Advisory Committee (BPAC)
- Disability Resource Center
- Wilmington and Beaches Convention & Visitors Bureau
- Cape Fear Public Transit Authority (Wave Transit)
- NCDOT BikePed Division
- NCDOT Division 3
- NCDOT Transportation Planning Branch

During Bicycle and Pedestrian Subcommittee meetings, WMPO staff initiated group discussions by presenting pertinent facts, relevant information, and public survey results related to the current and future state of bicycle and pedestrian facilities throughout the Wilmington region. Under the direction of the CAC, WMPO staff worked with the Bicycle and Pedestrian Subcommittee to develop recommendations for the following components of this element:

- Goals and Objectives
- Project Scoring Criteria
- Policies

Recommendations from the Bicycle and Pedestrian Subcommittee were presented to the CAC, Technical Coordinating Committee (TCC), and WMPO Board for further review and modification before being incorporated into Cape Fear Moving Forward 2045. Public input was also critical to the development of this element and is further discussed in the Public Involvement Element (Appendix D).

Bicycle and Pedestrian Modal Goals and Objectives

Goals and objectives for the development of this element were created over a series of Bicycle and Pedestrian Subcommittee meetings and serve three distinct purposes within the element. First, the goals and objectives guided the overall development of the element. Second, the goals and objectives were used as the criteria on which to base the scoring of bicycle and pedestrian projects in order to determine which projects were of greatest funding priority. Finally, the goals and objectives guided the development of policies which will ultimately be used to guide action on bicycle and pedestrian issues in the Wilmington region over the next 25 years. Because the goals and objectives served such a critical role in the development of the bicycle and pedestrian element, each was reviewed by CAC, TCC, and WMPO Board alongside the overall plan vision

and goals before being utilized in the development of Cape Fear Moving Forward 2045.

The goals and objectives for the bicycle and pedestrian element can be found below.

Goals and Objectives: Bicycle Facilities

Goal A: Safety, Education, and Enforcement

Objectives:

1. Promote a campaign to educate law enforcement officers, motorists, bicyclists, and pedestrians on laws and etiquette of sharing the road
2. Encourage law enforcement efforts to increase cyclist safety
3. Build facilities and traffic engineering solutions that prioritize cycling safety (signage, smart traffic lights, lighting, call boxes, etc.) while considering the nature of adjacent traffic and the presence of any conditions hazardous to cycling (bridge gratings, roundabouts, discontinuous bike lanes, etc)
4. Increase driver education on motoring safely and legally with cyclists
5. Increase cyclist education on riding safely and legally with motorists
6. Contribute to a comprehensive, integrated, and validated reporting system for documenting bicycle (and pedestrian) crash data, including frequency, severity, location, time of day, and atmospheric conditions
7. Promote the development of laws and ordinances to promote bicyclist safety

Goal B: Multimodal Connectivity

Objectives:

1. Distribute information to increase bike trail and connection awareness through various public and private opportunities
2. Improve connections between bicycling & other modes of transportation (public transportation and ferries)
3. Develop programmatic elements such as increasing the capacity for bicycles on buses and the creation of bicycle amenities at bus stops) to ease the transition between bicycling and public transportation
4. Implement a bike share program that is integrated with the fixed-route public transportation network

Goal C: Built Environment, Land Use, and Connectivity

Objectives:

1. Build bicycle facilities and remove barriers in areas with high employment densities such as medical campuses and retail centers
2. Increase bicycling facilities that fall within one mile of school campuses
3. Increase bicycle connections between parks and residential areas
4. Increase bicycle facility connections to grocery stores and resource centers
5. Increase connections to existing bicycling facilities, including school campuses
6. Increase accommodation of older adults, persons with disabilities, and young and low-income populations during the design of bicycle facilities and amenities (i.e. age-friendly design features)
7. Build bicycle facilities that allow safe usage of bridges, roundabouts, overpasses, and other geographical barriers
8. Build bicycle facilities that mitigate barriers in the existing built environment
9. Build trail connections that fill gaps in the roadway system that will allow for an uninterrupted bicycle route

10. Create off-road and recreational trails

Goal D: Health

Objectives:

1. Provide health indicators and data along branded trails
2. Designate signed exercise loops for bicycling

Goal E: Economic Development

Objectives:

1. Increase bicycle tourism in our region
2. Increase access and mobility projects targeting identified areas of low-income and minority residents
3. Incentivize public/private development around biking
4. Develop sponsorship policies and identify sponsorship opportunities (i.e. adopt-a-roadway program)
5. Develop a program to recognize bicycle-friendly businesses
6. Incorporate mobile technology into the trail system
7. Increase accommodation of major cycling events in facility design

Goals and Objectives: Pedestrian Facilities

Goal A: Safety, Education, and Enforcement

Objectives:

1. Increase the number of crosswalks at existing signals, focusing on high-traffic areas
2. Increase the use of audible pedestrian signals and flashing lights
3. Increase driver education specifically related to turning movements and crosswalk compliance
4. Promote law enforcement efforts to increase pedestrian safety
5. Prioritize pedestrian projects that occur at, or seek to improve the safety of, identified high risk/high crash locations
6. Contribute to a comprehensive, integrated, and validated reporting system for documenting bicycle and pedestrian crash data
7. Promote roadway and sidewalk design/redesign that increases pedestrian safety (adequate crossing times, medians, street trees, brick crossings, lighting, emergency call boxes, etc.)
8. Increase visual cues that prioritize pedestrian safety (traffic calming, “legally required to stop” cones, etc.)

Goal B: Transportation Choice

Objectives:

1. Improve sidewalk and crosswalk conditions depending on the nature of adjacent traffic
2. Evaluate the installation of sidewalks and crosswalks based on residential and employment density
3. Install crosswalks near bus stops
4. Increase/improve sidewalk and crosswalk connections between transit facilities and medical services

Goal C: Built Environment, Land Use, and Connectivity

Objectives:

1. Increase pedestrian facilities that fall within one mile of school campuses
2. Increase pedestrian connections between parks and residential areas

3. Increase pedestrian facilities around libraries, community centers/senior centers, courthouses, local government centers, etc.
4. Increase pedestrian facility connections around grocery stores/farmers markets/resource centers
5. Increase connections between existing pedestrian facilities
6. Increase direct connections to public transportation and paths of travel from bus stops to surrounding destinations
7. Use traffic impact analyses (TIAs) to increase pedestrian connectivity
8. Plan for pedestrian facilities with the installation and upgrade of other transportation facilities
9. Create trail links that fill gaps between low-traffic roadways to allow for pedestrian use while continuing to preserve the low-traffic status of those roadways.
10. Build pedestrian facilities that mitigate barriers in the existing built environment

Goal D: Health

Objectives:

1. Incorporate health statistics and case studies in the promotion of transportation demand management (TDM) programs and wellness programs
2. Designate exercise loops for walking

Goal E: Economic Development

Objectives:

1. Create and promote walking tours in our region through initiatives
2. Include pedestrian facility design in new developments
3. Create sponsorship policies for walking trails and identify sponsorship opportunities
4. Develop a program to recognize pedestrian-friendly development
5. Incorporate mobile technology into the trail system
6. Include accommodation of major events in facility design
7. Develop downtown pedestrian-friendly shopping areas

Project Scoring Criteria

The list of needed bicycle and pedestrian projects was quantitatively scored and ranked by the Bicycle and Pedestrian Modal Subcommittee based on the goals and objectives identified in this element. The scoring system, developed by the Subcommittee, is shown on the following page. This ranked list, which was then evaluated and revised by the CAC, TCC, and WMPO Board, served as the basis for the fiscal constraint analysis determining which projects are anticipated to receive funding in the region between 2020 and 2045, as is discussed in the Financial Element (Appendix E).

Bicycle and Pedestrian Scoring System

Scale	Goal	Criteria	Attribute	Score
25	Safety, Education, and Enforcement	Build facilities and traffic engineering solutions that prioritize cycling safety	Functional classification of adjacent/intersecting facility (Arterial=10, Collector=6, Local=2)	10
		Increase the number of crosswalks at existing signals		
		Prioritize pedestrian projects that occur at, or seek to improve the safety of high risk/high crash locations	Bicycle and/or pedestrian high-crash location (K=15, A=13, B=10, C=8, O=5)	15
20	Multimodal Connectivity and Transportation Choice	Improve connections between bicycling and other modes of transportation	Project intersects roadway or project is an intersection improvement located within a reasonable distance of a transit stop (0.25 mi=10, 0.5 mi=5, 0.75 mi=2)	10
		Install crosswalks near bus stops		
		Evaluate the installation of sidewalks and crosswalks based on residential and employment density	Project is located within an area of high household (HH) density or high employment (HE) density (HH+HE=10, HH or HE=5)	10
35	Built Environment, Land Use, and Connectivity	Increase bicycling facilities within 1 mile of school campuses	Project falls within 1 mile of a school or within a reasonable distance of a grocery store or community resource center (school 1 mi=6) (grocery/resource 0.25 mi=6, 0.5mi=4, 0.75mi=2)	12
		Increase bicycle connections to grocery stores and resource centers		
		Increase pedestrian facilities within 1 mile of school campuses		
		Increase pedestrian connections around grocery stores and resource centers		
		Build pedestrian facilities that mitigate barriers in the existing built environment	Functional classification of adjacent/intersecting facility OR geographic barrier i.e. river (Arterial/Barrier=10, Collector=6, Local=2)	10
		Increase bicycle connections between parks and residential areas	Project provides a connection or fills a gap providing connection from a recreation area or community or government center (0.25mi=5, 0.5mi=3, 0.75mi=1)	5
		Increase pedestrian connections between parks and residential areas		
		Increase pedestrian facilities around libraries, community/senior centers, courthouses and government centers		
		Increase connections between existing pedestrian facilities	Project fills a gap in an existing network (>2000'=8, 1,000'-2,000'=5, <1,000'=3)	8
20	Economic Development	Increase bicycle tourism	Connects or fills a gap providing a complete connection to a Point of Interest (POI) (Y/N)	6
		Develop downtown pedestrian-friendly shopping areas		
		Increase access and mobility projects targeting identified areas of low-income and minority residents	Project located in or connects to low-income, minority, and/or Limited English Proficiency (LEP) identified area (all=10, low-income=4, minority=3, LEP=3)	10
		Increase accommodation or major cycling events in facility design	Project falls on identified event route (Y/N)	4
		Include accommodation of major pedestrian events in facility design		

Policies

The policies below were developed by the Bicycle and Pedestrian Modal Subcommittee based on the goals and objectives of this element. These policies will be used to guide action on bicycle and pedestrian issues in the Wilmington region. Each policy was reviewed through public outreach and by the CAC, TCC, and WMPO Board before being included in Cape Fear Moving Forward 2045.

The WMPO will work with member agencies to do the following:

- Develop and maintain a safety campaign for drivers, cyclists, and pedestrians.
- Focus on improving bicycle and pedestrian safety at intersections using best practices and emerging tools.
- Give high priority to safety improvements in the vicinity of schools, public transit, commercial corridors, and other high-use bicycle and pedestrian destinations.
- Work toward addressing and improving challenging intersections and physical barriers, and consider pedestrian and bicycle movement in the planning stages for new or reconstructed facilities.
- Proactively seek new opportunities for acquisition of abandoned rights-of-way, natural waterways, utility rights-of-way, and other lands for the development of new facilities that integrate with the planned system.
- Encourage events that introduce residents to walking and bicycling, such as Walk/Bike to Work, Walk/Bike to School, the River to Sea Bike Ride, and charity or fundraising events.
- Accommodate all types, ages, and abilities of users in a comfortable manner throughout the system, while recognizing that all modes of travel and/or level of user ability may not necessarily be accommodated on every road or path.
- Support the development and adoption of local bicycle and pedestrian plans that identify projects to create an integrated and multimodal transportation system for the region.
- Express interest in an increased availability of regional, state, and federal funding sources for bicycle and pedestrian transportation projects.
- Utilize the WMPO TDM Committee (Go Coast Committee), when appropriate, to develop projects, programs, initiatives, and events that support active transportation choices.
- Continue to support the recommendations of the WMPO BPAC.
- Seek all possible funding sources to implement programs and projects. Work with federal, state, regional, and local agencies as well as any other available public or private funding sources to secure funding for the bicycle and pedestrian system.
- Support the incentivization of public/private partnership development of bicycle and pedestrian facilities.

Fiscally-Constrained Bicycle and Pedestrian Project List



Fiscally-constrained,
programmed in
2018-2027 STIP,
2020-2029 STIP



Fiscally-constrained
projects



Unfunded during
planning horizon

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
1	EB-6039	St Joseph Street/Lewis Drive Bike Lanes	2025	\$572,222
2	U-6233	US421/S Lake Park Blvd & Hamlet Avenue Improvements	2025	\$270,000
3	BP-700	Market Street & Lullwater Drive Crosswalk Improvements	2025	\$28,300
4	BP-35	College Road MUP (Phase 1)	2025	\$2,920,000
5	BP-559	Cross City Trail MUP	2025	\$2,750,000
6	BP-52	Oleander Drive Bike/Ped Improvements	2025	\$1,770,000
7	BP-36	College Road MUP (Phase 2)	2025	\$2,480,000
8	BP-681	Oleander Drive & Dawson Street Crosswalk Improvements	2025	\$74,000
9	BP-233	Floral Pkwy Bike/Ped Improvements	2025	\$850,000
10	BP-619	Carolina Beach Road & Antoinette Drive Crosswalk Improvements	2025	\$75,700
11	BP-661	College Road & Randall Pkwy Crosswalk Improvements	2025	\$28,300
12	BP-589	Carolina Beach Road & Shipyard Blvd Crosswalk Improvements	2025	\$53,400
13	BP-649	New Centre Drive & N College Road Pedestrian Signal	2025	\$53,800
14	BP-604	Lewis Drive & N Lake Park Blvd Crosswalk Improvements	2025	\$63,200
15	BP-846	St. Joseph Street & N Lake Park Blvd Crosswalk Improvements	2025	\$29,200
16	BP-147a	Central Blvd/Morningside Drive Bike Lanes (Phase 1)	2025	\$63,800
17	BP-765	10th Street & Wooster Street Crosswalk Improvements	2025	\$61,200
18	BP-636	University Drive & S College Road Crosswalk Improvements	2025	\$47,400
19	BP-370	Front Street Sharrows (Phase 1)	2025	\$30,000
20	BP-560	US421/Carolina Beach Road & Halyburton Pkwy Crosswalk Improvements	2025	\$75,100
21	BP-698	Market Street & Barclay Hills Drive Crosswalk Improvements	2025	\$39,800
22	BP-744	10th Street & Dawson Street Crosswalk Improvements	2025	\$61,200
23	BP-775	Military Cutoff Road & Destiny Way/Fresco Drive Crosswalk Improvements	2025	\$50,800
24	BP-774	Military Cutoff Road & Sir Tyler Drive/Main Street Crosswalk Improvements	2025	\$50,800

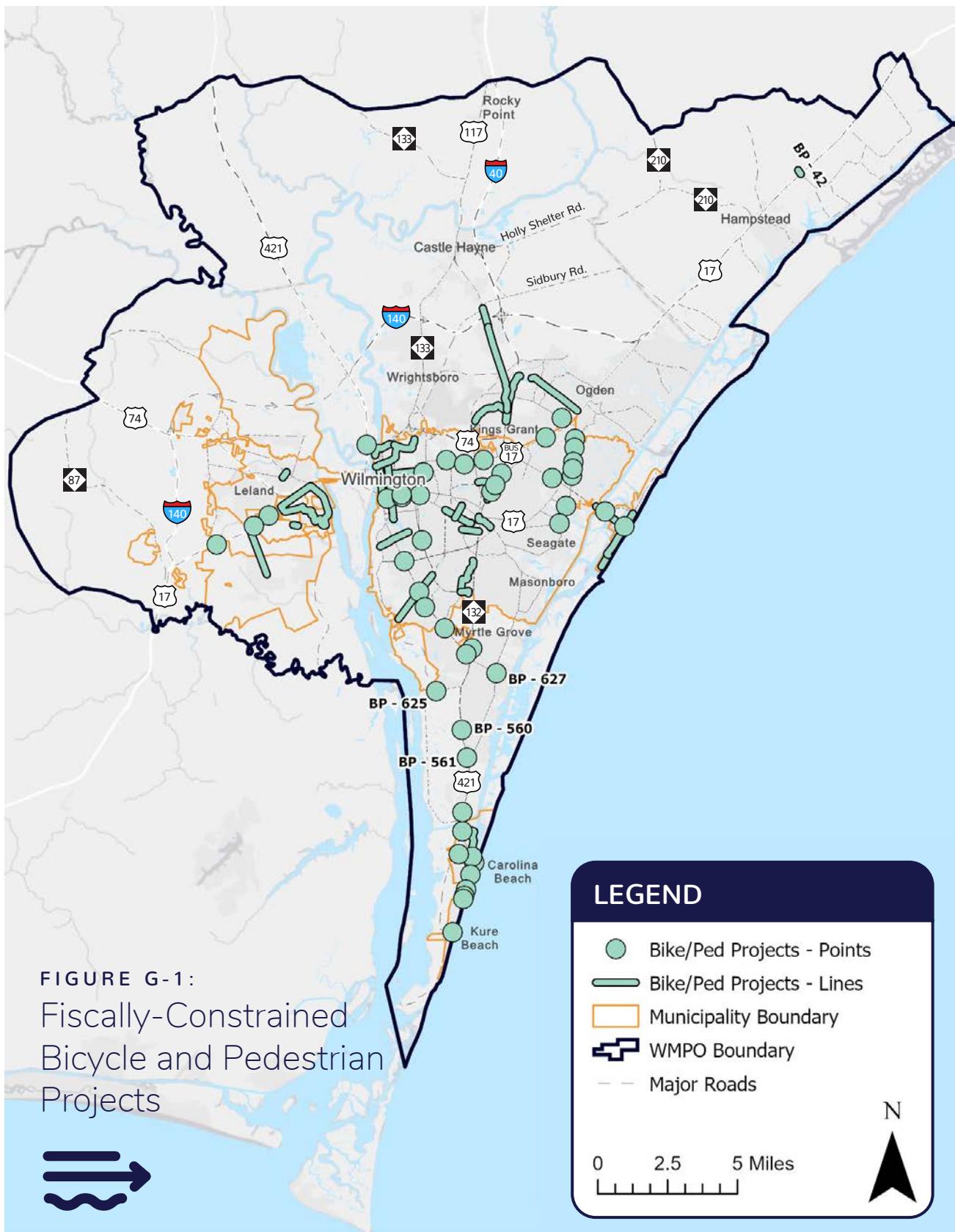
Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
25	BP-591	Greenville Loop Road & Oleander Drive Crosswalk Improvements	2025	\$40,100
26	BP-471	Front Street Sharrows (Phase 2)	2025	\$20,000
27	BP-441	Causeway Drive Sharrows	2025	\$80,000
28	BP-584	College Road & Shopping Center Entrance Crosswalk Improvements	2025	\$65,500
29	BP-590	Military Cutoff Road & Wrightsville Avenue Crosswalk Improvements	2025	\$40,000
30	BP-597	17th Street & Glen Meade Road Crosswalk Improvements	2025	\$75,400
31	BP-639	S 21st Street & Market Street Crosswalk Improvements	2025	\$48,700
32	BP-669	3rd Street & Dawson Street Crosswalk Improvements	2025	\$62,500
33	BP-635	Parker Farm Drive & Military Cutoff Road Crosswalk Improvements and Pedestrian Signal	2025	\$41,000
34	BP-754	Princess Place Drive & 30th Street Crosswalk Improvements	2025	\$67,800
35	BP-594	Carolina Beach Road & Independence Blvd Crosswalk Improvements	2025	\$65,500
36	BP-633	Military Cutoff Road & Cayman Court Pedestrian Signal	2025	\$50,300
37	BP-579	Military Cutoff Road & Station Road Crosswalk Improvements	2025	\$50,400
38	BP-642	Eastwood Road & Bay Creek Drive Crosswalk Improvements	2025	\$28,300
39	BP-442	Lumina Avenue Sharrows	2025	\$150,000
40	BP-795	Gordon Road & Netherlands Drive Crosswalk Improvements	2025	\$51,400
41	BP-239	Brunswick Nature Park Connector (Phase 1)	2025	\$3,740,000
42	BP-839	US17 & W Gate Drive/Grandiflora Drive Crosswalk Improvements	2025	\$65,500
43	BP-563	Causeway Drive & Salisbury Street Crosswalk Improvements	2025	\$52,300
44	BP-855	Echo Farms Blvd & Belfairs Drive Crosswalk Improvements	2025	\$78,600
45	BP-849	S Lake Park Blvd & Carolina Beach Lake Park Access Crosswalk Improvements	2025	\$29,200
46	BP-561	Carolina Beach Road & Myrtle Grove Road Pedestrian Signal	2025	\$74,300
47	BP-546	Central College Road Trail MUP	2030	\$2,490,000
48	BP-15	Independence Blvd MUP (Phase 2)	2030	\$2,240,000
49	BP-28	Causeway Drive Bicyclist Improvements Streetscape/Road Diet	2030	\$1,160,000
50	BP-381	John D. Barry Drive Bike Lanes	2030	\$2,500,000
51	BP-361	Central College Road Trail Extension Bike Lanes	2030	\$2,420,000
52	BP-281	Waynick Blvd Bike Lanes/Sharrows	2030	\$1,090,000

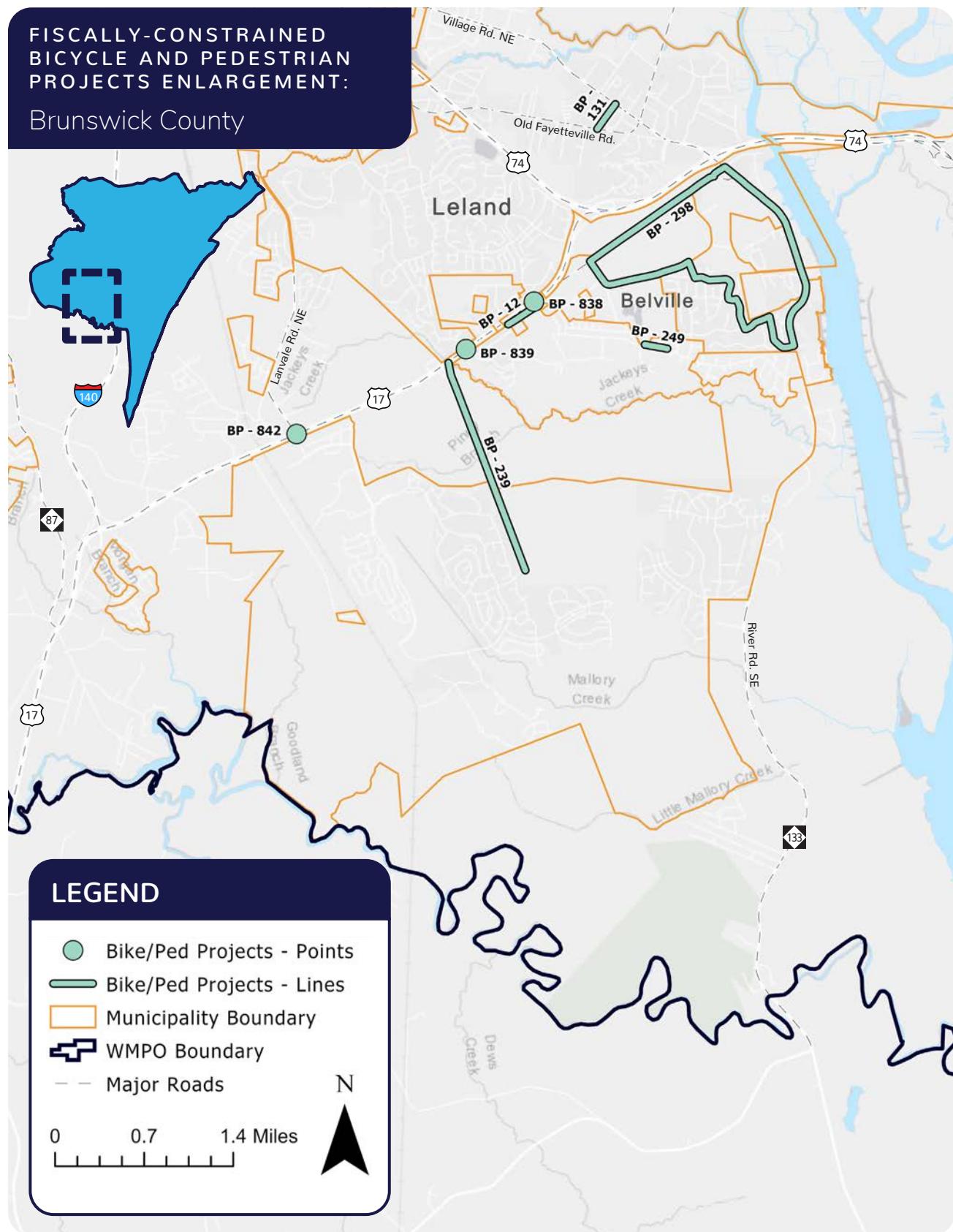
Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
53	BP-298	Chappell Loop Shoulder Bike Lanes & Sharrows	2030	\$190,000
54	BP-580	Carolina Beach Road & Mateo Drive Crosswalk Improvements	2030	\$90,200
55	BP-626	River Road & Carolina Beach Road Crosswalk Improvements	2030	\$73,900
56	BP-644	Causeway Drive & Lumina Street Crosswalk Improvements	2030	\$32,800
57	BP-838	US17 & Olde Waterford Way/Ploof Road SE Crosswalk Improvements	2030	\$62,800
58	BP-842	US17 & Lanvale Road NE/Provision Pkwy Crosswalk Improvements	2030	\$120,000
59	BP-851	North Carolina Avenue & S Lake Park Blvd Crosswalk Improvements	2030	\$33,900
60	BP-792	US17/Market Street & Green Meadows Drive Crosswalk Improvements	2030	\$59,500
61	BP-854	Harper Avenue & 7th Street Crosswalk Improvements	2030	\$33,900
62	BP-468b	Downtown Trail Greenway MUP (Phase 2)	2035	\$6,840,000
63	BP-556	17th Street NHC Library Connection MUP	2035	\$2,650,000
64	BP-860	Heide Trask Bridge Sidewalk Realignment	2035	\$3,790,000
65	BP-12	US17 MUP	2035	\$530,000
66	BP-1	5th Avenue Bike Lanes	2040	\$2,240,000
67	BP-468a	Downtown Trail Greenway MUP (Phase 1)	2040	\$8,310,000
68	BP-49	Peachtree Avenue MUP	2040	\$2,760,000
69	BP-406	Princess Street Sharrows	2040	\$130,000
70	BP-193	Lake Avenue Bike Lanes & Sidewalks	2040	\$1,410,000
71	BP-845	Harper Drive & Canal Drive Crosswalk Improvements	2040	\$59,200
72	BP-572	US421 & Isabel Holmes Bridge Crosswalk Improvements	2040	\$65,900
73	BP-625	Sanders Road & River Road Crosswalk Improvements	2040	\$93,000
74	BP-843	K Avenue & US421 Crosswalk Improvements	2040	\$110,000
75	BP-852	South Carolina Avenue & S Lake Park Blvd Crosswalk Improvements	2040	\$45,500
76	BP-131	Town Hall Drive Sidewalk	2040	\$243,825
77	BP-853	Texas Avenue & S Lake Park Blvd Crosswalk Improvements	2040	\$45,500
78	BP-432	South Smith Creek Trail MUP	2045	\$10,130,000
79	BP-14/ BP-285	Independence Blvd MUP (Phase 1)	2045	\$5,510,000
80	BP-627	Piner Road & Myrtle Grove Road Crosswalk Improvements	2045	\$110,000
81	BP-42	Jenkins Road Bike/Ped Improvements	2045	\$1,090,000

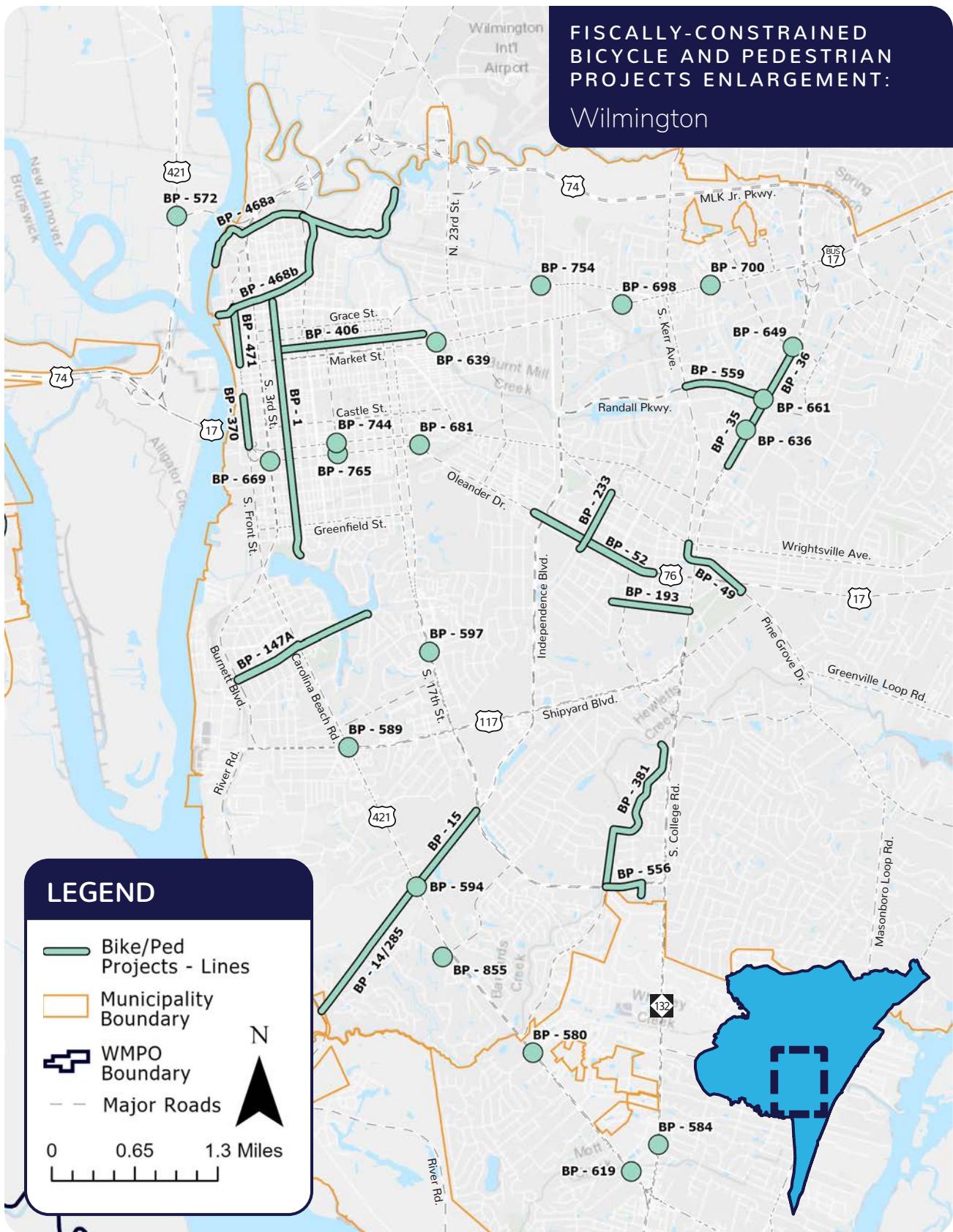
Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
82	BP-249	Jackeys Creek Connector MUP	2045	\$480,000
83	BP-268	Leland/Wilmington Bike/Ped Connection MUP	2045+	\$48,320,000
84	BP-456	College Road Bike Lanes	2045+	\$27,340,000
85	BP-270	3rd Street MUP	2045+	\$10,490,000
86	BP-861	Market Street Bike Lanes	2045+	\$11,790,000
87	BP-308	Shipyard Trail MUP	2045+	\$15,810,000
88	BP-457	Kerr Avenue Bike Lanes	2045+	\$14,510,000
89	BP-458	Wrightsville Avenue Bike/Ped Improvements	2045+	\$35,430,000
90	BP-303	Dow Road Trail MUP	2045+	\$24,770,000
91	BP-316	River to Sea Trail MUP	2045+	\$21,710,000
92	BP-373	Gordon Road Bike/Ped Improvements	2045+	\$34,070,000
93	BP-788	3rd Street & Brunswick Street Crosswalk Improvements	2045+	\$51,100
94	BP-16	Independence Blvd Extension MUP	2045+	\$7,960,000
95	BP-307	Carolina Beach Road Trail MUP	2045+	\$29,080,000
96	BP-426	North Smith Creek Trail MUP	2045+	\$25,650,000
97	BP-464	Carolina Beach Road Bike/Ped Improvements	2045+	\$48,350,000
98	BP-45	Wilshire Blvd Bike/Ped Improvements	2045+	\$12,270,000
99	BP-277	Masonboro Loop Trail MUP (Phase 1)	2045+	\$17,800,000
100	BP-336	Airlie Road MUP	2045+	\$12,750,000
101	BP-398	New Centre Drive Bike/Ped Improvements	2045+	\$21,840,000
102	BP-396	Military Cutoff Road Bike Lanes	2045+	\$7,100,000
103	BP-722	N 3rd Street & Red Cross Street Crosswalk Improvements	2045+	\$51,100
104	BP-297	Village Road Loop MUP, Shoulder Bike Lanes, Sharrows	2045+	\$10,720,000
105	BP-147b	Central Blvd/Morningside Drive Bike Lanes (Phase 2)	2045+	\$10,820,000
106	BP-324	US421 Trail MUP	2045+	\$29,400,000
107	BP-269	Masonboro Loop Trail MUP (Phase 2)	2045+	\$22,340,000
108	BP-551	Central Lake Park Blvd Sidewalks	2045+	\$18,990,000
109	BP-581	Carolina Beach Road & College Road Crosswalk Improvements	2045+	\$150,000
110	BP-39	Burnt Mill Creek Path MUP	2045+	\$10,720,000
111	BP-646	College Road & Oleander Drive Crosswalk Improvements and Pedestrian Signal	2045+	\$140,000
112	BP-305	South Carolina Beach Road Trail	2045+	\$25,330,000
113	BP-423	Market Street Rail Trail	2045+	\$22,090,000

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
114	BP-648	Military Cutoff Road & Eastwood Road Crosswalk Improvements	2045+	\$51,100
115	BP-306	South River Road Trail (Phase 2)	2045+	\$41,480,000
116	BP-355	Castle Hayne Road Bike Lanes (Phase 1)	2045+	\$12,370,000
117	BP-437	Castle Hayne Road Bike Lanes (Phase 2)	2045+	\$11,700,000
118	BP-276	River Road MUP	2045+	\$23,160,000
119	BP-397	New Centre Drive Bike Lanes (Phase 1)	2045+	\$4,880,000
120	BP-304	Snow's Cut Bike/Ped Bridge	2045+	\$21,230,000
121	BP-433	Myrtle Grove Road Trail	2045+	\$25,880,000
122	BP-280	College Acres MUP	2045+	\$8,170,000
123	BP-325	Wrightsville Beach Trail	2045+	\$33,250,000
124	BP-349	Cape Fear Blvd	2045+	\$11,350,000
125	BP-574	Drysdale Drive & Military Cutoff Road Crosswalk Improvements	2045+	\$55,900
126	BP-647	Market Street & Gordon Road Crosswalk Improvements & Pedestrian Signal	2045+	\$140,000
127	BP-345	Blue Clay Road Bike Lanes (Phase 2)	2045+	\$12,020,000
128	BP-301	I-140 East Trail	2045+	\$33,370,000
129	BP-430	North River Road Trail (Remaining Section)	2045+	\$14,970,000
130	BP-856	Cape Fear River Crossing	2045+	\$25,460,000
131	BP-240	Blackwell Road SE Trail	2045+	\$5,530,000
132	BP-859	Brunswick Forest to Town Creek Park and Schools	2045+	\$14,430,000
133	BP-238	Brunswick Nature Park Connector (Phase 2)	2045+	\$11,370,000
134	BP-322	Carolina Beach Waterfront Trail MUP	2045+	\$4,710,000
135	BP-326	Rogersville Road Trail	2045+	\$6,740,000
136	BP-409	St. Joseph Street Bike Lane & Sidewalk	2045+	\$18,610,000
137	BP-273	Country Club Road MUP	2045+	\$10,200,000
138	BP-577	Bayshore Drive & Market Street Crosswalk Improvements	2045+	\$120,000
139	BP-247	Sloop Point Loop Road MUP	2045+	\$14,200,000
140	BP-411	Sidbury Road Bike/Ped Improvements	2045+	\$7,100,000
141	BP-246	Fort Fisher Blvd Bike/Ped Improvements	2045+	\$2,850,000
142	BP-179/ BP-209	Hampstead Bypass Path	2045+	\$57,890,000
143	BP-56	Claredon Avenue MUP	2045+	\$6,130,000
144	BP-165	Navaho Trail MUP	2045+	\$16,440,000

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
145	BP-13	West Gate Park Connector	2045+	\$3,980,000
146	BP-180	NC133 MUP (Phase 1)	2045+	\$4,960,000
147	BP-212	US117/College Road Bike/Ped Improvements	2045+	\$10,260,000
148	BP-178	Sidbury Road Bike/Ped Improvements	2045+	\$26,130,000
149	BP-146	Halifax Road Bike/Ped Improvements	2045+	\$6,160,000
150	BP-223	Hoover Road MUP	2045+	\$3,870,000
151	BP-275	Landsdown Road MUP	2045+	\$4,520,000
152	BP-862	Leland MUP	2045+	\$14,700,000
153	BP-261	Cedar Hill Road MUP	2045+	\$4,980,000
154	BP-282	South River Road Trail (Phase 1)	2045+	\$4,960,000
155	BP-237	Fletcher Road NE MUP	2045+	\$3,330,000
156	BP-286	Ploof Road Path MUP	2045+	\$3,660,000
157	BP-300	Porters Neck Road Trail MUP	2045+	\$28,290,000
158	BP-337	Alabama Avenue MUP	2045+	\$4,670,000
159	BP-858	Belville Elementary Connector in Belville MUP	2045+	\$2,300,000
160	BP-248	Chappell Loop Road MUP	2045+	\$8,230,000
161	BP-201	NC133 MUP (Phase 2)	2045+	\$4,150,000
162	BP-206	Island Creek Road Bike/Ped Improvements	2045+	\$24,160,000
163	BP-43	St. Johns Church Road Bike/Ped Improvements	2045+	\$2,300,000
164	BP-97	Plantation Road MUP	2045+	\$9,610,000
165	BP-224	Hoover Road MUP	2045+	\$43,970,000
166	BP-376	Holly Shelter Road Bike/Ped Improvements	2045+	\$29,730,000
167	BP-469	Ocean Blvd MUP	2045+	\$9,190,000
168	BP-834	Ocean Avenue & Island Greenway Crosswalk Improvements	2045+	\$52,100
169	BP-272	Mallory Creek MUP	2045+	\$5,460,000
170	BP-344	Blue Clay Road Bike Lanes (Phase 1)	2045+	\$8,730,000
171	BP-323	Western Rail Corridor Trail MUP	2045+	\$12,310,000
172	BP-857	Apache Trail MUP	2045+	\$1,820,000
173	BP-341	Bayfield Drive Sharrows	2045+	\$170,000
174	BP-194	Independence Mall Frontage Bike/Ped Improvements	2045+	\$5,050,000

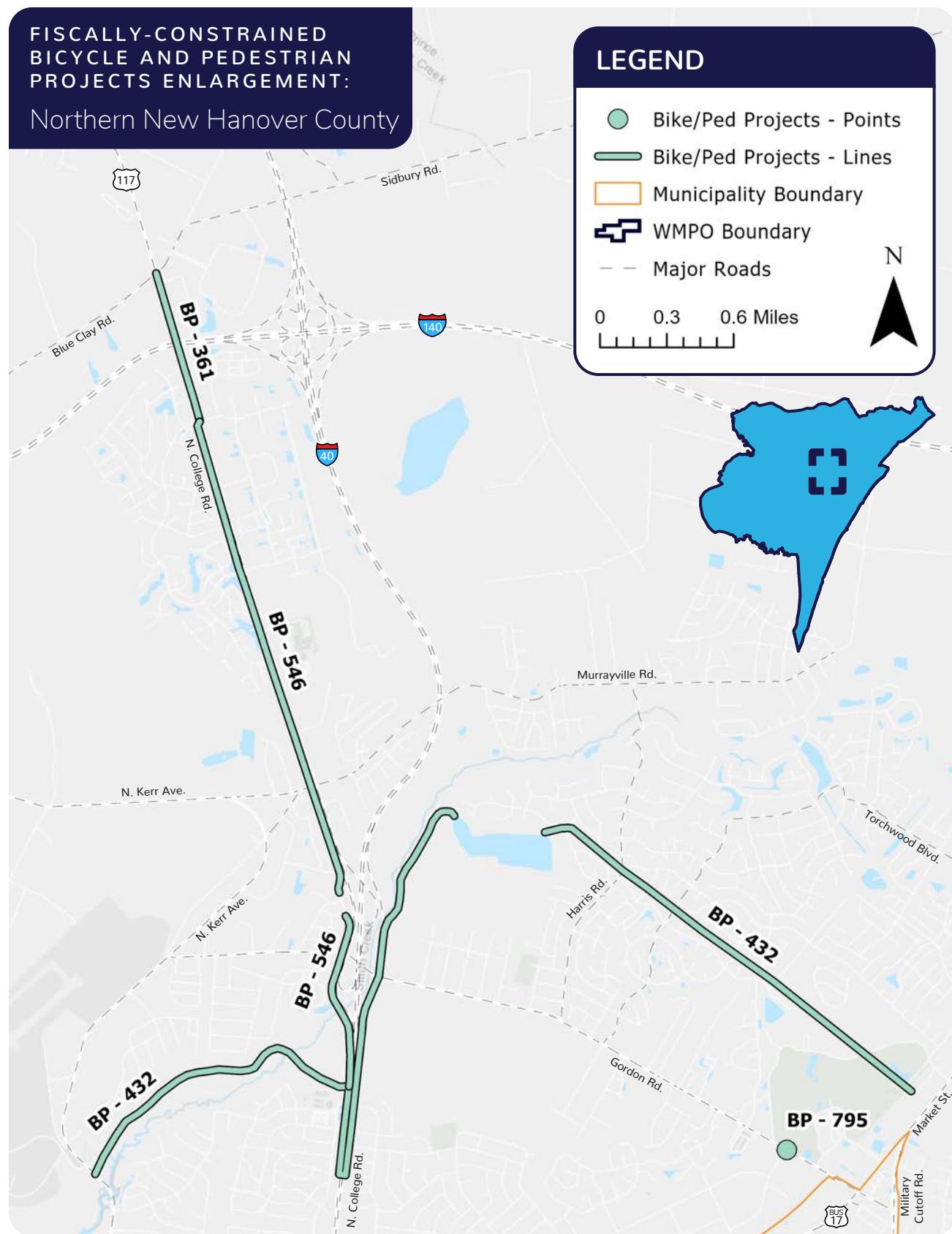












St Joseph Street/Lewis Drive Bike Lanes						EB-6039
Project Location: St Joseph Street/Lewis Drive		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Lake Park Blvd	Access Drive	Bike lanes	6,864 LF	5' (each side)	2025	\$572,222
Additional Notes						
<ul style="list-style-type: none"> • Project includes widening of existing pavement to allow for 2-way, 9' travel lanes and 5' striped bike lanes 						

US421/S Lake Park Blvd & Hamlet Avenue Improvements						U-6233
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
From	To					
Intersection of US421/S Lake Park Blvd & Hamlet Avenue	Traffic signal	N/A	2025	\$270,000		
	Ped heads	N/A				
	Additional crosswalk	10'				
NOTE: Pedestrian signal heads to include ADA-audible pedestrian buttons						

Market Street & Lullwater Drive Crosswalk Improvements						BP-700
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
From	To					
Intersection of Market Street & Lullwater Drive		Painted crosswalks	10'	2025	\$28,300	
NOTE: Curb ramps in place						

College Road MUP (Phase 1)						BP-35
Project Location: College Road		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Hurst Drive	Randall Pkwy	MUP	3,170 LF	10'	2025	\$2,920,000

Cross City Trail MUP						BP-559
Project Location: Randall Pkwy		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
S Kerr Avenue	College Road	MUP	3,300 LF	10'	2025	\$2,750,000

Oleander Drive Bike/Ped Improvements						BP-52
Project Location: Oleander Drive		Facility Type	Width	Project Horizon Year	Planning Year Cost	
From	To					
Hawthorne Road	42nd Street	Bike lanes	5' (each side)	2025	\$1,770,000	
Segment Length		Sidewalk	5' (each side)			
5,600 LF						

College Road MUP (Phase 2)						BP-36
Project Location: College Road		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Randall Pkwy	New Centre Drive	MUP	2,500 LF	10'	2025	\$2,480,000

Oleander Drive & Dawson Street Crosswalk Improvements						BP-681
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Oleander Drive & Dawson Street	Curb ramps (8)	N/A	10'	2025	\$74,000	
	Pedestrian signals (8)	N/A				
	Painted crosswalks (300 LF total)					

Floral Pkwy Bike/Ped Improvements						BP-233
Project Location: Floral Pkwy		Facility Type	Width	Project Horizon Year	Planning Year Cost	
From	To					
Independence Mall Entrance	Wrightsville Avenue	Bike lanes	5' (each side)	2025	\$850,000	
Segment Length		Sidewalk	5' (each side)			
2,660 LF						

Carolina Beach Road & Antoinette Drive Crosswalk Improvements			BP-619
Project Location	Facility Type	Width	Project Horizon Year
Intersection of Carolina Beach Road & Antoinette Drive	Curb ramps (8)	N/A	2025
	Pedestrian signals (8)	N/A	
	Painted crosswalks (375 LF total)	10'	

College Road & Randall Pkwy Crosswalk Improvements			BP-661
Project Location	Facility Type	Width	Project Horizon Year
Intersection of College Road & Randall Pkwy			
NOTE: Curb ramps and pedestrian signals in place	Painted crosswalks	10'	2025

Carolina Beach Road & Shipyard Blvd Crosswalk Improvements			BP-589
Project Location	Facility Type	Width	Project Horizon Year
Intersection of Carolina Beach Road & Shipyard Blvd	Curb ramps (2)	N/A	2025
	Pedestrian signals (4)	N/A	
	Painted crosswalks (250 LF total)	10'	

New Centre Drive & N College Road Pedestrian Signal			BP-649
Project Location	Facility Type	Width	Project Horizon Year
Intersection of New Centre Drive & N College Road	Pedestrian signals (3)	N/A	2025
	Painted crosswalks (475 LF total)	10'	

Lewis Drive & N Lake Park Blvd Crosswalk Improvements				BP-604
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Lewis Drive & N Lake Park Blvd	Curb ramps (6)	N/A	2025	\$63,200
	Pedestrian signals (6)	N/A		
	Painted crosswalks (250 LF total)	10'		

St. Joseph Street & N Lake Park Blvd Crosswalk Improvements				BP-846
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of St. Joseph Street & N Lake Park Blvd	Painted crosswalk (40 LF)	10'	2025	\$29,200
NOTE: Not signalized; curb ramps in place				

Central Blvd/Morningside Drive Bike Lanes (Phase 1)						BP-147a
Project Location: Central Blvd/Morningside Drive		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Burnett Blvd	Yaupon Drive	Sharrows/MUP	6,100 LF	10'	2025	\$63,800

10th Street & Wooster Street Crosswalk Improvements				BP-765
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of 10th Street & Wooster Street	Curb ramps (4)	N/A	2025	\$61,200
	Pedestrian signals (6)	N/A		
	Painted crosswalks (165 LF total)	10'		

University Drive & S College Road Crosswalk Improvements			BP-636
Project Location	Facility Type	Width	Project Horizon Year
Intersection of University Drive & S College Road	Curb ramps (2)	N/A	2025
	Pedestrian signals (3)	N/A	
	Painted crosswalks (200 LF total)	10'	

Front Street Sharrows (Phase 1)			BP-370			
Project Location: Front Street		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Ann Street	Cape Fear Memorial Bridge	Sharrow	2,400 LF	5' (each side)	2025	\$30,000

US421/Carolina Beach Road & Halyburton Pkwy Crosswalk Improvements			BP-560
Project Location	Facility Type	Width	Project Horizon Year
Intersection of US421/Carolina Beach Road & Halyburton Pkwy	Curb ramps (10)	N/A	2025
	Pedestrian signals (8)	N/A	
	Painted crosswalks (350 LF total)	10'	

Market Street & Barclay Hills Drive Crosswalk Improvements			BP-698
Project Location	Facility Type	Width	Project Horizon Year
Intersection of Market Street & Barclay Hills Drive	Curb ramps (2)	N/A	2025
	Pedestrian signals (2)	N/A	
	Painted crosswalk (75 LF total)	10'	

10th Street & Dawson Street Crosswalk Improvements				BP-744
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of 10th Street & Dawson Street	Curb ramps (4)	N/A	2025	\$61,200
	Pedestrian signals (6)	N/A		
	Painted crosswalks (165 LF total)	10'		

Military Cutoff Road & Destiny Way/Fresco Drive Crosswalk Improvements				BP-775
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Military Cutoff Road & Destiny Way/Fresco Drive	Curb ramps (4)	N/A	2025	\$50,800
	Pedestrian signals (4)	N/A		
	Painted crosswalks (132 LF total)	10'		

Military Cutoff Road & Sir Tyler Drive/Main Street Crosswalk Improvements				BP-774
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Military Cutoff Road & Sir Tyler Drive/Main Street	Curb ramps (4)	N/A	2025	\$50,800
	Pedestrian signals (4)	N/A		
	Painted crosswalks (132 LF total)	10'		

Greenville Loop Road & Oleander Drive Crosswalk Improvements				BP-591
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Greenville Loop Road & Oleander Drive	Curb ramps (2)	N/A	2025	\$40,100
	Pedestrian signals (2)	N/A		
	Painted crosswalks (90 LF total)	10'		

Front Street Sharrows (Phase 2)						BP-471
Project Location: Front Street		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Market Street	Downtown Greenway	Sharrow	1,600 LF	N/A	2025	\$20,000

Causeway Drive Sharrows						BP-441
Project Location: Causeway Drive		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Airlie Road	Waynick Blvd	Sharrow	6,500 LF	N/A	2025	\$80,000

College Road & Shopping Center Entrance Crosswalk Improvements						BP-584
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of College Road & Shopping Center Entrance (at Monkey Junction)	Curb ramps (6)	N/A	10'	2025	\$65,500	
	Pedestrian signals (6)	N/A				
	Painted crosswalks (350 LF total)					

Military Cutoff Road & Wrightsville Avenue Crosswalk Improvements						BP-590
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Military Cutoff Road & Wrightsville Avenue	Curb ramps (2)	N/A	10'	2025	\$40,000	
	Pedestrian signals (2)	N/A				
	Painted crosswalks (85 LF total)					

17th Street & Glen Meade Road Crosswalk Improvements				BP-597
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of 17th Street & Glen Meade Road	Curb ramps (4)	N/A	2025	\$75,400
	Pedestrian signals (8)	N/A		
	Painted crosswalks (360 LF total)	10'		

S 21st Street & Market Street Crosswalk Improvements				BP-639
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of S 21st Street & Market Street	Curb ramps (2)	N/A	2025	\$48,700
	Pedestrian signals (4)	N/A		
	Painted crosswalk (40 LF total)	10'		

3rd Street & Dawson Street Crosswalk Improvements				BP-669
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of 3rd Street & Dawson Street	Curb ramps (2)	N/A	2025	\$62,500
	Pedestrian signals (6)	N/A		
	Painted crosswalks (220 LF total)	10'		

Parker Farm Drive & Military Cutoff Road Crosswalk Improvements and Pedestrian Signal

BP-635

Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Parker Farm Drive & Military Cutoff Road	Curb ramps (2)	N/A	2025	\$41,000
	Pedestrian signals (2)	N/A		
	Painted crosswalks (132 LF total)	10'		

Princess Place Drive & 30th Street Crosswalk Improvements

BP-754

Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Princess Place Drive & 30th Street	Pedestrian signals (8)	N/A	2025	\$67,800
	Painted crosswalk (30 LF total)	10'		

NOTE: Curb ramps in place

Carolina Beach Road & Independence Blvd Crosswalk Improvements

BP-594

Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Carolina Beach Road & Independence Blvd	Curb ramps (6)	N/A	2025	\$65,500
	Pedestrian signals (6)	N/A		
	Painted crosswalks (350 LF total)	10'		

Military Cutoff Road & Cayman Court Pedestrian Signal

BP-633

Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Military Cutoff Road & Cayman Court	Curb ramps (4)	N/A	2025	\$50,300
	Pedestrian signals (4)	N/A		
	Painted crosswalks (112 LF total)	10'		

Military Cutoff Road & Station Road Crosswalk Improvements				BP-579
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Military Cutoff Road & Station Road	Curb ramps (4)	N/A	2025	\$50,400
	Pedestrian signals (4)	N/A		
	Painted crosswalks (118 LF total)	10'		

Eastwood Road & Bay Creek Drive Crosswalk Improvements				BP-642
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Eastwood Road & Bay Creek Drive	Painted crosswalk	10'	2025	\$28,300
NOTE: Pedestrian signals in place				

Lumina Avenue Sharrows				BP-442	
Project Location: Lumina Avenue		Facility Type	Segment Length	Project Horizon Year	Planning Year Cost
From	To		Width		
Salisbury Street	Causeway Drive	Sharrow	12,300 LF	N/A	2025 \$150,000

Gordon Road & Netherlands Drive Crosswalk Improvements				BP-795
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Gordon Road & Netherlands Drive	Curb ramps (4)	N/A	2025	\$51,400
	Pedestrian signals (4)	N/A		
	Painted crosswalks (160 LF total)	10'		

Brunswick Nature Park Connector (Phase 1)						BP-239
Project Location: See additional notes		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
US17	Mallory Creek Drive	MUP	10,900 LF	10'	2025	\$3,740,000
Additional Notes						
<ul style="list-style-type: none"> • Project located along existing utility easement south of US17; starting point approximately 800' west of US17/Ocean Hwy E & Grandiflora Drive/W Gate Drive 						

US17 & W Gate Drive/Grandiflora Drive Crosswalk Improvements						BP-839
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of US17 & W Gate Drive/ Grandiflora Drive	Curb ramps (6)	N/A	N/A	2025	\$65,500	
	Pedestrian signals (6)	N/A				
	Painted crosswalks (350 LF total)	10'				

Causeway Drive & Salisbury Street Crosswalk Improvements						BP-563
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Causeway Drive & Salisbury Street	Curb ramps (4)	N/A	N/A	2025	\$52,300	
	Pedestrian signals (4)	N/A				
	Painted crosswalks (200 LF total)	10'				

Echo Farms Blvd & Belfairs Drive Crosswalk Improvements						BP-855
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Existing roundabout at Echo Farms Blvd & Belfairs Drive	Curb ramps (12)	N/A	N/A	2025	\$78,600	
	Pedestrian signals (8)	N/A				
	Painted crosswalks (500 LF total)	10'				

S Lake Park Blvd & Carolina Beach Lake Park Access Crosswalk Improvements				BP-849
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Carolina Beach Lake Park Access from S Lake Park Blvd NOTE: Not signalized	Curb ramps (2)	N/A	2025	\$29,200
	Painted crosswalk (40 LF total)	10'		

Carolina Beach Road & Myrtle Grove Road Pedestrian Signal				BP-561
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Carolina Beach Road & Myrtle Grove Road	Curb ramps (4)	N/A	2025	\$74,300
	Pedestrian signals (4)	N/A		
	Painted crosswalks (250 LF total)	10'		

Central College Road Trail MUP				BP-546		
Project Location: N College Road		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
South Smith Creek Trail (BP-432)	Northchase Pkwy	MUP	5,900 LF	10'	2030	\$2,490,000

Independence Blvd MUP (Phase 2)				BP-15		
Project Location: Independence Blvd		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
US421/Carolina Beach Road	S 17th Street	MUP	4,000 LF	10'	2030	\$2,240,000

Causeway Drive Bicyclist Improvements Streetscape/Road Diet BP-28

Project Location: Causeway Drive		Facility Type	Width	Project Horizon Year	Planning Year Cost
From	To				
Airlie Road	Waynick Blvd	Travel lanes (2)	14'	2030	\$1,160,000
		Center turn lane	11'		
Segment Length		On-street parking (south side only)	8'		
7,050 LF		MUP	12'		

John D. Barry Drive Bike Lanes BP-381

Project Location: John D. Barry Drive		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
17th Street	Robert E. Lee Drive	Bike lanes	2,400 LF	5' (each side)	2030	\$2,500,000

Central College Road Trail Extension Bike Lanes BP-361

Project Location: N College Road		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Blue Clay Road	Northchase Pkwy	Bike lanes	3,600 LF	5' (each side)	2030	\$2,420,000

Waynick Blvd Bike Lanes/Sharrows BP-281

Project Location: Waynick Blvd		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Causeway Bridge	S Lumina Avenue	Bike lanes/sharrows	6,500 LF	5' (each side)	2030	\$1,090,000

Chappell Loop Shoulder Bike Lanes & Sharrows						BP-298
Project Location: Chappell Loop Road SE and neighborhood connections (see additional notes)		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Blackwell Road SE	NC133/River Road SE	Bike lanes/ sharrows	12,600 LF	5' (each side)	2030	\$190,000
Additional Notes						
<ul style="list-style-type: none"> Chappell Loop Road SE from Blackwell Road SE to East Wood Lane SE; East Wood Lane SE to Two Pine Road/Pine Branches Circle SE; Pine Branches Circle SE to Winding Branches Drive SE; Winding Branches Drive SE to Windsor Drive SE; Windsor Drive SE to North Olde Towne Wynd SE; North Olde Towne Wynd SE to Brunswick Place SE; Brunswick Place SE to NC133/River Road SE Blackwell Road SE and NC133/River Road SE addressed in other projects 						

Carolina Beach Road & Mateo Drive Crosswalk Improvements						BP-580
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Carolina Beach Road & Mateo Drive		Curb ramps (2)	N/A	2030	\$90,200	
		Pedestrian signals (8)	N/A			
		Painted crosswalks (465 LF total)	10'			

River Road & Carolina Beach Road Crosswalk Improvements						BP-626
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of River Road & Carolina Beach Road		Curb ramps (6)	N/A	2030	\$73,900	
		Pedestrian signals (6)	N/A			
		Painted crosswalks (275 LF total)	10'			

Causeway Drive & Lumina Street Crosswalk Improvements					BP-644
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Causeway Drive & Lumina Street NOTE: Pedestrian signals in place	Painted crosswalk	10'	2030	\$32,800	

US17 & Olde Waterford Way/Ploof Road SE Crosswalk Improvements					BP-838
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of US17 & Olde Waterford Way/ Ploof Road SE	Curb ramps (4)	N/A	2030	\$62,800	
	Pedestrian signals (4)	N/A			
	Painted crosswalks (280 LF total)	10'			

US17 & Lanvale Road NE/Provision Pkwy Crosswalk Improvements					BP-842
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of US17 & Lanvale Road NE/ Provision Pkwy	Curb ramps (12)	N/A	2030	\$120,000	
	Pedestrian signals (12)	N/A			
	Painted crosswalks (584 LF total)	10'			

North Carolina Avenue & S Lake Park Blvd Crosswalk Improvements					BP-851
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of North Carolina Avenue & S Lake Park Blvd	Curb ramps (2)	N/A	2030	\$33,900	
	Painted crosswalk (40 LF total)	10'			
NOTE: Not signalized					

US17/Market Street & Green Meadows Drive Crosswalk Improvements			BP-792	
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of US17/Market Street & Green Meadows Drive	Curb ramps (4)	N/A	2030	\$59,500
	Pedestrian signals (4)	N/A		
	Painted crosswalks (160 LF total)	10'		

Harper Avenue & 7th Street Crosswalk Improvements			BP-854	
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Harper Avenue & 7th Street	Curb ramps (2)	N/A	2030	\$33,900
	Painted crosswalk (40 LF total)	10'		

Downtown Trail Greenway MUP (Phase 2)			BP-468b		
Project Location: See additional notes		Facility Type	Segment Length	Width	Project Horizon Year
From	To				Planning Year Cost
Nutt Street	Burnt Mill Creek	MUP	9,000 LF	10'	2035
Additional Notes					
<ul style="list-style-type: none"> For project location, refer to Fiscally-Constrained Bicycle and Pedestrian Project Enlargement: Wilmington on page 179 					

17th Street NHC Library Connection MUP			BP-556		
Project Location: S 17th Street, Patriots Way		Facility Type	Segment Length	Width	Project Horizon Year
From	To				Planning Year Cost
John D. Barry Drive	Pine Valley Branch Library	MUP	2,100 LF	10'	2035

Heide Trask Bridge Sidewalk Realignment						BP-860
Project Location: US74/76/Wrightsville Avenue		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Drawbridge lane shift	Drawbridge lane shift	MUP	760 LF	8'	2035	\$3,790,000
Additional Notes						
<ul style="list-style-type: none"> Remove sidewalk on north side; shift travel lanes; add MUP on south side Vertically separated 						

US17 MUP						BP-12
Project Location: US17/Ocean Hwy E		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Ploof Road	Ocean Gate Plaza	MUP	1,400 LF	10'	2035	\$530,000

5th Avenue Bike Lanes						BP-1
Project Location: 5th Avenue		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Campbell Street	Greenfield Lake Park	Bike lane	10,975 LF	4.5' preferred	2040	\$2,240,000

Downtown Trail Greenway MUP (Phase 1)						BP-468a
Project Location:		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Riverfront Boardwalk	Bess Street	MUP	6,600 LF	10'	2040	\$8,310,000
Additional Notes						
<ul style="list-style-type: none"> For project location, refer to Fiscally-Constrained Bicycle and Pedestrian Project Enlargement: Wilmington on page 209 						

Peachtree Avenue MUP						BP-49
Project Location: Peachtree Avenue		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
S Kerr Avenue	Hugh MacRae Park	MUP	1,660 LF	10'	2040	\$2,760,000

Princess Street Sharrows						BP-406
Project Location: Princess Street		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
5th Street	20th Street	Sharrows	6,070 LF	N/A	2040	\$130,000

Lake Avenue Bike Lanes & Sidewalks						BP-193
Project Location: Lake Avenue		Facility Type	Width	Project Horizon Year	Planning Year Cost	
From	To					
Halifax Road	College Road	Bike lanes	5' (each side)	2040	\$1,410,000	
Segment Length		Sidewalk	5' (each side)			
3,250 LF						

Harper Drive & Canal Drive Crosswalk Improvements						BP-845
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Harper Drive & Canal Drive	NOTE: 10' painted crosswalks in place	Curb ramps (2)	N/A	2040	\$59,200	
		Pedestrian signals (2)	N/A			

US421 & Isabel Holmes Bridge Crosswalk Improvements						BP-572
Project Location		Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of US421 & US74/NC133/Isabel Holmes Bridge	NOTE: 10' painted crosswalks in place	Curb ramps (2)	N/A	2040	\$65,900	
		Pedestrian signals (2)	N/A			
		Painted crosswalks (185 LF total)	10'			

Sanders Road & River Road Crosswalk Improvements			Project Horizon Year	Planning Year Cost
Project Location	Facility Type	Width		
Intersection of Sanders Road & River Road	Curb ramps (6)	N/A	2040	\$93,000
	Pedestrian signals (6)	N/A		
	Painted crosswalks (100 LF total)	10'		

K Avenue & US421 Crosswalk Improvements			Project Horizon Year	Planning Year Cost
Project Location	Facility Type	Width		
Intersection of K Avenue & US421	Curb ramps (9)	N/A	2040	\$110,000
	Pedestrian signals (8)	N/A		
	Painted crosswalks (260 LF total)	10'		

South Carolina Avenue & S Lake Park Blvd Crosswalk Improvements			Project Horizon Year	Planning Year Cost
Project Location	Facility Type	Width		
Intersection of South Carolina Avenue & S Lake Park Blvd	Curb ramps (2)	N/A	2040	\$45,500
	Painted crosswalk (40 LF total)	10'		

NOTE: Not signalized

Town Hall Drive Sidewalk			Project Horizon Year	Planning Year Cost			
Project Location: Town Hall Drive	From	To	Facility Type	Segment Length	Width		
	SR 1472/ Village Road NE	Leland Town Hall parking lot	Sidewalk	775 LF	5'	2040	\$243,825

Texas Avenue & S Lake Park Blvd Crosswalk Improvements				BP-853
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost
Intersection of Texas Avenue & S Lake Park Blvd NOTE: Not signalized	Curb ramps (2)	N/A	2040	\$45,500
	Painted crosswalk (40 LF total)	10'		

South Smith Creek Trail MUP				BP-432		
Project Location: Along Smith Creek (see additional notes)		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
N Kerr Avenue	Market Street	MUP	10,750 LF	10'	2045	\$10,130,000
Additional Notes						
<ul style="list-style-type: none"> From N Kerr Avenue, along Smith Creek to Smith Creek Park; from Smith Creek Park along existing utility easement to Market Street 						

Independence Blvd MUP (Phase 1)				BP-14/ BP-285		
Project Location: Independence Blvd		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
River Road	US421/Carolina Beach Road	MUP	6,520 LF	10'	2045	\$5,510,000

Piner Road & Myrtle Grove Road Crosswalk Improvements				BP-627	
Project Location	Facility Type	Width	Project Horizon Year	Planning Year Cost	
Intersection of Piner Road & Myrtle Grove Road	Curb ramps (6)	N/A	2045	\$110,000	
	Pedestrian signals (6)	N/A			
	Painted crosswalks (120 LF total)	10'			

Jenkins Road Bike/Ped Improvements					BP-42
Project Location: Jenkins Road		Facility Type	Width	Project Horizon Year	Planning Year Cost
From	To				
US17	St. Johns Church Road	Bike lanes	5' (each side)	2045	\$1,090,000
Segment Length			5' (each side)		
835 LF		Sidewalk	5' (each side)	2045	\$1,090,000

Jackeys Creek Connector MUP					BP-249	
Project Location: (See below)		Facility Type	Segment Length	Width	Project Horizon Year	Planning Year Cost
From	To					
Terminus of Jackeys Creek Lane	Terminus of Night Harbor Drive SE	MUP	1,000 LF	10'	2045	\$480,000

Bicycle and Pedestrian Complete Project List

Project ID	Project Name	From	To
EB-6029	Clarendon Avenue Bike/Ped Improvements	4th Street	SR1573/Dow Road
EB-6028	Market Street Signalized Pedestrian Crossing	N/A	N/A
EB-5719	Peachtree Avenue Bicycle Lane	Park Avenue	McMillan Avenue
BP-1	5th Ave	Greenfield Lake Park	Ann St
BP-2	5th Ave	Ann St	Rail Line North of Campbell St
BP-3	Dow Rd	Lake Park Blvd	Clarendon Ave
BP-4	Fort Fisher Blvd	N Ave/Seventh Ave	E Ave
BP-5	New Centre Dr	Proposed Trail to Clear Run Dr	College Rd
BP-6	New Centre Dr	College Rd	Market St
BP-7	Racine Dr	Eastwood Rd	Randall Dr
BP-8	Wilshire Blvd	Macmillan Ave	Kerr Ave
BP-9	Village Rd Connector	Lincoln Rd NE	Leland School Rd
BP-10	Old Fayetteville Rd B	Basin St	Pickett Rd
BP-11	Medical Center Dr	S 17th St	Carolina Beach Rd
BP-12	US 17 Frontage Path	Ocean Gate Plaza	Ploof Rd
BP-13	W Gate Park Connector	End	West Gate Dr
BP-14	Independence Blvd	Carolina Beach Rd	River Rd
BP-15	Independence Blvd	S 17th St	Carolina Beach Rd
BP-16	Independence Blvd Extension	South of MLK Pkwy	Randall Pkwy
BP-17	Shipyard Blvd	S 17th St	Carolina Beach Rd
BP-18	Shipyard Blvd	Independence Blvd	S 17th St
BP-19	Shipyard Blvd	Longstreet Dr	Independence Blvd
BP-20	S 17th St	Shipyard Blvd	Independence Blvd
BP-21	Hospital Plaza Dr Path	S 17th St	Lakeshore Drive
BP-22	Greenville Ave	Park Ave	Oleander Dr
BP-23	Village Rd	Oakmont Ct NE	Wayne St NE
BP-24	Village Rd NE	Old Mill Rd	Wayne Rd
BP-25	Eastwood Rd	Racine Dr	Cardinal Dr
BP-26	23rd St	Princess Place Dr	One Tree Hill Way
BP-27	College Rd	Northchase Pkwy	Blue Clay Rd

Project ID	Project Name	From	To
BP-28	Causeway Dr	Waynick Blvd	Airlie Rd
BP-29	N Ave	Atlantic Ave	Fort Fisher Blvd
BP-30	Village Rd NE A	Lossen Ln	Wayne St
BP-31	Old Fayetteville Rd NE	Pickett Rd	Lanvale Rd
BP-32	Bridge Barrier Rd	Old Dow Rd	Greenway Plan Path
BP-33	Shipyard Blvd	Carolina Beach Rd	River Rd
BP-34	College Rd	Wilshire Blvd	Wrightsville Ave
BP-35	College Rd	Randall Pkwy	Hurst Dr
BP-36	College Rd	New Centre Dr	Randall Pkwy
BP-37	Burnt Mill Creek Path	Metts Ave	Colonial Dr
BP-38	Burnt Mill Creek Path	Market St	Metts Ave
BP-39	Burnt Mill Creek Path	Archie Blue Park	Market St
BP-40	N College Rd	New Village Way	NE Northchase Pkwy
BP-41	N College Rd	Bavarian Ln	New Village Way
BP-42	Jenkins Rd	St Johns Church Rd	US17
BP-43	St Johns Church Rd	End	Jenkins Rd
BP-44	Master Ln	Sloop Point Rd	Doral Dr
BP-45	Wilshire Blvd	Kerr Ave	Wrightsville Ave
BP-46	Market St	Marsh Oaks Dr	Bayshore Dr
BP-47	Cape Fear Blvd	Lake Park Blvd	Dow Road
BP-48	S 17th Street	Independence Blvd	Hospital Plaza Dr
BP-49	Peachtree Ave	MacMillan Ave	Park Ave
BP-50	N College Rd	Danny Pence Dr	New Town Rd
BP-51	Wooster Street	Oleander Drive	S. 8th Ave
BP-52	Oleander Drive	42nd Street	Hawthorne Road
BP-53	Wrightsville Ave	Independence Blvd	Castle Street
BP-54	Wrightsville Ave	Hawthorne Dr	College Rd
BP-55	N 23rd St	Belvedere Dr	Princess Place Dr
BP-56	Clarendon Ave MUP	4th St	Dow Rd
BP-57	Village Rd Connector	Lincoln Rd NE	Leland School Rd
BP-58	Corning Connection	Racine Dr	Ringo Dr
BP-59	Cahill Dr	Walton Dr	End
BP-60	Seahawk Landing Dr	Price Dr	Cahill Dr

Project ID	Project Name	From	To
BP-61	Price Dr	Walton Dr	Riegel Rd
BP-62	Cardinal Extension Dr	Chester St	Market St
BP-63	Timber Ln	Long Leaf Acres Dr	Cardinal Dr
BP-64	Long Leaf Acres Dr	Toulon Dr	Eastwood Rd
BP-65	Toulon Dr	Green Meadows Dr	Long Leaf Acres Dr
BP-66	Green Meadows Dr B	Toulon Dr	Saint Nicholas Rd
BP-67	Green Meadows Dr C	Saint Nicholas Rd	Market St
BP-68	Market St Segment	Judges Rd	Cardinal Extension Dr
BP-69	N Judges Rd	Market St	Albemarle Rd
BP-70	Fitzgerald Dr	Albemarle Rd	Lord Tennyson Rd
BP-71	Lord Tennyson Rd	Fitzgerald Dr	Darwin Dr
BP-72	Kings Grant Rd	Kings Dr	Private
BP-73	Elisha Dr	Tanbridge Rd	Long Leaf Acres Dr
BP-74	Tanbridge Rd	Wells Rd	Camberly Dr
BP-75	Wells Rd	Monument Dr	Tanbridge Rd
BP-76	Monument Dr	Town Center Dr	Wells Rd
BP-77	Military Cutoff Rd	Station Rd	Gordon Rd
BP-78	Oleander Drive Bradley Creek	Private	Greenville Loop Rd
BP-79	Oleander Drive D	Greenville Loop Rd	Hinton Ave
BP-80	Oleander Drive C	Hinton Ave	Hawthorne Dr
BP-81	Oleander Drive B	Hawthorne Dr	Wallace Ave
BP-82	Oleander Drive A	Wallace Ave	S College Rd
BP-83	Rose Ave	Wrightsville Ave	Riegel Rd
BP-84	Hinton Ave	Park Ave	Michelle Dr
BP-85	Michelle Dr	Hinton Ave	Wrightsville Ave
BP-86	Andover Rd	Wrightsville Ave	Rose Ave
BP-87	French Rd	End	Park Ave
BP-88	Harley Rd	Market St	Albemarle Rd
BP-89	White Road	End	Gordon Rd
BP-90	Harris Road/Shenandoah St	Gordon Rd	Creek Ridge Rd
BP-91	Edgewater Club Road	End	Porters Neck Rd
BP-92	Marshfield Dr	End	Porters Neck Rd Trail
BP-93	Salem Ct	End	Porters Neck Rd Trail

Project ID	Project Name	From	To
BP-94	Scotts Hill Loop Rd	Great Pine Ct	Salem Ct
BP-95	Behind Portersneck Lowes	Market St	Cypress Pond Way
BP-96	Connection From Lowes To Plantation Rd	Lilly Pond Ln	Plantation Rd
BP-97	Plantation Rd	End	Crooked Pine Rd
BP-98	Marsh Oaks Dr	Monarch Dr	Market St
BP-99	Monarch Dr	Aquarius Dr	Marsh Oaks Dr
BP-100	Aquarius Dr	Scorpion Dr	Monarch Dr
BP-101	Torchwood Blvd	End	Ogden Park Connector Trail
BP-102	Ogden Park Dr	Gordon Rd	Daybreak Ln
BP-103	Daybreak Ln	Ogden Park Dr	Farrington Farms Dr
BP-104	Farrington Farms Rd	Sun Coast Dr	Daybreak Ln
BP-105	Sun Coast Dr	End	Sapling Cir
BP-106	Sapling Cir	Alamosa Dr	Sun Coast Dr
BP-107	Alamosa Dr	Brodick Ct	Sapling Cir
BP-108	Brodick Ct	Alamosa Dr	Ashby Dr
BP-109	Ashby Dr	Woodhall Dr	Brodick Ct
BP-110	Woodhall Dr	Brittany Lakes Dr	Ashby Dr
BP-111	Brittany Lakes Dr	Woodhall Dr	Potomac Dr
BP-112	Potomac Dr	Brittany Lakes Dr	Sheffield Ct
BP-113	Sheffield Ct	Potomac Dr	Shenandoah St
BP-114	Creek Ridge Rd	Brittany Rd	Shenandoah St
BP-115	Brittany Rd	North Smith Creek Trail	Creek Ridge Rd
BP-116	Sun Coast Dr	Sapling Cir	Harris Rd
BP-117	Walker St NE	Lincoln Rd NE	Mt. Misery Rd NE
BP-118	Reed Rd NE	Lake Norman Ln	Mt. Misery Rd NE
BP-119	Mt. Misery Rd NE	Cedar Hill Rd NE	Lincoln Rd NE
BP-120	Parallel NE Cape Fear River	Northeast	Navassa
BP-121	Low Country Blvd	Rice Gate Way	Brunswick Forest Pkwy
BP-122	Winding Trail Dr Extension	Cedar Hill Rd	Old Mill Rd
BP-123	Chappell Loop Rd SE	East Wood Ln	Ploof Rd
BP-124	Eastwood Ln SE	Pine Branches Cir	Chappell Loop Rd
BP-125	Two Pine Rd	Winding Branches Dr	East Wood Ln
BP-126	Winding Branches Dr	Windsor Dr	Pine Branches Cir

Project ID	Project Name	From	To
BP-127	Windsor Dr SE	N Olde Towne Wynd	Winding Branches Dr
BP-128	N Olde Towne Wynd SE	Brunswick Pl	Windsor Dr
BP-129	Brunswick Pl	S Olde Towne Wynd	N Olde Towne Wynd
BP-130	S Olde Towne Wynd SE	River Rd	Brunswick Pl
BP-131	Lossen Ln	Village Rd	Old Fayetteville Rd
BP-132	Old Fayetteville Rd A	Basin St	Lossen Ln
BP-133	Rampart St	Royal St	Basin St
BP-134	Royal St	Wayne St	Rampart St
BP-135	Wayne St NE	Village Rd	Royal St
BP-136	Village Rd C	S Navassa Rd	Lossen Ln
BP-137	Cedar Hill Rd	Daniels Rd	Winding Trail Extension
BP-138	Marlboro St	Market St	Randall Pkwy
BP-139	St Rosea Rd	McClelland Dr	Princess Place Dr
BP-140	McClelland Dr	New Centre Dr	Saint Rosea Dr
BP-141	S Smith Creek	End	Colonial Dr
BP-142	Washington St Path	Kentucky Ave	Bell St
BP-143	Wright St	S 16th St	Front St
BP-144	Meares St	S 16 St	Front St
BP-145	S 41st St	Shipyard Blvd	Oleander Dr
BP-146	Halifax Rd	Fordham Rd	Lake Ave
BP-147	Central Blvd Morningside Dr	Yaupon Dr	Burnett Blvd
BP-148	Monkey Junction Connection	Honeybee Ln	Carolina Beach Rd Trail
BP-149	Gate Post Prior Willoughby Park Connection	Prior Dr	Willoughby Park Ct
BP-150	Antoinette Dr	Normandy Dr	Carolina Beach Rd
BP-151	Gabriel St Path Extension	Bancroft Dr	Mcquillan Dr
BP-152	Huron Dr Connection	End	Okeechobee Rd
BP-153	River Breeze Dr	Riverbreeze Dr	Halyburton Memorial Pkwy
BP-154	Sedgley Dr Path Extension	Private	The Cape Blvd
BP-155	Catamaran Dr Path Extension	End	Catamaran Dr
BP-156	Spencer Farlow Dr	Access Rd	Island Marina Dr
BP-157	Canal Dr	Carl Winner Ave	Virginia Ave
BP-158	S 6th Ave	H Ave	K Ave
BP-159	S 5th Ave	S Fort Fisher Blvd	H Ave

Project ID	Project Name	From	To
BP-160	Marsh Hawk Ct	Amber Dr	Bragg Dr
BP-161	Aster Ct	Bethel Rd End	Greenway Plan Path
BP-162	Waltmoor Rd	Greenwich Ln	S College Rd
BP-163	Greenwich Ln	Landsdowne Rd	Waltmoor Rd
BP-164	Devonshire Ln	Landsdowne Rd	Dover Rd
BP-165	Navaho Trl	End	Masonboro Loop Rd
BP-166	N College Rd A	N College Rd	Castle Hayne Rd
BP-167	College to Castle Hayne Park	End	N College Rd
BP-168	Castle Hayne Park Connector B	Juvenile Center Dr	Greenway Plan Path
BP-169	Northchase Pkwy	New Village Rd	N College Rd
BP-170	Murrayville Rd A	I-40	N College Rd
BP-171	Gordon Rd B	N College Rd	N Kerr Ave
BP-172	Laurel Dr	N Kerr Ave	Castle Hayne Rd
BP-173	Blue Clay Rd Path Connector	I-140 West Trail	Dairy Farm Rd
BP-174	NC 210	Navillus Blvd	Merricks Creek
BP-175	Island Creek Rd	US Hwy 17	Royal Oak Ct
BP-176	US 17 Hampstead	Lodge Rd	Whitebridge Rd
BP-177	US 17 Hampstead Frontage Path	Scotts Hill Loop Rd	Whitebridge Rd
BP-178	Sidbury Rd	Dairy Farm Rd	US Hwy 17
BP-179	Hampstead Bypass Path	Old Whitfield Rd	Dairy Farm Rd
BP-180	NC Hwy 133	US 117	Cheshire Rd
BP-181	Cheshire Rd	NC Hwy 133	NC Hwy 210
BP-182	US Hwy 117 S	NC 133	NC 210
BP-183	Clarks Landing Loop	End	NC Hwy 210
BP-184	US 421 N	Pender-New Hanover Line	Montague Rd
BP-185	Blueberry Rd	End	Montague Rd
BP-186	US 421 S	Existing Greenway Route	Blueberry Rd
BP-187	Brunswick Forest Pkwy	Brunswick Village Blvd	Ocean Hwy
BP-188	W Gate Dr	Coral Stone Ct	West Gate Dr
BP-189	Brunswick Forest Pkwy B	End	Low Country Blvd
BP-190	Low Country Blvd	Rice Gate Way	Brunswick Forest Pkwy
BP-191	Cape Fear National Dr	End	Low Country Blvd

Project ID	Project Name	From	To
BP-192	Southern Cape Fear River Crossing	New Hanover County	Brunswick County
BP-193	Lake Ave	S College Rd	Halifax Rd
BP-194	Independence Mall Frontage	Independence Blvd	Fordham Rd
BP-195	Brunswick Forest Pkwy	Low Country Blvd	Brunswick Village Blvd
BP-196	Brunswick Village Blvd	End	Brunswick Forest Pkwy
BP-197	Cedar Hill Rd	Mt Misery Rd	Daniels Rd
BP-198	Mt Misery Rd NE	Leland School Rd	Village Rd
BP-199	Mt Misery Rd Ne	Lincoln Rd NE	Leland School Rd
BP-200	Mt Misery Rd Ne	Dogwood Rd NE	Cedar Hill Rd NE
BP-201	NC Hwy 133	Cheshire Rd	NC 210/NC 133 Confluence
BP-202	US 117	Pender-New Hanover Line	NC 133
BP-203	Market Street	Ogden Park Dr	Military Cutoff Rd
BP-204	NC 210	Royal Oaks Dr	Navillus Blvd
BP-205	Sondey Rd Extension	Railroad	Castle Hayne Rd
BP-206	Island Creek Rd	US Hwy 17	Royal Oak Ct
BP-207	US 17 Hampstead	Lodge Rd	Whitebridge Rd
BP-208	US 17 Hampstead Frontage Path	Scotts Hill Loop Rd	Whitebridge Rd
BP-209	Hampstead Bypass Path	Old Whitfield Rd	Dairy Farm Rd
BP-210	NC Hwy 133	US 117	Cheshire Rd
BP-211	Cheshire Rd	NC Hwy 133	NC Hwy 210
BP-212	US Hwy 117 S	NC 133	NC 210
BP-213	Clarks Landing Loop	End	NC Hwy 210
BP-214	US 421 N	Pender-New Hanover Line	Montague Rd
BP-215	Blueberry Rd	End	Montague Rd
BP-216	US 421 S	Existing Greenway Route	Blueberry Rd
BP-217	NC Hwy 133	Cheshire Rd	NC 210/NC 133 Confluence
BP-218	US 117	Pender-New Hanover Line	NC 133
BP-219	NC 210	Royal Oaks Dr	Navillus Blvd
BP-220	US 17 Hampstead Frontage Path	Lea Dr Ext	Scotts Hill Loop Rd
BP-221	Factory Road	Lea Dr Ext	US17
BP-222	Lea Dr Ext	US 17	Lea Dr Ext

Project ID	Project Name	From	To
BP-223	Hoover Road	Tim Moore Dr	US17
BP-224	Hoover Road	Highlands Dr	Tim Moore Dr
BP-225	Olde Point Road	Kings Landing Road	Country Club Road
BP-226	Kings Landing Road	Country Club Rd	Olde Point Rd
BP-227	Avila Dr Ext	Country Club Rd	US17
BP-228	Lewis Rd	End	Sloop Point Loop Rd
BP-229	Power Line Easement	Strickland Dr	Sloop Point Rd
BP-230	Snows Cut Bridge Path	Annie Drive	Old Dow Road
BP-231	Coral Drive	4th Ave	Causeway Drive
BP-232	Veterans Park Trail	Athletic Fields	Halyburton Memorial Pkwy
BP-233	Floral Parkway	Fordham Rd Entrance to Mall	Wrightsville Ave
BP-234	Smith Creek Murrayville Connection	North Smith Creek Trail	Murrayville Rd
BP-235	Lincoln Rd NE	Post Office Rd	Walker St
BP-236	Leland School Rd NE	Village Rd	Mt. Misery Rd NE
BP-237	Fletcher Rd NE	End	Mt. Misery Rd NE
BP-238	B Brunswick Nature Park Connector	Brunswick Nature Park	Mallory Creek
BP-239	A Brunswick Nature Park Connector	Mallory Creek	Ocean Hwy E
BP-240	Blackwell Rd SE	Chappell Loop Rd	River Rd
BP-241	S Navassa Rd	Broadway St	Loop Rd
BP-242	Old Mill Rd	Winding Trail Extension	Main St
BP-243	Lanvale Rd NE	Grandiflora Dr	Old Fayetteville Rd NE
BP-244	Old Mill Rd B	Leland School Rd	Lanvale Rd
BP-245	Ocean Blvd	Dow Rd S	Greenway Plan Path
BP-246	Fort Fisher Blvd	S Fort Fisher Blvd End	S Fifth Ave
BP-247	Sloop Pt Loop Rd	US Hwy 17	Country Club Dr
BP-248	Chappell Loop Rd E	Chappell Loop Rd	Blackwell Rd
BP-249	Jackey's Creek Connector	Jackey's Creek Ln	Night Harbor Dr
BP-250	Brunswick Forest Frontage Path	Wire Road	Brunswick Forest Pkwy
BP-251	Lanvale Rd NE	Ocean Hwy	Grandiflora Dr
BP-252	Lanvale Rd NE	Old Fayetteville Rd NE	Village Rd
BP-253	Winding Trail Dr	Ocean Hwy E	Timber Ln NE

Project ID	Project Name	From	To
BP-254	Picket Rd Ne Extension	Village Rd Ne	Timber Ln NE
BP-255	Winding Trail Dr Extension	Old Mill Rd	Village Rd
BP-256	Old Mill Rd	Lincoln Rd	Winding Trail Extension
BP-257	S Navassa Rd	Loop Rd	Village Rd
BP-258	S Navassa Rd	Old Mill Rd	Broadway St
BP-259	Old Mill Rd	Main St	N Navassa Rd
BP-260	Cedar Hill Rd	Royster Rd NE	Old Mill Rd
BP-261	Cedar Hill Rd	Winding Trail Extension	Royster Rd NE
BP-262	Doral Dr	Master Ln	Sloop Point Rd
BP-263	5th Street	Atlanta Ave	Cape Fear Blvd
BP-264	Piner Rd Sidewalk	College Rd	Myrtle Grove Rd
BP-265	Edgewater Club Rd Sidewalk	Sea Shell Lane	Reisling Avenue
BP-266	Complete Lake Ave Sidewalk	Halifax Rd	41st St
BP-267	Hidden Valley Rd Sidewalk/ MUP	Masonboro Rd	South College Rd
BP-268	Leland/Wilmington Bikeped Connection	Leland	Wilmington
BP-269	Bike Lanes to Monkey Junction	Navaho Trail	Monkey Junction
BP-270	Burnett Blvd MUP	Market Street	Kentucky Ave
BP-271	Access Improvement	Azalea Dr	Gardenia Ln
BP-272	Mallory Creek MUP	Lilbridge Dr	Cove Landing Dr
BP-273	Country Club MUP	Sloop Point Loop Rd	US 17
BP-274	Red Cedar MUP	Middle Sound Loop Rd	Timber Creek Lane
BP-275	Navaho Trail MUP	S College Rd	Masonboro Loop Rd
BP-276	Rt133 Bike Path to Southport	Southport	Leland
BP-277	Masonboro to Hugh MacRae MUP	Navaho Trail	Hugh MacRae
BP-278	23rd Street Bike Lane to ILM	Shirley Rd	Airport Blvd
BP-279	Scott Hills MUP	US 17	US 17
BP-280	College Acres MUP/Sidewalk	S College Rd	Oriole Dr
BP-281	Waynick Blvd	South Lumina Ave	US 76
BP-282	Sanders Rd MUP	River Rd	Carolina Beach Rd
BP-283	Beasley Rd Bike Lane	Masonboro Loop Rd	Masonboro Loop Rd
BP-284	Louisiana Ave Sidewalk	Delaware Ave	Virginia Ave

Project ID	Project Name	From	To
BP-285	Independence MUP/Sidewalk	Carolina Beach Rd	River Rd
BP-286	Ploof Road	US 17	Chappell Loop Rd
BP-287	Ploof Road	Chappell Loop Road South-east	Ocean Highway East
BP-288	Grandiflora/Pine Harvest/Palm Ridge	US 17	Lanvale Rd
BP-289	Grandiflora/Pine Harvest/Palm Ridge	Grandiflora Dr	Basin St
BP-290	Grandiflora/Pine Harvest/Palm Ridge	Grandiflora Dr	US 17
BP-291	Fletcher Road/Northwest District Park Connection	Northwest Township Park	Fletcher Rd
BP-292	Holly Hills Drive/Sturgeon Drive Connection	Sturgeon Dr	Holly Hills Dr
BP-293	Wayne Street/ Royal Street Connection	Wayne St	Royal St
BP-294	Night Harbor Drive/Olde Towne Wynd Connection	Olde Towne Wynd	Night Harbor Dr
BP-295	US 17 Left-Over Connection	Grandiflora Dr	W Gate Dr
BP-296	US 17 Left-Over Connection	Waterford Way	Ploof Rd
BP-297	Village Road Loop	Navassa Rd	Cedar Hill Rd NE
BP-298	Old Leland Loop	Ploof Rd	River Rd
BP-299	Future Rd	Future Road	Blue Clay Rd
BP-300	Porters Neck Rd Trail	Future Passive Park (NE of Creekwood Rd)	Bald Eagle Ln
BP-301	I-140 East Trail	Market St	Murrayville Rd
BP-302	Pender Connector Trail	County Line	Ogden Park Connector Trail
BP-303	Dow Rd Trail	Seventh Ave	Snows Cut
BP-304	Snows Cut Bridge Trail	Bridge Barrier Rd	Soundside Dr
BP-305	South Carolina Beach Rd Trail	River Rd	Sanders Rd
BP-306	South River Rd Trail	Soundside Dr	Carolina Beach Rd
BP-307	Carolina Beach Rd Trail	Sanders Rd	17th St
BP-308	Shipyard Trail	Hugh MacRae Park	River Rd
BP-309	Fuxton Way Connector Trail	Fuxton Way	Peiffer Ave
BP-310	Surry St Trail	Wright St	Nun St
BP-311	Ringo St Trail	Sunglow Dr	Barclay Hills Dr

Project ID	Project Name	From	To
BP-312	Victoria Dr Connector Trail	Brentwood Dr	Chadwick Ave
BP-313	Middle Sound Loop Trail	Middle Sound Loop Rd	Market St Rail Trail
BP-314	I-140 West Trail	College Rd	Future Subdivision
BP-315	College Rd North Trail	North Cape Fear River	Blue Clay Rd
BP-316	River To The Sea Trail	Wrightsville Ave	Castle St
BP-317	McCrary Park Trail	Randall Pkwy	Bosemont Ave
BP-318	Mallard St Trail	NE of Widgeon Dr	Rill Rd
BP-319	Chester St Trail	Elisha Dr	Eastwood Rd
BP-320	Maides Park Connector Trail	Kerr Ave	Burnt Mill Creek
BP-321	Station Rd Trail	Military Cutoff Rd	Nobile School Rd
BP-322	Carolina Beach Waterfront Trail	Hamlet Ave	Carl Winner Ave
BP-323	Western Rail Corridor Trail	US Hwy 21	County Line
BP-324	US Hwy 421 Trail	Cape Fear River	Cape Fear Soccerplex
BP-325	Wrightsville Beach Trail	South Ridge Ln	Causeway Bridge
BP-326	Rogersville Rd Trail	Wrightsville Ave	Eastwood Rd
BP-327	Central Rail Trail	Castle Hayne Park	Gardner Dr
BP-328	Sunnyvale Dr Trail	Carolina Beach Rd	Future Sky Bridge
BP-329	Military Cutoff Rd Trail	Eastwood Rd	Drysdale Dr
BP-330	13th St	Lee Dr	Castle St
BP-331	19th St	Colwell Ave	Ann St
BP-332	23rd St	Princess Place Dr	One Tree Hill Way
BP-333	23rd St	One Tree Hill Way	Gardner Dr
BP-334	5th Ave	Greenfield Lake Park	Ann St
BP-335	5th Ave	Ann St	Rail Line North of Campbell St
BP-336	Airlie Rd	Eastwood Rd	Military Cutoff Rd
BP-337	Alabama Ave	Lake Park Blvd	Island Greenway West of Spot Ln
BP-338	Annie Dr	Prop Trail North From Spencer Farlow Dr	Snows Cut Greenway
BP-339	Bald Eagle Ln	Futch Creek Rd	Porters Neck Rd
BP-340	Barclay Hills Dr	Kerr Ave	Princess Place Dr
BP-341	Bayfield Dr	Porters Neck Rd	Bayshore Dr
BP-342	Bayshore Dr	Bayfield Dr	Torchwood Blvd

Project ID	Project Name	From	To
BP-343	Beasley Rd	Masonboro Loop Rd	James E L Wade Park
BP-344	Blue Clay Rd	Sidbury Rd	Holly Shelter Rd
BP-345	Blue Clay Rd	Sidbury Rd	Prop Trail at Rail Corridor
BP-346	Brentwood Dr	Castle Hayne Rd	Prop Trail at Victoria Dr
BP-347	Burnett Blvd	Shipyard Blvd	Front St
BP-348	Canal Dr	Carolina Beach Ave	Florida Ave
BP-349	Cape Fear Blvd	Carolina Beach Ave	Third St
BP-350	Cardinal Dr	Eastwood Rd	Clear Run Dr
BP-351	Cardinal Extension Dr	Eastwood Rd	Market St
BP-352	Carolina Beach Ave	Hamlet Ave	Lake Park Blvd
BP-353	Carolina Beach Ave	Salt Marsh Ln	Cape Fear Blvd
BP-354	Castle Hayne Rd	Brentwood Dr	McRae St
BP-355	Castle Hayne Rd	Kerr Ave	North of 1-140
BP-356	Cathay Rd	Carolina Beach Rd	River Rd
BP-357	Chadwick Ave	Castle Hayne Rd	Prop Trail
BP-358	Champ Davis Rd	Porters Neck Rd	Futch Creek Rd
BP-359	Chestnut St	Market St	23rd St
BP-360	Clear Run Dr	Mallard St	College Acres Dr
BP-361	College Rd	Northchase Pkwy	Blue Clay Rd
BP-362	Colonial Dr	Prop Trail North of Forest Hills Dr	Park Ave
BP-363	Covil Farm Rd	Middle Sound Loop Rd	Military Cutoff Rd
BP-364	Dow Rd	Lake Park Blvd	Clarendon Ave
BP-365	Eighth St	Harper Ave	Clarendon Ave
BP-366	Faulkenberry Rd	Myrtle Grove Rd	Carolina Beach Rd
BP-367	Florida Ave	Carolina Beach Ave	Canal Dr
BP-368	Fort Fisher Blv	N Ave/Seventh Ave	E Ave
BP-369	Fourth St	Harper Ave	Prop Trail West of Sixth St
BP-370	Front St	Cape Fear Memorial Bridge	Ann St
BP-371	Futch Creek Rd	Bald Eagle Ln	Old Market St
BP-372	Glen Meade Rd	Echo Ln	17th St
BP-373	Gordon Rd	Military Cutoff Rd	College Rd
BP-374	Greenville Ave	Park Ave	Wrightsville Ave
BP-375	Harper Ave	Carolina Beach Ave	Third St

Project ID	Project Name	From	To
BP-376	Holly Shelter Rd	Prop Trail at County Line	Blue Clay Rd
BP-377	Holly Shelter Rd	Blue Clay Rd	Castle Hayne Rd
BP-378	Holly Tree Rd	College Rd	Shipyard Blvd
BP-379	Hooker Rd	Wrightsville Ave	Rose Ave
BP-380	Isabel S Holmes Bridge	Front St	US Hwy 421
BP-381	John D Barry Dr	Robert E Lee Dr	17th St
BP-382	Kerr Ave	Randall Pkwy	Market St
BP-383	Kerr Ave	Martin Luther King Jr Pkwy	Market St
BP-384	Kerr Ave	Truesdale Rd	Blue Clay Rd
BP-385	Lake Park Blvd	Driftwood Ln	Fayetteville Ave
BP-386	Lake Park Blvd	Risley Rd	Spencer Farlow Dr
BP-387	Lewis Dr	Saint Joseph St	Lake Park Blvd
BP-388	Linden Ridge Rd	Prop Trail East of Linden Ridge Rd	Prop Trail West of Barnards Landing Rd
BP-389	Live Oak Pkwy	Gillette Dr	Park Ave
BP-390	Loganberry Rd	Blueberry Rd	North End
BP-391	Lynnwood Dr	Waverly Dr	South End
BP-392	Macmillan Ave	Old Meares Rd	Pinegrove Dr
BP-393	Market St	Futch Creek Rd	End
BP-394	Mercer Ave	Independence Blvd	Market St
BP-395	Metts Ave	Prop Trail At Creek	15th St
BP-396	Military Cutoff Rd	Eastwood Rd	Wrightsville Ave
BP-397	New Centre Dr	Proposed Trail to Clear Run Dr	College Rd
BP-398	New Centre Dr	College Rd	Columb Dr
BP-399	Old Ave	Parmeles Rd	Castle Hayne Park
BP-400	Otter Rd	Spencer Farlow Dr	Lewis Dr
BP-401	Oyster Ln	Middle Sound Loop Rd	Sky Crest Ct
BP-402	Parmeles Rd	College Rd	Castle Hayne Rd
BP-403	Peiffer Ave	Oleander Dr	South End
BP-404	Pine Grove Dr	Holly Tree Rd	Oleander Dr
BP-405	Princess Place Dr	Future Independence Blvd Extension	Prop Trail At Creek
BP-406	Princess St	20th St	5th Ave
BP-407	Private	Future Road	Kerr Ave

Project ID	Project Name	From	To
BP-408	Racine Dr	Eastwood Rd	Randall Dr
BP-409	Saint Joseph St	Lees Ln	Lewis Dr
BP-410	Saint Nicholas Rd	Nobile School Rd	Elisha Dr
BP-411	Sidbury Rd	Dairy Farm Rd	Blue Clay Rd
BP-412	Silver Lake Rd	Lex Dr	Prop Trail North of Arrowhead Park
BP-413	Sutton Lake Rd	US Hwy 421	Lake
BP-414	Thais Trl	Bayshore Dr	South End
BP-415	Trails End Rd	East End	Masonboro Loop Rd
BP-416	Troy Dr	Shipyard Blvd	Wellington Ave
BP-417	Wilshire Blvd	Macmillan Ave	Kerr Ave
BP-418	Wilshire Blvd	Kerr Ave	Wrightsville Ave
BP-419	Wrightsville Ave	Greenville Ave	Donna Ave
BP-420	Yaupon Dr	17th St	Lake Shore Dr
BP-421	Hugh MacRae Park Connector Trail	Hugh MacRae Park	Independence Blvd
BP-422	Chestnut St	23rd St	Princess St
BP-423	Market St Rail Trail	Porters Neck Rail Trail	Cape Harbor Dr
BP-424	23rd St	Chestnut St	Princess Place Dr
BP-425	17th/Independence Trail	River Rd	Greenfield Park Trail
BP-426	North Smith Creek Trail	Northchase Pkwy	Smith Creek Park
BP-427	Kerr Ave	Blue Clay Rd	Castle Hayne Rd
BP-428	Kerr Ave	College Rd	Truesdale Rd
BP-429	5th Ave	Prop Trail at Downtown Rail Corridor	Nixon St
BP-430	North River Rd Trail	Sanders Rd	Independence Blvd
BP-431	Wrightsville Ave	Oleander Dr	Greenville Ave
BP-432	South Smith Creek Trail	Market St	Kerr Ave
BP-433	Myrtle Grove Rd Trail	Carolina Beach Rd	Carolina Beach Rd
BP-434	Castle Hayne Rd	Parmeles Rd	I-140
BP-435	Castle Hayne Rd	North Cape Fear River	Holly Shelter Rd
BP-436	Castle Hayne Rd	Holly Shelter Rd	Parmeles Rd
BP-437	Castle Hayne Rd	Brentwood Dr	Kerr Ave
BP-438	Independence Blvd Trail	Maides Park Greenway	Randall Pkwy

Project ID	Project Name	From	To
BP-439	Lake Park Blvd	Driftwood Ln	Carolina Sands Dr
BP-440	421 Rail Trail	County Line	Sutton Steam Plant Rd
BP-441	Causeway Dr	Waynick Blvd	Airlie Rd
BP-442	Lumina Ave	Causeway Dr	Salisbury St
BP-443	Randall Dr	Reynolds Dr	College Rd
BP-444	Oak Bluff Ln	Fuxton Way South End	Oak Bluff Ln
BP-445	Hamlet Ave	Carolina Beach Waterfront Greenway	Carolina Beach Ave
BP-446	McRae St	Castle Hayne Rd	Martin Luther King Jr Pkwy
BP-447	Lake Park Blvd/Saint Joseph St to Lees Ln	Carl Winner Ave	Lees Ln
BP-448	Front St	Wright St	Marstellar St
BP-449	Atlantic Ave	N Ave	M Ave
BP-450	Atlantic Ave	M Ave	L Ave
BP-451	Atlantic Ave	L Ave	K Ave
BP-452	K Ave	Atlantic Ave	Fort Fisher Blvd
BP-453	N Ave	Atlantic Ave	Fort Fisher Blvd
BP-454	Nixon St	5th	End Of Nixon St
BP-455	Old Mill Rd	Castle Hayne Rd	Blue Clay Rd
BP-456	College Rd	Market St	Long Leaf Hills Dr
BP-457	Kerr Ave	Randall Pkwy	Wrightsville Ave
BP-458	Wrightsville Ave	Dawson St	Wood Dale Dr
BP-459	Market St	Birchwood Dr	Kerr Ave
BP-460	Future Rd	Wrightsville Ave	Pinegrove Dr
BP-461	Future Rd	Greenville Loop Rd	Masonboro Loop Rd
BP-462	Wellington Ave	S 17th St	Flint Dr
BP-463	Gillette Dr	Lake Shore Dr	Live Oak Pkwy
BP-464	Carolina Beach Rd	Front St	St Andrews Blvd
BP-465	Halyburton Memorial Pkwy	US Hwy 421	River Rd
BP-466	Harnett St	3rd St	5th St
BP-467	5th St	Taylor St	Nixon St
BP-468	Downtown Trail	Colonial Dr	Riverfront Boardwalk
BP-468A	Downtown Trail Greenway (Phase I)	Bess St	Riverfront

Project ID	Project Name	From	To
BP-468B	Downtown Trail Greenway (Phase II)	Burnt Mill Creek	Nutt St
BP-468C	Downtown Trail Greenway (Phase II)	Colonial Dr	Burnt Mill Creek
BP-469	Ocean Blvd	US Hwy 421	Croaker Ln
BP-470	Chester St	Cardinal Extension Dr1	Elisha Dr
BP-471	Front St	Chestnut St	Downtown Greenway
BP-472	Middle Sound Trail	Lord Dr	Middle Sound Loop Rd
BP-473	Swordfish Ln	Alabama Ave	Tennessee Ave
BP-474	Green Meadows Dr	Windmill Way	Windmill Way
BP-475	Green Meadows Dr	Market St	Private Dr
BP-476	Green Meadows Dr	Private Dr	Windmill Way
BP-477	Kings Dr	College Rd	Kings Grant Rd
BP-478	Bramton Rd	Spring Valley Rd	End of Bramton Rd
BP-479	Private	Cheryl Ln	End of Private Dr
BP-480	Grathwol Dr	Lloyd Ct	William Louis Dr
BP-481	Kings Grant Rd	Shelley Dr	Shelley Dr
BP-482	Kings Grant Rd	Shelley Dr	Richardson Dr
BP-483	Lord Tennyson Rd	Dickens Dr	Morris Ct
BP-484	Darwin Dr	Dandelion Dr	Goldenrod Dr
BP-485	Albemarle Rd	Darwin Dr	Harley Rd
BP-486	Grathwol Dr	Bent Creek Dr	William Louis Dr
BP-487	Grathwol Dr	Bent Creek Dr	Kerr Ave
BP-488	Kings Dr	College Rd	Spring Branch Rd
BP-489	Grathwol Dr	Cheryl Ln	Deborah Ct
BP-490	Spring Branch Rd	Bramton Rd	Kings Dr
BP-491	Kings Grant Rd	Kings Dr	Lord Nance Ct
BP-492	Cheryl Ln	Grathwol Dr	Private Dr
BP-493	Bramton Rd	Spring Valley Rd	Kenningston St
BP-494	Grathwol Dr	Jason Ct	Deborah Ct
BP-495	Bramton Rd	Norwich Rd	Spring Branch Rd
BP-496	Grathwol Dr	Jason Ct	Lloyd Ct
BP-497	Bramton Rd	Kenningston St	Middlesex Rd
BP-498	Kings Grant Rd	Lord Nance Ct	Shelley Dr

Project ID	Project Name	From	To
BP-499	Kings Grant Rd	Richardson Dr	Lord Tennyson Rd
BP-500	Lord Tennyson Rd	Kings Grant Rd	Marlowe Dr
BP-501	Lord Tennyson Rd	Marlowe Dr	Shakespeare Dr
BP-502	Lord Tennyson Rd	Shakespeare Dr	Dickens Dr
BP-503	Darwin Dr	Lord Tennyson Rd	Dandelion Dr
BP-504	Darwin Dr	Goldenrod Dr	Albemarle Rd
BP-505	Bramton Rd	Middlesex Rd	Norwich Rd
BP-506	Lord Tennyson Rd	Morris Ct	Darwin Dr
BP-507	Harley Rd	Albemarle Rd	Mid-Point Harley Rd
BP-508	Blair School Rd	Blair School Loop	Blair School Loop
BP-509	Blair School Rd	Market St	Blair School Loop
BP-510	Blair School Rd	Blair School Loop	Noble School Rd
BP-511	Blair School Rd	Noble School Rd	St Nicholas Rd
BP-512	Wallace Ave	Park Ave	Peachtree Ave
BP-513	Wallace Ave	Peachtree Ave	Pine St
BP-514	Wallace Ave	Pine St	US 76
BP-515	Wallace Ave	Pine St	US 76
BP-516	Wallace Ave	Park Ave	Wrightsville Ave
BP-517	Wallace Ave	Pine Grove	Donald Ross Dr
BP-518	Wallace Ave	Donald Ross Dr	US 76
BP-519	Wallace Ave Xing	Park Ave N	Park Ave S
BP-520	Green Meadows Dr	Windmill Way	Amsterdam Way
BP-521	Amsterdam Way	Van Dyke Dr	Old Dairy Rd
BP-522	Amsterdam Way	Old Dairy Rd	Netherlands Dr
BP-523	Netherlands Dr	Amsterdam Way	Gordon Rd
BP-524	Amsterdam Way	Van Dyke Dr	N Green Meadows Dr
BP-525	Torchwood Blvd	County Wood Way	Alcoa Way
BP-526	Torchwood Blvd	Chipley Dr	Beacon Dr
BP-527	Torchwood Blvd	Ireland Ct	Needlefish Ct
BP-528	Torchwood Blvd	Elkmont Ct	Coker Ct
BP-529	Torchwood Blvd	Essary Pl	Coker Ct
BP-530	Torchwood Blvd	Essary Pl	Montfaye Ct
BP-531	Torchwood Blvd	Cauthen Way	County Wood Way

Project ID	Project Name	From	To
BP-532	Torchwood Blvd	Beacon Dr	Gilmore Dr
BP-533	Torchwood Blvd	Cauthen Way	US 17
BP-534	Torchwood Blvd	Needlefish Ct	Eastern Rail Trail
BP-535	Torchwood Blvd	Montfaye Ct	Old Oak Rd
BP-536	Torchwood Blvd	Old Oak Rd	Gilmore Dr
BP-537	Winery Way	Reisling Ave	Sharaz Way
BP-538	Reisling Ave	Chablis Way	Winery Way
BP-539	Reisling Ave	Futch Creek Way	Chablis Way
BP-540	Shiraz Way	Winery Way	Porters Neck Rd
BP-541	Manassas Dr	US Hwy 421	Shiloh Dr
BP-542	Manassas Dr	Shiloh Dr	Appomattox Dr
BP-543	Wrightsville Ave	Greenville Ave	Donna Ave
BP-544	Lumina Ave	Salisbury St	South Ridge Ln
BP-545	College Gordon Connector Trail	Gordon Rd	College Rd
BP-546	College Rd Central Trail	Northchase Pkwy	South Smith Creek Trail
BP-547	Ogden Park Connector Trail	Eastern Rail Trail	Ogden Park
BP-548	Kerr Ave Trail	Bavarian Ln	Martin Luther King Jr Pkwy
BP-549	N Kerr Ave	US 74	South Smith Creek Trail
BP-550	Wendover Ct	Oyster Dr	Bright Leaf Rd
BP-551	Central Lake Park Blvd Sidewalks Carolina Beach 5'	Carolina Sands	Atlanta Ave
BP-552	Carolina Beach Ave N Sidewalk	Salt Marsh Ln	Scallop Ln
BP-553	Alabama Ave MUP	S. Lake Park Blvd	Spot Ln
BP-554	Northend Bicycle Improvements	N/A	N/A
BP-555	Pelican Ln Sidewalk	Canal Dr	Carolina Beach Ave N
BP-556	17th St/NHC Library Connection	Pine Valley Branch Library	John Barry Dr
BP-557	Crosswinds Connection	Neighborhood Street Network North of Mohican Trail	Neighborhood Street Network South of Mohican Trail
BP-558	Cape Fear Blvd MUP	Dow Rd	Third Street
BP-559	Complete Cross City Trail	S Kerr Ave	N College Rd
BP-560	Halyburton Memorial Pkwy & Carolina Beach Rd	N/A	N/A

Project ID	Project Name	From	To
BP-561	Carolina Beach Rd & Myrtle Grove Rd	N/A	N/A
BP-562	S Front St & 421	N/A	N/A
BP-563	Causeway Dr & Salisbury St	N/A	N/A
BP-564	Salisbury St & Lumina Ave	N/A	N/A
BP-565	Military Cutoff Rd & Market St	N/A	N/A
BP-566	Hurst Dr & College Rd	N/A	N/A
BP-567	Eastwood Rd & Pembroke Jones Dr	N/A	N/A
BP-568	Eastwood Rd & Racine Dr	N/A	N/A
BP-569	College Rd & Pine Valley Dr	N/A	N/A
BP-570	College Rd & Bragg Dr	N/A	N/A
BP-571	Kings Dr & College Rd	N/A	N/A
BP-572	Us Hwy 421 & Isabel Holmes Bridge	N/A	N/A
BP-573	College Rd & Pinecliff Dr	N/A	N/A
BP-574	Drysdale Dr & Military Cutoff Rd	N/A	N/A
BP-575	One Tree Hill Way & 23rd St	N/A	N/A
BP-576	23rd St & Airport Blvd	N/A	N/A
BP-577	Bayshore Dr & Market St	N/A	N/A
BP-578	Market St & Middle Sound Loop Rd	N/A	N/A
BP-579	Military Cutoff Rd & Station Rd	N/A	N/A
BP-580	Carolina Beach Rd & Matteo Dr	N/A	N/A
BP-581	Carolina Beach Rd & College Rd	N/A	N/A
BP-582	Carolina Beach Rd & Shopping Center Entrance	N/A	N/A
BP-583	Carolina Beach Rd & Sanders Rd	N/A	N/A
BP-584	College Rd & Shopping Center Entrance	N/A	N/A
BP-585	College Rd & Jasmine Cove Way	N/A	N/A

Project ID	Project Name	From	To
BP-586	Martin Luther King Jr Pkwy & Kerr Ave	N/A	N/A
BP-587	Randall Pkwy & Kerr Ave	N/A	N/A
BP-588	17th St & Shipyard Blvd	N/A	N/A
BP-589	Carolina Beach Rd & Shipyard Blvd	N/A	N/A
BP-590	Military Cutoff Rd & Wrightsville Ave	N/A	N/A
BP-591	Greenville Loop Rd & Oleander Dr	N/A	N/A
BP-592	Holly Tree Rd & Shipyard Blvd	N/A	N/A
BP-593	Independence Blvd & Mercer Ave	N/A	N/A
BP-594	Carolina Beach Rd & Independence Blvd	N/A	N/A
BP-595	Gordon Rd & Military Cutoff Rd	N/A	N/A
BP-596	Cardinal Dr & Eastwood Rd	N/A	N/A
BP-597	17th St & Glen Meade Rd	N/A	N/A
BP-598	17th St & Medical Center Dr	N/A	N/A
BP-599	17th St & Wellington Ave	N/A	N/A
BP-600	17th St & Saint Andrews Dr	N/A	N/A
BP-601	Converse Rd & Shipyard Blvd	N/A	N/A
BP-602	Carolina Beach Rd & Cathay Rd	N/A	N/A
BP-603	Carolina Beach Rd & Golden Rd	N/A	N/A
BP-604	Lewis Dr & Lake Park Blvd	N/A	N/A
BP-605	King Ave & Canal Dr	N/A	N/A
BP-606	Carolina Beach Ave & Harper Ave	N/A	N/A
BP-607	Market St & Porters Neck Rd	N/A	N/A
BP-608	College Rd & Gordon Rd West	N/A	N/A
BP-609	Bavarian Ln & College Rd	N/A	N/A
BP-610	Danny Pence Dr & College Rd	N/A	N/A
BP-611	Northchase Pkwy SE & College Rd	N/A	N/A

Project ID	Project Name	From	To
BP-612	Northchase Pkwy W & College Rd	N/A	N/A
BP-613	Blue Clay Rd & College Rd	N/A	N/A
BP-614	Blue Clay Rd & Kerr Ave	N/A	N/A
BP-615	Castle Hayne Rd & Centennial Dr	N/A	N/A
BP-616	Wrightsville Ave & Eastwood Rd	N/A	N/A
BP-617	16th St/17th St & Hospital Plaza Dr	N/A	N/A
BP-618	17th St & George Anderson Dr	N/A	N/A
BP-619	Carolina Beach Rd & Antoinette Dr	N/A	N/A
BP-620	Carolina Beach Rd & Mobile Home Park	N/A	N/A
BP-621	Carolina Beach Rd & Silver Lake Rd	N/A	N/A
BP-622	Greenville Loop Rd & Greenville Sound Rd	N/A	N/A
BP-623	Masonboro Loop Rd & Finian Dr	N/A	N/A
BP-624	Independence Blvd & River Rd	N/A	N/A
BP-625	Sanders Rd & River Rd	N/A	N/A
BP-626	River Rd & Carolina Beach Rd	N/A	N/A
BP-627	Piner Rd & Myrtle Grove Rd	N/A	N/A
BP-628	Market St & Marsh Oaks Dr	N/A	N/A
BP-629	Porters Neck Rd Roundabout	N/A	N/A
BP-630	College Rd & Park Ave	N/A	N/A
BP-631	Masonboro Sound Rd & Masonboro Loop Rd (North)	N/A	N/A
BP-632	Masonboro Sound Rd & Masonboro Loop Rd (South)	N/A	N/A
BP-633	Military Cutoff Rd & Cayman Court	N/A	N/A
BP-634	Military Cutoff Rd & Monument Dr	N/A	N/A
BP-635	Parker Farm Dr & Military Cutoff Rd	N/A	N/A

Project ID	Project Name	From	To
BP-636	University Drive & S College Rd	N/A	N/A
BP-637	S College Rd & Lake Ave	N/A	N/A
BP-638	Wallace Ave & Oleander Dr	N/A	N/A
BP-639	S 21st St & Market St	N/A	N/A
BP-640	17th St And Castle St	N/A	N/A
BP-641	Chestnut St and N 15th St	N/A	N/A
BP-642	Eastwood Rd & Bay Creek Dr	N/A	N/A
BP-643	S College Rd & S 17th St	N/A	N/A
BP-644	Causeway Dr & Lumina St	N/A	N/A
BP-645	Park Ave & Independence Blvd	N/A	N/A
BP-646	College Rd & Oleander Dr	N/A	N/A
BP-647	Market St & Gordon Rd	N/A	N/A
BP-648	Military Cutoff Rd & Eastwood Rd	N/A	N/A
BP-649	New Centre Dr & N College Rd	N/A	N/A
BP-650	Independence & Shipyard	N/A	N/A
BP-651	7th Ave & K Ave	N/A	N/A
BP-652	Avenue K & Ft Fisher Blvd	N/A	N/A
BP-653	N Ave & Ft Fisher Blvd	N/A	N/A
BP-654	Wooster St & 16th St	N/A	N/A
BP-655	Market St & Martin Luther King Jr Pkwy/Eastwood Rd	N/A	N/A
BP-656	Market St & College Rd West Ramp	N/A	N/A
BP-657	College Rd & Martin Luther King Jr Pkwy	N/A	N/A
BP-658	Market St & New Centre Dr	N/A	N/A
BP-659	Market St & Kerr Ave	N/A	N/A
BP-660	Kerr Ave & Wrightsville Ave	N/A	N/A
BP-661	College Rd & Randall Pkwy	N/A	N/A
BP-662	College Rd & Wrightsville Ave	N/A	N/A
BP-663	College Rd & Peachtree Ave	N/A	N/A

Project ID	Project Name	From	To
BP-664	College Rd & Shipyard Blvd/ Long Leaf Hills	N/A	N/A
BP-665	17th St & Independence Blvd	N/A	N/A
BP-666	Oleander Dr & Independence Blvd	N/A	N/A
BP-667	17th St & Wooster St	N/A	N/A
BP-668	3rd St & Wooster St	N/A	N/A
BP-669	3rd St & Dawson St	N/A	N/A
BP-670	17th St & Market St	N/A	N/A
BP-671	16th St & Market St	N/A	N/A
BP-672	3rd St & Market St	N/A	N/A
BP-673	Martin Luther King Blvd /3rd St & Front St/Davis St	N/A	N/A
BP-674	Oleander Dr & Floral Pkwy/ Fordham Rd	N/A	N/A
BP-675	Oleander Dr & 39th St	N/A	N/A
BP-676	Oleander Dr & Mall Entrance	N/A	N/A
BP-677	Oleander Dr & Audubon Blvd/ Lincoln Rd	N/A	N/A
BP-678	Oleander Dr & 41st St	N/A	N/A
BP-679	Oleander Dr & 42nd St	N/A	N/A
BP-680	Wrightsville Ave & Floral Ave	N/A	N/A
BP-681	Oleander Dr & Dawson St	N/A	N/A
BP-682	Oleander Dr & Country Club Rd	N/A	N/A
BP-683	Oleander Dr & Hawthorne Dr	N/A	N/A
BP-684	Independence Blvd & Canterbury Rd	N/A	N/A
BP-685	Wrightsville Ave & Dawson St	N/A	N/A
BP-686	Wrightsville Ave & Independence Blvd	N/A	N/A
BP-687	Wrightsville Ave & Wilshire Blvd	N/A	N/A
BP-688	College Rd & Kmart Shopping Center	N/A	N/A
BP-689	College Rd & Riegel Dr	N/A	N/A

Project ID	Project Name	From	To
BP-690	Carolina Beach Rd & Northern Blvd	N/A	N/A
BP-691	Carolina Beach Rd & Central Blvd	N/A	N/A
BP-692	Carolina Beach Rd & Southern Blvd	N/A	N/A
BP-693	Carolina Beach Rd & Raleigh St/Parkway Blvd	N/A	N/A
BP-694	Carolina Beach Rd & G Anderson/Echo Farms	N/A	N/A
BP-695	23rd St & Market St	N/A	N/A
BP-696	Market St & Forest Hills Dr	N/A	N/A
BP-697	Market St & Covil Ave	N/A	N/A
BP-698	Market St & Barclay Hills Dr	N/A	N/A
BP-699	Market St & North 17 Shopping Center	N/A	N/A
BP-700	Market St & Lullwater Dr	N/A	N/A
BP-701	Market St & College Rd East Ramp	N/A	N/A
BP-702	Market St & Blair School Rd	N/A	N/A
BP-703	Eastwood Rd & Plaza East/ Hampton Inn	N/A	N/A
BP-704	Wrightsville Ave & Military Cutoff Rd	N/A	N/A
BP-705	Wrightsville Ave & Hawthorne Dr	N/A	N/A
BP-706	Wrightsville Ave & Macmillan Ave	N/A	N/A
BP-707	Wrightsville Ave & Colonial Dr/ Country Club Dr	N/A	N/A
BP-708	16th St & Castle St	N/A	N/A
BP-709	17th St & Dock St	N/A	N/A
BP-710	16th St & Dock St	N/A	N/A
BP-711	17th and Grace St/Princess Pl Dr	N/A	N/A
BP-712	2nd St & Market St	N/A	N/A
BP-713	Front St & Market St	N/A	N/A
BP-714	Front St & Grace St	N/A	N/A

Project ID	Project Name	From	To
BP-715	3rd St N & Princess St	N/A	N/A
BP-716	3rd St N & Chestnut St	N/A	N/A
BP-717	3rd St N & Grace St	N/A	N/A
BP-718	3rd St N & Walnut St	N/A	N/A
BP-719	2nd St & Princess St	N/A	N/A
BP-720	2nd St & Chestnut St	N/A	N/A
BP-721	2nd St & Grace St	N/A	N/A
BP-722	3rd St N & Red Cross St	N/A	N/A
BP-723	4th St & Grace St	N/A	N/A
BP-724	5th Ave & Grace St	N/A	N/A
BP-725	4th St & Chestnut St	N/A	N/A
BP-726	5th Ave & Chestnut St	N/A	N/A
BP-727	4th St & Princess St	N/A	N/A
BP-728	5th Ave & Princess St	N/A	N/A
BP-729	4th St & Market St	N/A	N/A
BP-730	5th Ave & Market St	N/A	N/A
BP-731	3rd St & Castle St	N/A	N/A
BP-732	5th Ave & Castle St	N/A	N/A
BP-733	Market St & 10th St	N/A	N/A
BP-734	16th St & Chestnut St	N/A	N/A
BP-735	16th St & Princess St	N/A	N/A
BP-736	5th Ave & Red Cross St	N/A	N/A
BP-737	8th St/McRae St & Red Cross St/Rankin St	N/A	N/A
BP-738	Rankin St & 10th St	N/A	N/A
BP-739	3rd St & Greenfield St	N/A	N/A
BP-740	Greenfield St & 5th Ave	N/A	N/A
BP-741	16th St & Greenfield St	N/A	N/A
BP-742	Greenfield St & 13th St	N/A	N/A
BP-743	13th St & Dawson St	N/A	N/A
BP-744	10th St & Dawson St	N/A	N/A
BP-745	16th St & Robin Hood Rd	N/A	N/A
BP-746	41st St & Lake Ave	N/A	N/A

Project ID	Project Name	From	To
BP-747	Independence Blvd & Mall Entrance	N/A	N/A
BP-748	Oleander Dr & Columbus Cir/ Mimosa Pl	N/A	N/A
BP-749	College Rd & University Shop Centers	N/A	N/A
BP-750	College Rd & Oriole Dr	N/A	N/A
BP-751	Racine Dr & Oriole Dr	N/A	N/A
BP-752	College Rd & Hunters Trl	N/A	N/A
BP-753	23rd St & Princess Place Dr	N/A	N/A
BP-754	Princess Place Dr & 30th St	N/A	N/A
BP-755	Princess Place Dr & Fire Station	N/A	N/A
BP-756	Racine Dr & Carl St	N/A	N/A
BP-757	New Centre Dr & Bob King Dr	N/A	N/A
BP-758	New Centre Dr & Shopping Center	N/A	N/A
BP-759	Randall Pkwy & Shopping Center	N/A	N/A
BP-760	Pine Grove Dr & Wallace Ave	N/A	N/A
BP-761	Pine Grove Dr & Long Leaf Hills Dr	N/A	N/A
BP-762	4th St & Red Cross St	N/A	N/A
BP-763	16th St & Grace St	N/A	N/A
BP-764	13th St & Wooster St	N/A	N/A
BP-765	10th St & Wooster St	N/A	N/A
BP-766	8th St & Castle St	N/A	N/A
BP-767	10th St & Castle St	N/A	N/A
BP-768	13th St & Castle St	N/A	N/A
BP-769	Carolina Beach Rd & Fire Station	N/A	N/A
BP-770	Shipyard Blvd & Hoggard HS/ Shopping Center	N/A	N/A
BP-771	College Rd & Cascade Rd/ Shopping Center	N/A	N/A
BP-772	6th St Bridge	N/A	N/A

Project ID	Project Name	From	To
BP-773	Military Cutoff Rd & Covil Farm Rd	N/A	N/A
BP-774	Military Cutoff Rd & Sir Tyler Dr/Main St	N/A	N/A
BP-775	Military Cutoff Rd & Destiny Way Fresco Dr	N/A	N/A
BP-776	Randall Dr & Racine Dr	N/A	N/A
BP-777	Hamilton Dr & Hurst Dr	N/A	N/A
BP-778	Market St & Cardinal Dr	N/A	N/A
BP-779	Martin Luther King Jr Pkwy & Isabel Holmes Bridge	N/A	N/A
BP-780	Isabel Holmes Bridge	N/A	N/A
BP-781	N 23rd St & Martin Luther King Blvd Ramp	N/A	N/A
BP-782	N 23rd St & Blue Clay Rd	N/A	N/A
BP-783	N 23rd St & Castle Hayne Rd	N/A	N/A
BP-784	Military Cutoff Rd & Fire Station 9	N/A	N/A
BP-785	Military Cutoff Rd & Arboretum Dr	N/A	N/A
BP-786	Carolina Beach Rd & Medical Center Dr	N/A	N/A
BP-787	17th St & New Hanover Med Park/Robin Hood Dr	N/A	N/A
BP-788	3rd St N & Brunswick St	N/A	N/A
BP-789	Dogwood Ln & Oleander Dr	N/A	N/A
BP-790	Eastwood Rd & Dungannon Blvd/ Long Leaf Acres Dr	N/A	N/A
BP-791	N College Rd & Kings Grant Rd	N/A	N/A
BP-792	US 17/Market St & N Green Meadows Dr	N/A	N/A
BP-793	US 17 Market St & Ogden Park Dr	N/A	N/A
BP-794	Gordon Rd & I-40 On ramp	N/A	N/A
BP-795	Gordon Rd & Netherlands Dr	N/A	N/A
BP-796	Gordon Rd & Ogden Park Dr	N/A	N/A
BP-797	Gordon Rd & Gordon Acres Dr	N/A	N/A

Project ID	Project Name	From	To
BP-798	Gordon Rd & White Rd	N/A	N/A
BP-799	Gordon Rd & Harris Rd	N/A	N/A
BP-800	N College Rd & Long Ridge Dr	N/A	N/A
BP-801	N College Rd & New Village Way	N/A	N/A
BP-802	Plantation Rd & Military Cutoff Extension	N/A	N/A
BP-803	Middle Sound Loop Rd & Red Cedar Rd	N/A	N/A
BP-804	Middle Sound Loop Rd & Darden Rd	N/A	N/A
BP-805	Biscayne Dr & Scorpion Dr	N/A	N/A
BP-806	Shenandoah St & Suncoast Dr	N/A	N/A
BP-807	White Rd & Suncoast Dr	N/A	N/A
BP-808	I-140 & Royster Rd NE	N/A	N/A
BP-809	I-140 & Cedar Hill Rd	N/A	N/A
BP-810	US 74/Andrew Jackson Hwy & Old Fayetteville Rd	N/A	N/A
BP-811	Lanvale Rd & Leland School Rd NE	N/A	N/A
BP-812	Mt Misery Rd & Cedar Hill Rd NE	N/A	N/A
BP-813	Grandiflora Dr & Timber Ln Extension	N/A	N/A
BP-814	US 74 Andrew Jackson Highway & Mercantile Dr NE	N/A	N/A
BP-815	Wilshire Blvd & Page Ave	N/A	N/A
BP-816	Wilshire Blvd & Bonham Ave	N/A	N/A
BP-817	New Centre Dr & Dapple Ct	N/A	N/A
BP-818	Chestnut St & 23rd St	N/A	N/A
BP-819	Shipyard Blvd & Worth Dr	N/A	N/A
BP-820	Carolina Beach Rd	N/A	N/A
BP-821	Carolina Beach Rd & Saint Andrews Dr	N/A	N/A
BP-822	River Rd & North River Rd Trail	N/A	N/A
BP-823	S Fort Fisher Blvd & Private Rd	N/A	N/A

Project ID	Project Name	From	To
BP-824	US Hwy 17 & Country Club Rd	N/A	N/A
BP-825	US Hwy 210 & US Hwy 17	N/A	N/A
BP-826	US Hwy 17 & Factory Rd	N/A	N/A
BP-827	US Hwy 17 & Hoover Rd	N/A	N/A
BP-828	US Hwy 17 & Schools	N/A	N/A
BP-829	US Hwy 17	N/A	N/A
BP-830	Sidbury Rd & US Hwy 17	N/A	N/A
BP-831	US Hwy 17 & Scotts Hill Loop Rd	N/A	N/A
BP-832	US Hwy 17 & Scotts Hill Loop Rd	N/A	N/A
BP-833	NC Hwy 210/NC Hwy 133/Clarks Landing Rd	N/A	N/A
BP-834	Ocean Ave & Island Greenway	N/A	N/A
BP-835	Spartanburg Ave & Island Greenway	N/A	N/A
BP-836	Sumter Ave & Island Greenway	N/A	N/A
BP-837	Shipyard Blvd & Independence Blvd	N/A	N/A
BP-838	US 17 & Olde Waterford Way/Ploof Rd SE	N/A	N/A
BP-839	US 17 & W Gate Dr/Grandiflora Dr	N/A	N/A
BP-840	Seventh Ave & K Ave	N/A	N/A
BP-841	N Ave & Fort Fisher Blvd	N/A	N/A
BP-842	US 17 & Provision Pkwy	N/A	N/A
BP-843	K Ave & 421	N/A	N/A
BP-844	College & Hoggard/Hurst Dr	N/A	N/A
BP-845	Harper and Canal Intersection Improvements	N/A	N/A
BP-846	St Joseph and Lake Park Intersection Improvements	N/A	N/A
BP-847	Canal and Pelican Intersection Improvements	N/A	N/A
BP-848	Atlanta and S Lake Park Intersection Improvements	N/A	N/A

Project ID	Project Name	From	To
BP-849	Lake Park Blvd and CB Lake Park Intersection Improvements	N/A	N/A
BP-850	Spartanburg Ave and Lake Park Blvd Intersection Improvements	N/A	N/A
BP-851	North Carolina Ave and Lake Park Blvd Intersection	N/A	N/A
BP-852	South Carolina Ave and Lake Park Blvd Intersection	N/A	N/A
BP-853	Texas Ave and Lake Park Blvd Intersection Improvements	N/A	N/A
BP-854	Harper Ave and 7th St Intersection Improvements	N/A	N/A
BP-855	Echo Farms Crossing	N/A	N/A
BP-856	Cape Fear River Crossing	Battleship Rd NE	Surry St
BP-857	Apache Trail MUP	Navaho Trail	Mohican Trl
BP-858	Belville Elementary Connector in Belville	Chappell Loop Rd	Belville Elementary
BP-859	Brunswick Forest to Town Creek Park and Schools	Town Creek Rd	Brunswick Forest Pkwy
BP-860	Wrightsville Beach Sidewalk Realignment	Airlie Rd	Marina St
BP-861	Market St MUP	30th St	Kerr
BP-862	New BikePed Facilities	US 17	River Rd

Sources:

- Cape Fear Transportation 2040 MTP (2015)
- NCDOT Complete Streets Policy (2019)
- North Carolina 2018-2027 STIP (2017)
- North Carolina 2020-2029 STIP (2019)
- WalkBikeNC North Carolina Statewide Pedestrian and Bicycle Plan (2013)
- River to the Sea Bikeway Master Plan (2013)
- Walk Wilmington: A Comprehensive Pedestrian Plan (2009)
- Wilmington/New Hanover County Comprehensive Greenway Plan (2013)
- Town of Leland Pedestrian Plan (2016)
- Carolina Beach Pedestrian Plan (2016)

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APPENDIX H: Ferry and Water Transportation Element

Current Trends

Ferries and water transportation offer an alternative mode of travel in coastal and river areas and may serve to shorten trip distances. Several cities in the United States have expanded their ferry and water transportation services, or have added new ones, in recent years. In addition to meeting recreational and tourism travel needs, ferry systems and water transportation services can provide another option for daily commuters, reducing congestion on roadways or overcrowded public transportation systems.

North Carolina has the second largest state-operated ferry system in the United States. The NCDOT Ferry Division operates 21 ferries on seven routes. The North Carolina Ferry System has maintained a steady annual increase in ridership. The expected continued growth of the tourism industry and new developments in the area are driving conversations about improvements to, and expansion of, the current ferry system. As roadways in the region become increasingly congested, the ferry system may provide an alternative to vehicular travel, especially if connections are provided to other alternative transportation networks such as bus routes and greenways. Leaders in the region are also interested in exploring the potential expansion of existing water transportation.

Ferries play a critical role in community service and public safety. In addition to providing emergency services and a means of emergency evacuation, ferries sometimes rescue distressed boaters.

Existing Conditions in the Region

The Cape Fear River is a significant geographic and hydrologic feature of the Wilmington Urban Area. With connections to the Atlantic Ocean, Intracoastal Waterway, and Brunswick River, the Cape Fear River serves as a central artery for the regional water transportation network.

Public ferry facilities within the Wilmington region are limited to the North Carolina Ferry System landings at

Southport (Brunswick County) and Fort Fisher (New Hanover County), the Port of Wilmington, and locally managed infrastructure primarily serving recreational boaters. According to the NCDOT Ferry Division, the Southport to Fort Fisher ferry transported approximately 468,000 passengers in 2017, or 26% of all riders on its seven routes. The Bald Head Island Ferry does not operate within the WMPO planning boundary but has a main terminal in Southport. Additionally, private boat operators providing taxi services and tourist vessels for hire may utilize public facilities for launching and mooring.

Installing facilities and operating service at the shoreline of waterways requires plans, permits, and maintenance similar to surface transportation projects. Projects to expand water transportation within the region would likely require a high degree of local support and funding in order to succeed.

Ferry and Water Transportation Modal Subcommittee

In order to analyze and propose recommendations for the development of ferry and water transportation in the Wilmington Urban Area, the WMPO contacted subject matter experts in the ferry and water transportation field to form a Ferry and Water Transportation Subcommittee. Specifically, the WMPO worked with the following organizations to develop the recommendations in this element:

- WMPO Citizens Advisory Committee (CAC)
- Bald Head Island Ferry
- United States Coast Guard
- New Hanover County Sheriff's Department
- NCDOT Ferry Division
- NCDOT Facilities Management Unit
- NCDOT Division 3
- NCDOT Transportation Planning Branch
- City of Wilmington Police Marine Unit

During Ferry and Water Transportation Subcommittee meetings, WMPO staff initiated group discussions by presenting pertinent facts, relevant information, and public survey results related to the current and future state of ferry and water transportation throughout the Wilmington region. Under the direction of the CAC, WMPO staff worked with the Ferry and Water Transportation Subcommittee to develop recommendations for the following components of this element:

- Goals and Objectives
- Project Scoring Criteria
- Policies

Recommendations from the Ferry and Water Transportation Subcommittee were presented to the CAC, Technical Coordinating Committee (TCC), and WMPO Board for further review and modification before being incorporated in Cape Fear Moving Forward 2045. Public input was also critical to the development of this element and is further discussed in Appendix D, the Public Involvement Element.

Ferry and Water Transportation Modal Goals and Objectives

Goals and objectives for the development of this element were created over a series of Ferry and Water Transportation Subcommittee meetings and serve three distinct purposes within this element. First, the goals and objectives guided the overall development of the element. Second, the goals and objectives were used as the criteria on which to base the scoring of ferry and water transportation projects in order to determine which projects were of greatest funding priority. Finally, the goals and objectives guided the development of policies which will ultimately be used to guide action on ferry and water transportation issues in the Wilmington region over the next 25 years. The mode-specific goals and objectives were reviewed by the CAC, Technical Coordinating Committee (TCC), and WMPO Board, alongside the overall MTP vision and goals, before being utilized in the development of Cape Fear Moving Forward 2045.

The goals and objectives for ferry and water transportation can be found below and continued on the following page.

Goal A: Safety

Objectives:

1. Develop new facilities and support existing facilities at locations along ferry routes not prone to shoaling
2. Reduce conflicts with non-ferry automobile traffic at ferry terminals
3. Ensure adequate security standards and protocols
4. Improve the efficiency of evacuation operations

Goal B: Environmental Responsibility

Objectives:

1. Minimize environmental disturbance of ferry operations
2. Increase the use of environmentally-preferable fuel and renewable energy sources

Goal C: Efficiency and Level of Service

Objectives:

1. Improve the overall transportation network in terms of congestion management and the efficient use of public infrastructure
2. Improve (widen to broader ridership needs) ADA accessibility and mobility from ferry terminal to adjacent destinations
3. Develop new ferry routes and add express passenger service for commuter and tourism markets
4. Improve capacity of existing ferry routes to reduce wait times and vehicles left behind

Goal D: Modal Integration

Objectives:

1. Improve access to and quality of intermodal ferry terminal and marina facilities
2. Increase infrastructure to promote biking to and from the ferry terminals
3. Promote opportunity for bike share at ferry terminals and park and ride locations
4. Improve public transit connections to ferry terminals
5. Provide bike parking and/or storage facilities on ferries
6. Implement preferred loading for bicycle and pedestrians onto ferries
7. Provide additional parking at ferry terminals or offsite park and ride lots

Goal E: Economic Development

Objectives:

1. Enhance and maintain ferry service to tourist destinations and local employment areas
2. Incorporate passenger amenities such as shuttles, waiting areas, and sidewalks into future service facility design
3. Expand ferry capacity at rush hour to encourage commuting by ferry

Project Scoring Criteria

The list of needed ferry and water transportation projects was quantitatively scored and ranked by the Ferry and Water Transportation Modal Subcommittee based on the goals and objectives identified in this element, using the scoring system developed by the subcommittee (shown on the opposite page). This ranked list was then evaluated and revised by the CAC, TCC, and WMPO Board and used as the basis for the fiscal constraint analysis to determine which projects are anticipated to receive funding in the region between 2020 and 2045, as discussed in Appendix E, the Financial Element.

Ferry and Water Transportation Scoring System

Scale	Goal	Criteria	Attribute	Score
25	Safety	Reduce conflicts with nonferry automobile traffic and multimodal traffic at ferry terminals	Adds waiting/stacking capacity onsite	20
			Adds crosswalk and cyclist crossing for Fort Fisher Blvd and ferry entrance access	
			Adds lights and/or signs calling attention to walkers and cyclists	
	Environmental Responsibility	Improve the efficiency of evacuation operations	Connects evacuation routes	5
			Standardizes/expands facilities accessible to ferry	
	10	Minimize environmental disturbance of ferry operations	Study or mitigation plan for shoaling	10
			Study or mitigation plan for environmental impacts	
			Limits impacts to extent of previously disturbed site	
25	Efficiency and Level of Service	Improve the overall transportation network in terms of congestion management and the efficient use of public infrastructure	Connects evacuation routes to detour Congestion Management Area (CMA)	10
			Standardizes/expands facilities accessible to ferry	
			Reduces number of cars traveling to CMA	
			Reduces Vehicle Miles Traveled (VMT)	
			Adds daily or long-term parking at terminal	
		Improve capacity of existing ferry routes to reduce wait times and vehicles left behind	Adds service capacity (per hour/per day)	15
			Adds capacity for commuter "rush hour" traffic	
			Adds capacity for seasonal tourist traffic	
25	Modal Integration	Improve access to and quality of intermodal ferry terminal and marina facilities	Adds pedestrian connection to facility	10
			Completes sidewalk connection route	
			Connects to sidewalk network	
		Increase infrastructure to promote cycling to and from the ferry terminals	Completes continuous bike route to facility	5
			Connects to bike network	
		Improve public transit connections to ferry terminals	Connects to or adds transit infrastructure at terminals	10
			Increases connectivity to existing bus routes	
			Increases connectivity to transit stops	
15	Economic Development	Enhance and maintain ferry service to tourist destinations and local employment areas	Standardize/expand facilities accessible to ferry	5
			Route connects to employment center	
			Route connects to tourism center	
		Incorporate passenger amenities such as shuttles, waiting areas	Completes sidewalk connection route	5
			Improves existing terminals for passengers	

Policies

The policies below were developed by the Ferry and Water Transportation Subcommittee based on the goals and objectives of this element. Ferry and water transportation policies will be used to guide action on ferry and water transportation issues in the Wilmington Urban Area. Each policy was reviewed through public outreach and by the CAC, TCC, and WMPO Board before being included in Cape Fear Moving Forward 2045.

The WMPO will work with member agencies to do the following:

- Prioritize safety for operators and passengers by maintaining regulatory compliance and utilizing industry best practices for ferry systems.
- Recognize existing and potential ferry routes as public transit opportunities to connect pedestrian, bicycle, and bus networks.
- Increase tourist and commuter ridership of existing ferry routes by improving facilities and adapting to changes in demand.
- Promote the viability of additional water transportation routes through a private or public/private partnership with local boat operators.

Fiscally-Constrained Ferry and Water Transportation Project List



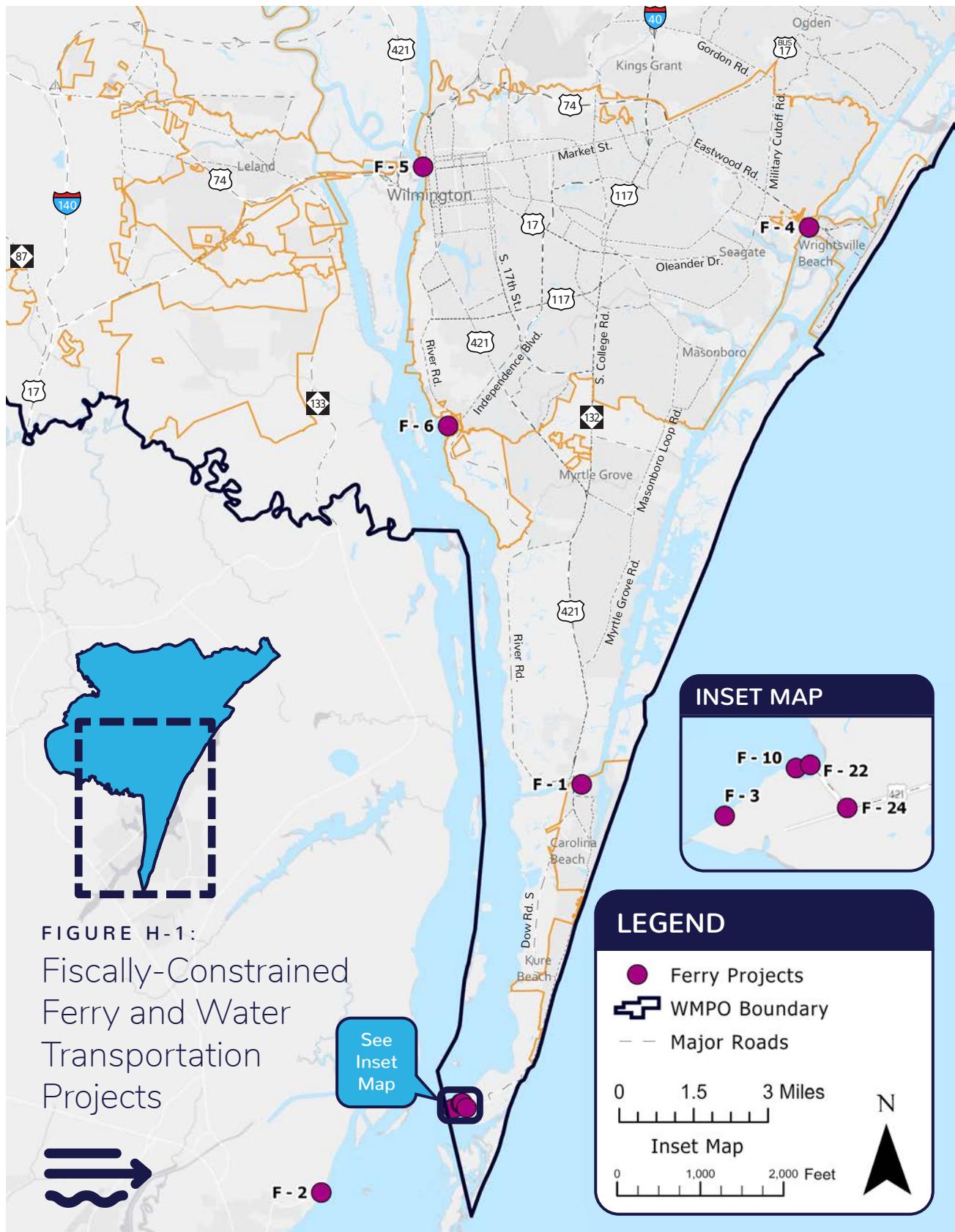
Fiscally-constrained, programmed in
2018-2027 STIP, 2020-2029 STIP



Fiscally-constrained projects

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
1	F-5703	Replacement Vessel (support fleet)*	2025	\$3,250,000
2	F-2	Southport Additional Mooring Facility	2025	\$5,796,370
3	F-24	Fort Fisher Pedestrian Improvements	2025	\$39,006
4	F-22	Fort Fisher Mooring Facility	2030	\$6,719,582
5	F-3	New River Class Vessel (3rd Ferry)	2035	\$18,883,582
6	F-10	New River Class Vessel (4th Ferry)	2035	\$18,883,582
7	F-5	Downtown Wilmington Ferry/Taxi Stop	2045	\$444,258
8	F-1	Carolina Beach Ferry/Taxi Stop	2045	\$444,258
9	F-6	Central Marina/Independence Terminal	2045	\$3,331,934
10	F-4	Wrightsville Beach Ferry/Taxi Stop	2045	\$444,258

* Not shown on map



Fiscally-Constrained Ferry and Water Transportation Project Descriptions

Replacement Vessel (support fleet)

F-5703

Description: Replacement of tugs and barges for the support fleet of the Southport - Fort Fisher Ferry.

Southport Additional Mooring Facility

F-2

Description: Construction of an additional mooring facility at Southport for the Southport - Fort Fisher Ferry. Additional mooring to include dolphins, ramps, and gantries.

Fort Fisher Pedestrian Improvements

F-24

Description: Installation of sidewalk to the facility entrance. Proposed sidewalk will provide a connection to the crosswalk and MUP/sidewalk along Fort Fisher Blvd.

Fort Fisher Mooring Facility

F-22

Description: Construction of an additional mooring facility at Fort Fisher for the Southport - Fort Fisher Ferry. Additional mooring to include ramps, gantries, and stacking lanes.

New River Class Vessel (3rd Ferry)

F-3

Description: Acquisition of an additional vehicle ferry for the Southport - Fort Fisher route.

New River Class Vessel (4th Ferry)

F-10

Description: Acquisition of an additional vehicle ferry for the Southport - Fort Fisher route.

Downtown Wilmington Ferry/Taxi Stop

F-5

Description: Construct ticketing facilities and provide shore power to create a passenger ferry stop at the Downtown Wilmington Riverwalk. (Proposed Route: Downtown Wilmington - Carolina Beach)

Carolina Beach Ferry/Taxi Stop

F-1

Description: Enhance Carolina Beach Municipal Docks to be accessible by passenger ferry. (Proposed Route: Downtown Wilmington - Carolina Beach)

Central Marina/Independence Terminal

F-6

Description: Construct ferry terminal/mooring facility to accommodate pedestrian ferry.
(Proposed Route: Downtown Wilmington - Carolina Beach)

Wrightsville Beach Ferry/Taxi Stop

F-4

Description: Enhance dock at CAMA Access Point to be accessible by passenger ferry.
(Proposed Route: Carolina Beach - Wrightsville Beach)

Ferry and Water Transportation Complete Project List

Project ID	Project Name	Project Type
F-1	Carolina Beach Ferry/Taxi Stop	Proposed Mooring Facility
F-2	Southport Additional Mooring Facility	Proposed Mooring Facility
F-3	New River Class Vessel (3rd Ferry)	Proposed Additional Vessel(s)
F-4	Wrightsville Beach Ferry/Taxi Stop	Proposed Mooring Facility
F-5	Downtown Wilmington Ferry/Taxi Stop	Proposed Mooring Facility
F-6	Central Marina/Independence Terminal	Proposed Ferry Terminal
F-7	Low-draft River Class Vessel	Proposed Additional Vessel(s)
F-8	Town of Belville Mooring Facility	Proposed Mooring Facility
F-9	Town of Belville Terminal/Multimodal Hub	Proposed Ferry Terminal
F-10	New River Class Vessel (4th Ferry)	Proposed Additional Vessel(s)
F-11	High Speed Pedestrian Ferry from Fort Fisher to Charleston, with stop in Myrtle Beach	Proposed Additional Vessel and Mooring Facility
F-12	Public Boat Ramp (on Intracoastal Waterway in Porters Neck/Scotts Hill)	Boat Ramp
F-13	High Speed Ferry to Ocracoke	Proposed Additional Vessel and Mooring Facility
F-14	Ferry Times	Improvements/Policy
F-15	More Public Boat Ramps	Boat Ramp
F-16	Central Marina to Carolina Beach	Proposed Ferry Route
F-17	Central Marina to Downtown Wilmington	Proposed Ferry Route
F-18	Carolina Beach to Wrightsville Beach	Proposed Ferry Route
F-19	Carolina Beach to Fort Fisher	Proposed Ferry Route
F-20	Downtown Wilmington to Navassa	Proposed Ferry Route
F-21	Leland to Independence	Proposed Ferry Route

Project ID	Project Name	Project Type
F-22	Fort Fisher Mooring Facility	Proposed Mooring Facility
F-23	Fort Fisher Parking Lot Enhancement	Proposed Facility Improvements
F-24	Fort Fisher Pedestrian Improvements	Proposed Facility Improvements

Sources:

- NC Moves 2050, State of the System: Ferry
<https://www.ncdot.gov/initiatives-policies/Transportation/nc-2050-plan/Documents/nc-moves-fact-sheet-ferry.pdf>



Photo Credit: North Carolina State Ports Authority

APPENDIX I:

Freight and Freight Rail Element

Current Trends

Freight industry analysis revealed that the last mile of transportation to a freight node is the most congested, the slowest, and the most dangerous—thus more costly. In recent years, discussions of first mile/last mile issues primarily focused on urbanized areas where truck and rail primary routes leave corridors dedicated to speed and mobility to enter corridors dedicated to serving local access and mobility needs.

Balancing all of the functions of a transportation system in the first mile/last mile is particularly important to the safe and efficient movement of freight into and out of an urbanized area. The rapidly growing population presents itself as a pressing concern in the development of transportation networks that serve freight.

North Carolina is experiencing an increased emphasis on freight and rail planning in the urbanized areas, which is encouraging transportation organizations to invest more heavily in freight-supporting infrastructure. Investments include public projects to improve identified truck route corridors and entering into public-private partnerships to improve infrastructure while gaining public benefits from economic development.

The Port of Wilmington has been experiencing steady growth and is expected to grow by nearly 45% by 2045 according to the 2017 NCDOT Statewide Multimodal Freight Plan. This progress would have seismic economic impacts throughout the region in both job creation and import/export taxation. However, this growth could end up being conservative given the acceleration of automation in the freight industry, which would cause extreme disruption followed by exponential growth spurred by near perfect efficiency.

Existing Conditions in the Region

Freight infrastructure within the Wilmington Urban Area consists of roadways and railways designated for use by freight carriers. Types of freight include those typically seen in other Metropolitan Planning Organizations (MPOs) throughout the country, such as domestic delivery and goods associated with the manufacturing and industrial sectors. Freight-generating facilities in the Wilmington region include the Port of Wilmington, Colonial Terminals, MCO Transportation, Apex Oil, and Invista.

Primary Highway Freight System (PHFS) routes, North Carolina Priority Highway Freight Network (NCPHFN) routes, Critical Rural Freight Corridors (CRFCs), Critical Urban Freight Corridors (CUFCs), and local truck routes are all found within the WMPO planning boundary and are heavily utilized by highway freight traffic. See Figure I-1, Freight Routes in the Wilmington Region, on the opposite page. Existing conditions of the highway system and trends for roadways within the Wilmington region are discussed in the Roadway Element found in Appendix K.

Currently, there is a growing interest in freight rail service within the Wilmington Urban Area, along with a renewed focus on potential passenger rail. CSX Transportation operates a Class I Railroad in the region, with intermodal facility connections outside of the WMPO boundary. A shortline, Wilmington Terminal Railroad connects the CSX Transportation line to the Port of Wilmington and other freight-generating facilities within the City of Wilmington. CSX Transportation Davis Yard, located in Navassa, serves as the regional base for switching operations. Additionally, the US Army operates the rail connection to Military Ocean Terminal Sunny Point (MOTSU). Although MOTSU is not within the WMPO planning area, the rail line is partially located within the planning area boundary and the activities at MOTSU, and on the rail line, could have significant impacts on large portions of the Wilmington region.

Imports, exports, and commodities used by businesses in southeastern North Carolina are affected by inefficiencies in the rail system. In 2017, a Wilmington rail realignment feasibility study was performed to determine the practicality, necessity, and viability of relocating rail track in the Wilmington Beltline from the Port of Wilmington directly to Brunswick County. This would further improve the mobility of freight to and from the Port via rail, while decreasing travel delay for vehicular traffic on Wilmington roadways. NCDOT also owns 27 miles of the former Wilmington & Weldon rail line right-of-way between Wallace (Duplin County) and Castle Hayne (New Hanover County). The restoration of this rail service would connect the Wilmington region to the northern I-95 corridor and main line networks along the east coast, offering additional freight opportunities and potential passenger services.

A new rail service, the Queen City Express, was launched in July 2017 with daily intermodal service between the Port of Wilmington and Charlotte, North Carolina. This service is a collaboration between North Carolina Ports and CSX Transportation, which operates the rail line. Potential future growth of intermodal rail moving into and out of the Wilmington region is also dependent on the proposed CSX facility in Rocky Mount, North Carolina and the reestablishment of the Wallace to Castle Hayne connection.

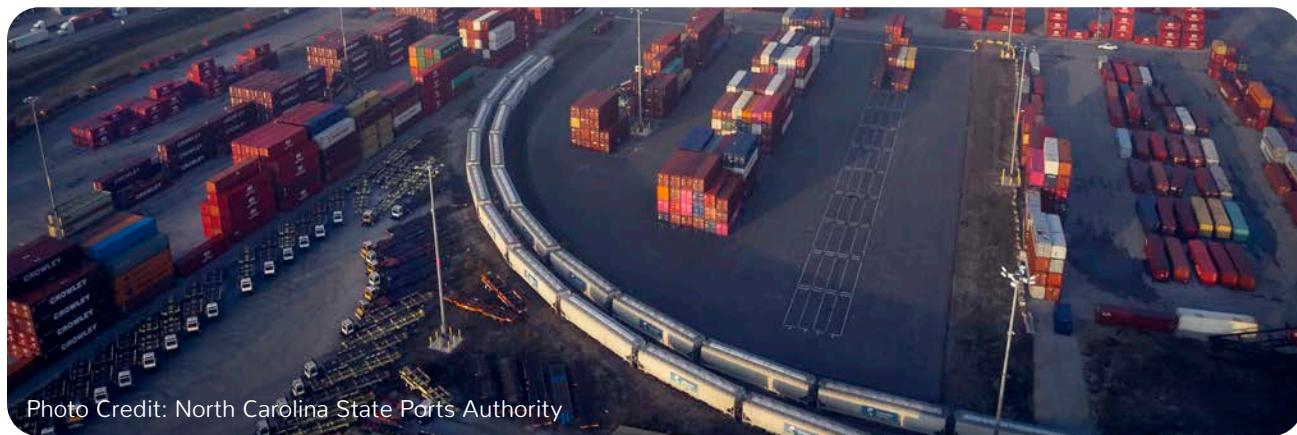
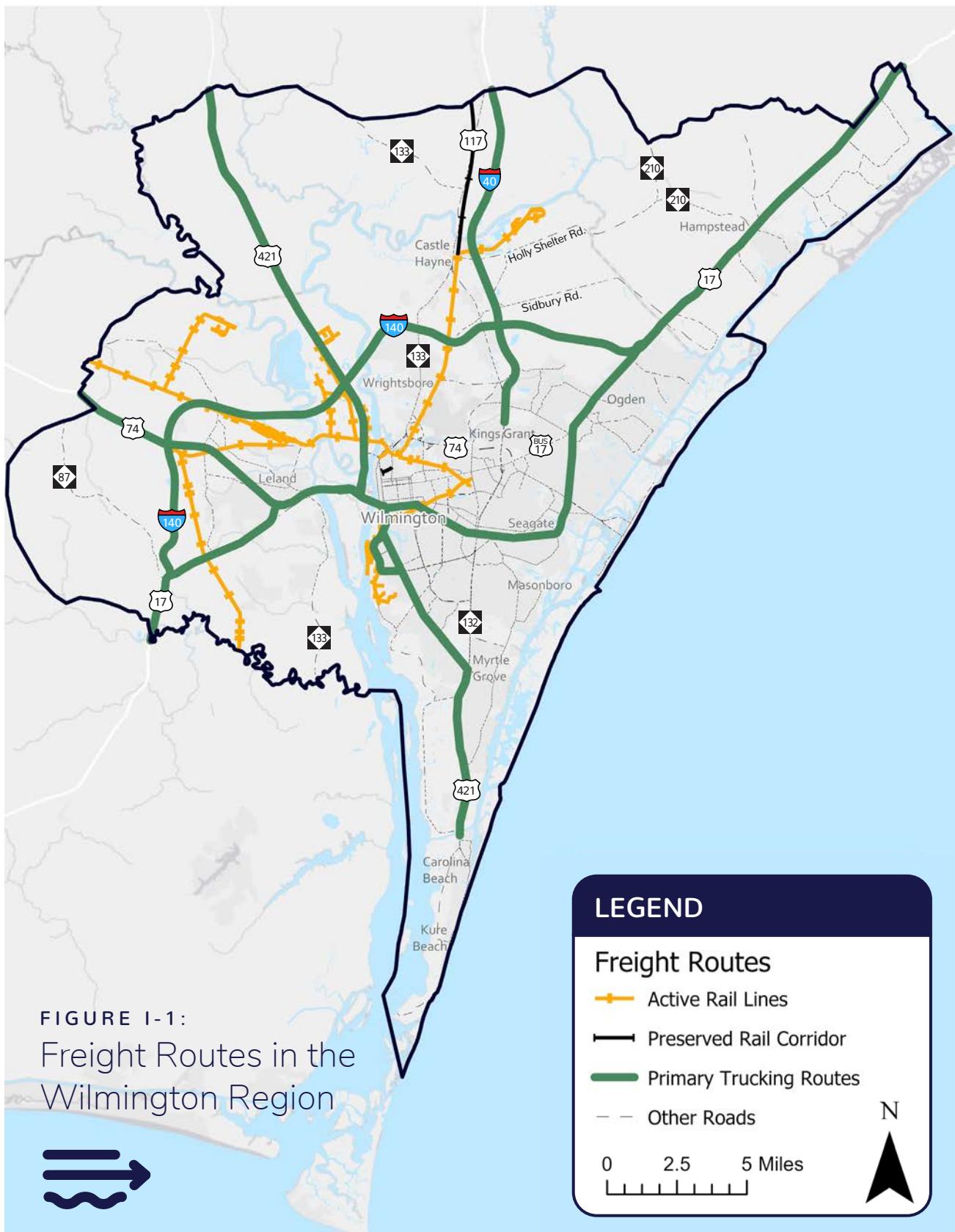


Photo Credit: North Carolina State Ports Authority



The North Carolina Port of Wilmington

The Port of Wilmington is located on the Cape Fear River within the City of Wilmington in New Hanover County and is the larger of two seaports in the state. The Port contains 284 acres of developed land and 150 acres of undeveloped land, providing container, bulk, and breakbulk services. The Port of Wilmington has recently constructed a 101,000 square-foot cold storage facility, in addition to offering container bays for refrigerated containers. The Port, which is equipped to handle over 600,000 Twenty-foot Equivalent Unit (TEU) containers, has approximately 23 acres of covered storage and 125 acres of open storage area. This vast capacity is used to ship and store various commodities including chemicals, food products, petroleum products, wood products, and steel utilizing intermodal trade via water, rail, and roadways.



Photo Credit:
North Carolina State Ports Authority

The Port of Wilmington is designated as a Foreign Trade Zone 214, along with Wilmington International Airport (ILM). NCDOT has projected a 43% growth of the Port over the life of this plan. In 2018, NC Ports undertook a Container Terminal Yard Improvement Planning Study with the key objective of expanding the current terminal throughput capacity to accommodate a minimum 750,000 TEUs annually by 2025. Recent investments in infrastructure improvement projects, including the procurement of new neo-Panamax cranes, berth renovations, and vessel navigation improvements, have increased the container berth's capacity to well over 1,000,000 TEUs annually. However, in order to achieve the forecasted annual throughput volume, it has been identified that existing key port infrastructure directly behind the berth, such as the main terminal gate complex, the container storage yard and paving, and intermodal yard require improvements so that the capacity of the rest of the terminal can match or exceed the targeted annual throughput. In total, the five-year infrastructure investment plan requires \$250 million in support of the expansion plan at NC Ports.

The Port of Wilmington's steady growth is a product of its business model to remain competitive in its facilities and services offered relative to competitor port facilities in the Southeast, which include Norfolk, Virginia; Charleston, South Carolina; and Savannah, Georgia. North Carolina Ports is working with its federal

NC PORT OF WILMINGTON ➔ JULY 1, 2017 TO JUNE 30, 2018

322,291

TEUs*

CONTAINERS

195,000

Tons

BREAKBULK MATERIAL

2.4M

Tons

BULK MATERIAL

*A TEU (Twenty-foot Equivalent Unit) is a volume measurement used in container transportation

Source: North Carolina State Ports Authority, North Carolina Ports: 2018 Economic Contribution Study



Above: The Port of Wilmington's new refrigerated container yard, completed in April 2020, has increased the Port's refrigerated container ("reefer") plugs from 235 to 775. Phase 2 of the project would allow the Port to expand to over 1,000 plugs. Photo Credit: North Carolina State Ports Authority

partners on necessary navigational harbor enhancements that will enable the Port of Wilmington to better accommodate deep-draft container vessels. Efforts to widen the existing turning basin from 1,400 feet to 1,524 feet were completed in the spring of 2020, enabling the Port to accommodate ultra-large container vessels which can carry 14,000 TEUs. The Port of Wilmington also undertook a project to raise the height of the Duke Energy transmission lines that traverse the Cape Fear River to the south of the Port. Working with Duke Energy, the transmission lines were raised 41 feet to a total height of 212 feet.

The Port of Wilmington currently maintains a competitive edge over its neighboring facilities in terms of efficiency. One measure of this efficiency is average truck turning times. A truck turn is essentially the amount of time it takes for a freight truck to enter the facility, conduct its business, and leave the port. The average single and double (import/export) truck turns at the Port of Wilmington are 18 minutes and 30 minutes, respectively, which is several minutes less than Norfolk, Charleston, and Savannah.

The North Carolina Ports 2018 Economic Contribution Study estimates that the Port of Wilmington contributed approximately \$12.9 billion to North Carolina businesses. Approximately \$9.1 billion of this was through the Port's container activity. Additionally, the Port of Wilmington spurred (both directly and indirectly) approximately 78,600 jobs across the state of North Carolina. State and local tax contributions from the Port

of Wilmington in 2018 were estimated to be \$589.5 million.

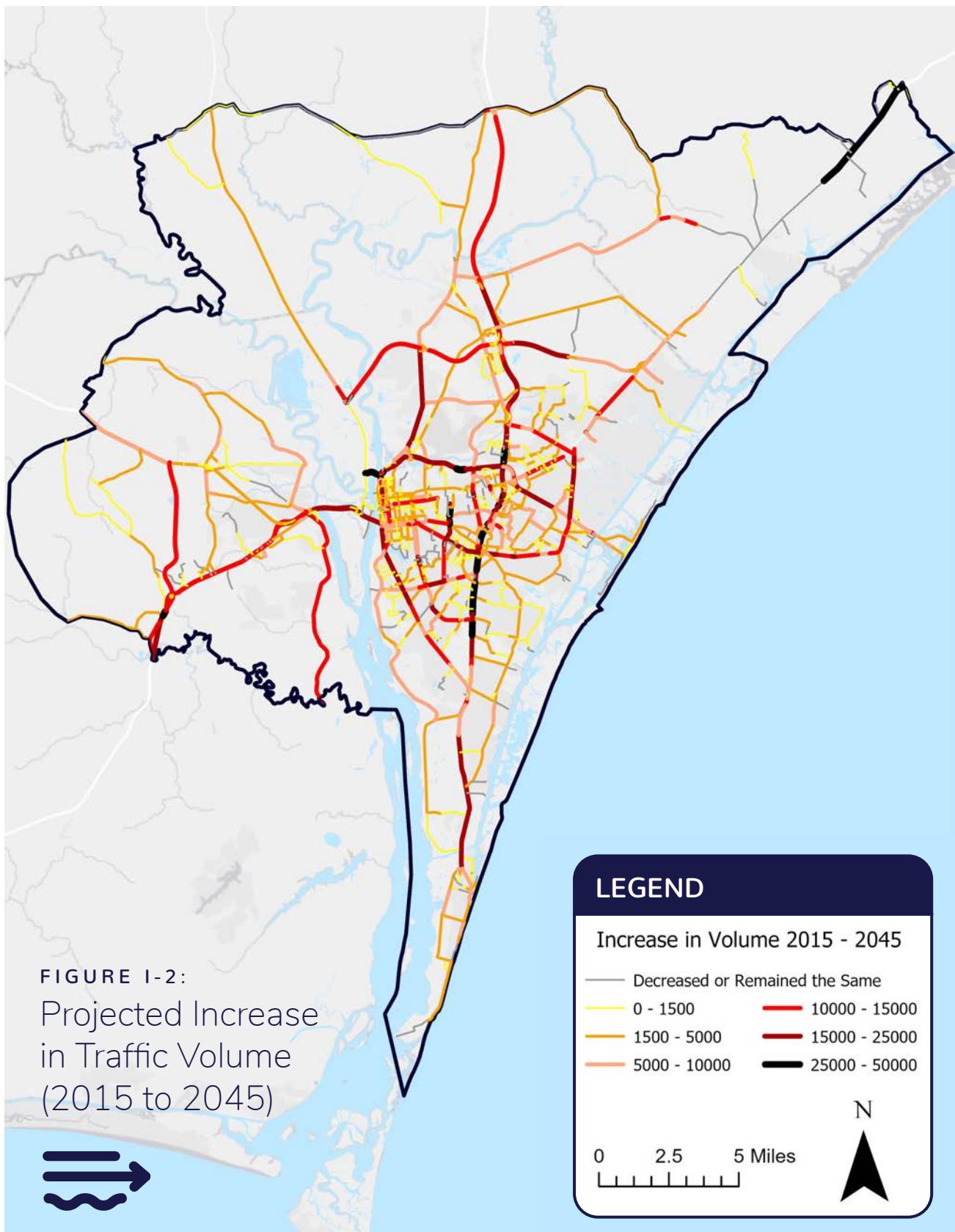
In addition to the commodity trading services, the Port also serves an important military role. The Port of Wilmington is the designated Seaport of Embarkation (SPOE) for the troops at Fort Bragg, which is the largest military base in the world with about 65,000 active duty and reserve soldiers. The Port is the alternate SPOE for both Joint Base Langley-Eustis and Camp Lejeune. This role is critical to Army and Marine Corps Power Projection Platforms (PPPs), which facilitate the rapid, strategic deployment of troops and equipment to assist in various domestic or global crises. In these exercises, the ability to move personnel and gear quickly and efficiently is of the utmost importance, increasing the need for further improvements to roadways, rail, and water transportation in the various corridors connecting the Port to state and nationwide transportation networks.

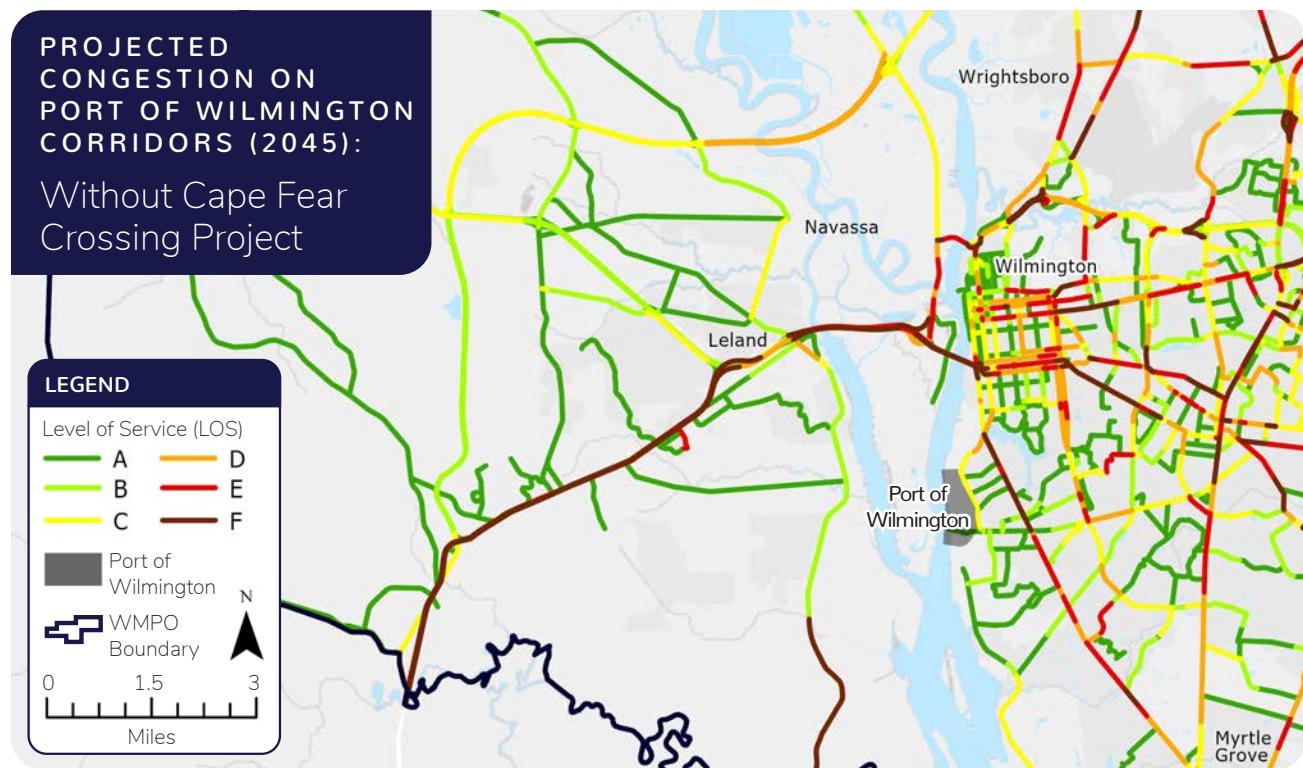
Future demand projections suggest that congestion levels on the local transportation network could negatively impact the Port's growth and competitiveness. Access to the port terminal is vital to maintaining an efficient and effective supply chain, as the roads and rail lines leading into and out of the Port are key components of North Carolina's pipeline to the global marketplace. Large-scale projects such as the Wilmington Rail Realignment, the restoration of rail service between Wallace and Castle Hayne, and the Cape Fear Crossing, will not only benefit and support the enormous growth projected for the Port of Wilmington, but will also provide traffic flow and safety improvements to the local roadway network. Though all three projects have been identified by the WMPO as regionally critical, alternative funding sources will need to be identified in order to move forward with their implementation. This plan supports further advocacy of these projects, as well as the identification of new or alternative funding sources.

The maps on the following pages illustrate the projected increase in traffic volume for the region over the life of the plan, as well as projected congestion and projected volume on Port of Wilmington corridors (with and without the Cape Fear Crossing).

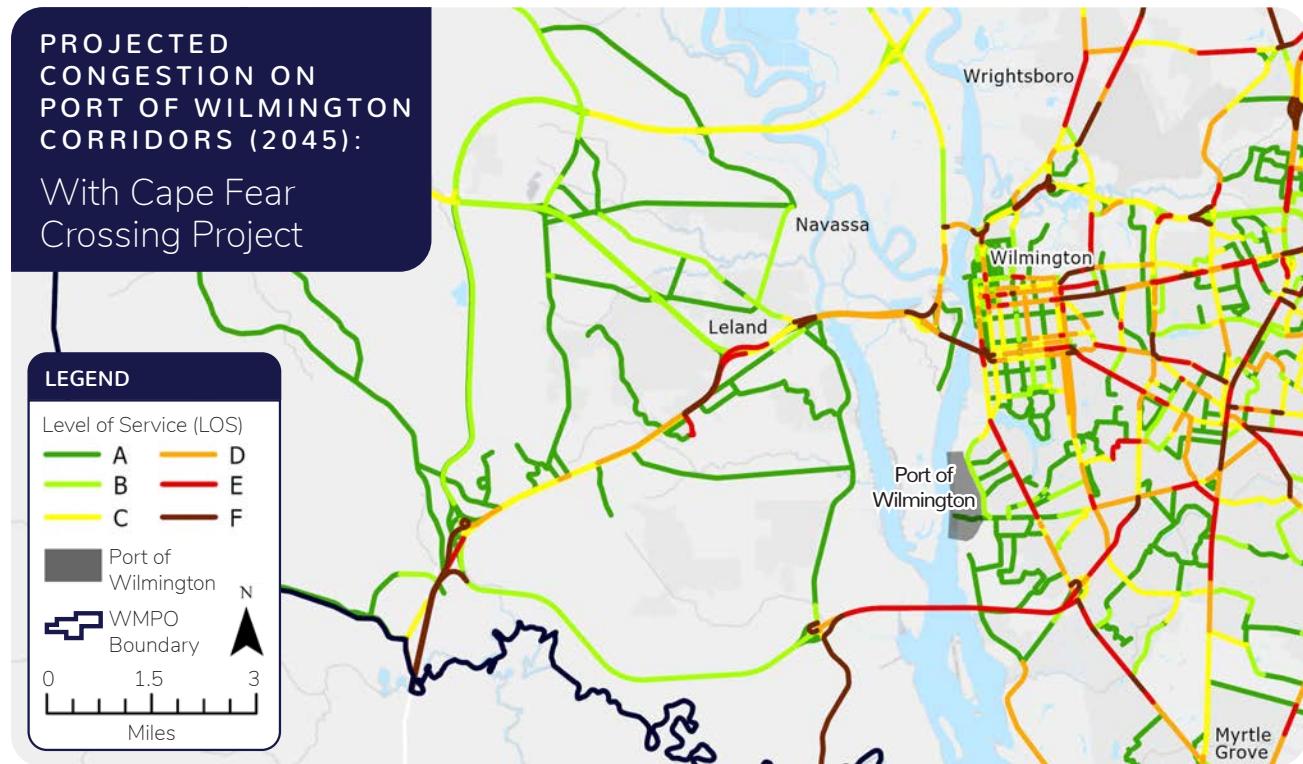


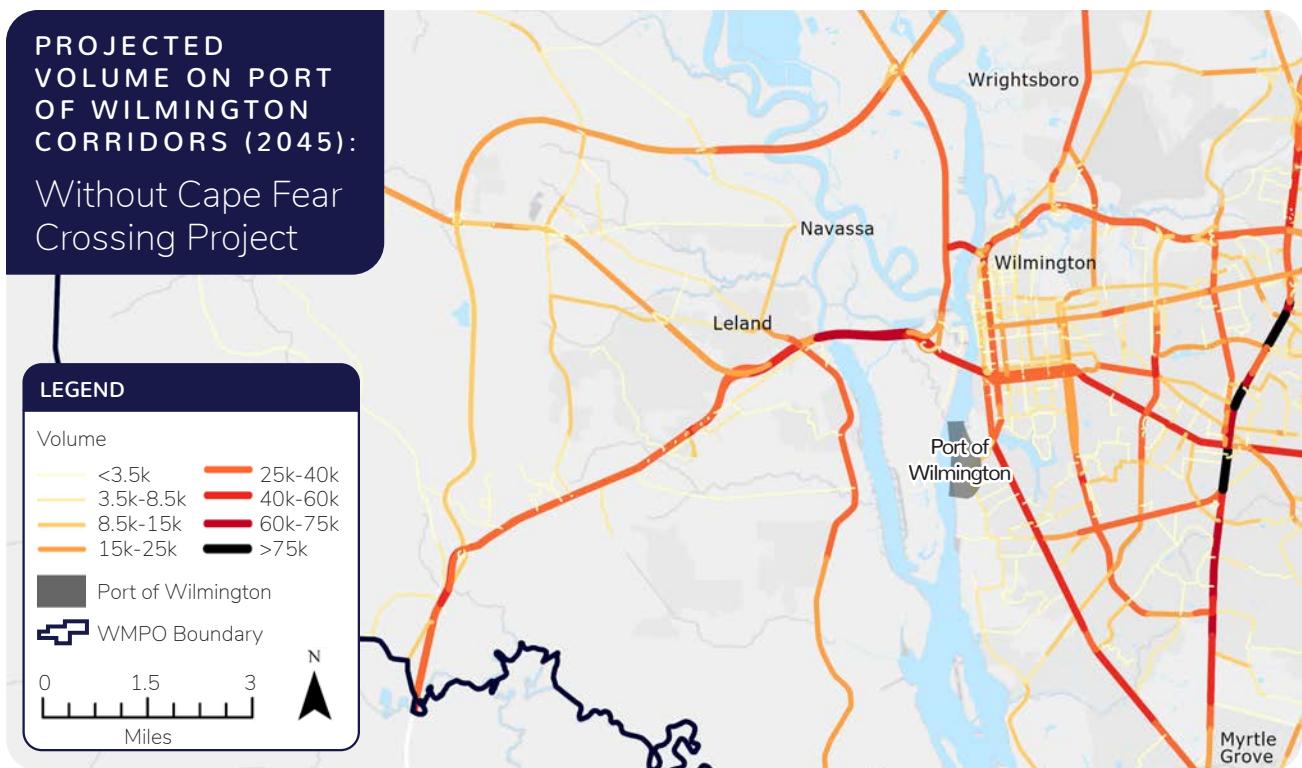
Above: The MV Hyundai Hope—the largest container ship in NC Ports history—called on the Port of Wilmington in May 2020. The ship, which can carry nearly 14,000 TEUs, is seen here in the Cape Fear River on its way to the Port.



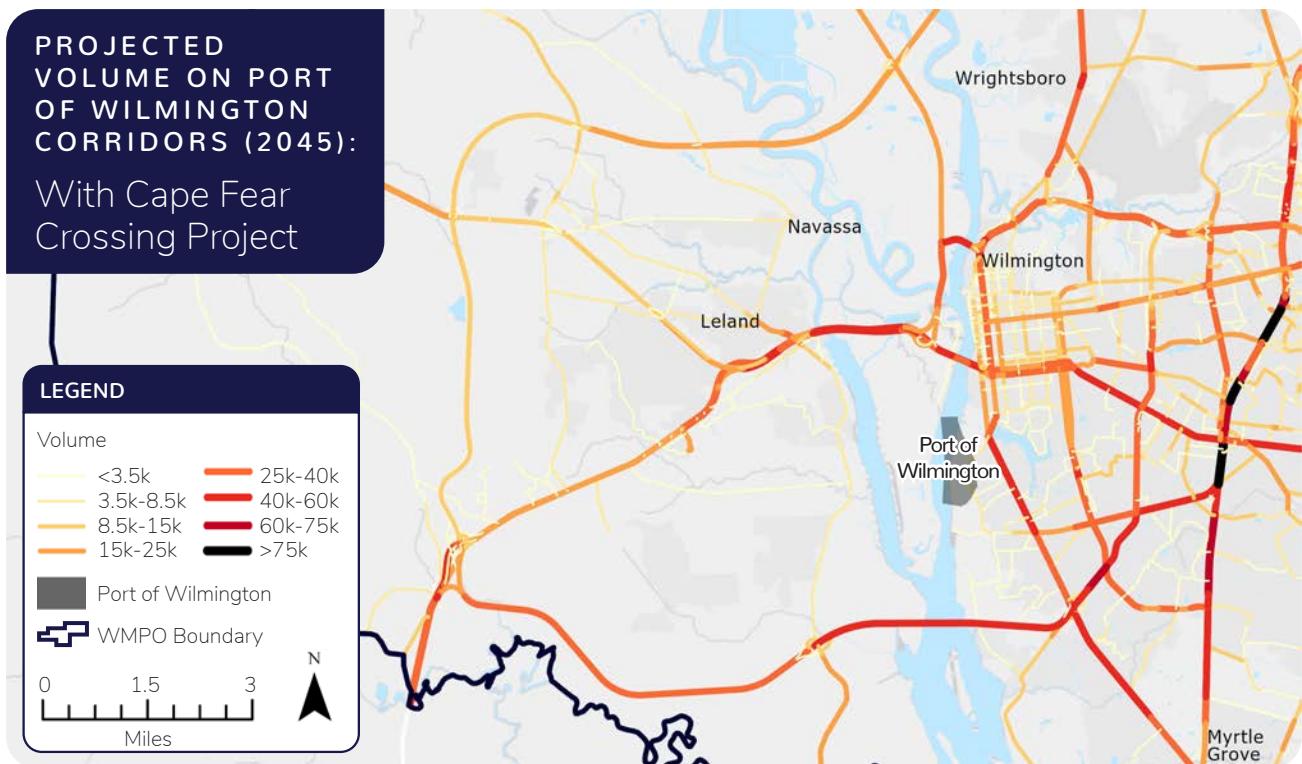


NOTE: Levels of service are defined in Appendix K, Roadway Element





NOTE: Cape Fear Crossing Alternative MA shown. This is one of two alternatives preferred by the WMPO.



Freight and Freight Rail Modal Subcommittee

In order to analyze and propose recommendations for freight and freight rail within the Wilmington Urban Area, the WMPO contacted subject matter experts in the field to form a Freight and Freight Rail Subcommittee. Specifically, the WMPO worked with the following organizations to develop the recommendations for this element:

- WMPO Citizens Advisory Committee (CAC)
- City of Wilmington Rail Realignment
- Wilmington Terminal Railroad
- North Carolina State Ports Authority, Port of Wilmington
- MCO Transport
- Colonial Terminals, Inc.
- MOTSU
- NCDOT Rail Division
- NCDOT Division 3
- NCDOT Transportation Planning Division

WMPO staff worked with the Freight and Freight Rail Subcommittee to develop recommendations for the following components of this element:

- Goals and Objectives
- Project Scoring Criteria
- Policies

Freight and Freight Rail Modal Goals and Objectives

Goals and objectives for the development of this element were created over a series of Freight and Freight Rail Subcommittee meetings and serve three distinct purposes within this element. First, the goals and objectives guided the overall development of the element. Second, the goals and objectives were used as the criteria on which to base the scoring of freight and freight rail projects in order to determine which projects were of greatest funding priority. Finally, the goals and objectives guided the development of policies which will ultimately be used to guide action on freight and freight rail issues in the Wilmington region over the next 25 years. The mode-specific goals and objectives were reviewed by the CAC, Technical Coordinating Committee (TCC), and WMPO Board, alongside the overall MTP vision and goals, before being utilized in the development of Cape Fear Moving Forward 2045.

The goals and objectives for freight and freight rail can be found below and continued on the following page.

Goal A: Regional Economic Vitality and Innovation

Objectives:

1. Leverage regional assets such as ports, airports, rail, and other intermodal facilities
2. Encourage job creation by providing sufficient transportation capacity for freight and rail users

3. Directly or indirectly support (new and existing) industrial parks, warehouse distribution centers, and freight infrastructure within the WMPO planning area
4. Develop and sustain regionally or economically strategic freight corridors across all modes
5. Build capacity for both domestic and international freight
6. Facilitate future adaptations to accommodate changing demands and technology
7. Preserve rail-served sites for future rail-served industrial development

Goal B: Transportation Network Efficiency and Safety

Objectives:

1. Mitigate key congestion bottlenecks within the freight network
2. Improve speed, safety, and efficiency of truck movement along the existing roadways to better accommodate growing volumes in the near- and mid-term
3. Improve speed, safety, and efficiency of rail movement along the existing railroad to better accommodate growing volumes in the near- and mid-term
4. Improve or maintain safe and reliable connections to ports, rail terminals, military bases, and major logistics and manufacturing sites
5. Transform rail alignments and corridors to improve efficiency and encourage the use of under-utilized gateways and assets
6. Eliminate and/or mitigate freight and rail conflicts with other modes
7. Incentivize collaboration across modes to realize cost and schedule efficiencies

Goal C: Supply Chain Resilience and Reliability

Objectives:

1. Align the MTP with the North Carolina State Freight Plan
2. Build resiliency to extreme events and hazards by designing and constructing less vulnerable infrastructure to minimize loss, and employing rapid restoration techniques after a disaster
3. Address key challenges and bottlenecks affecting the movement of military personnel, supplies, and equipment
4. Improve and maintain the reliability of freight corridors

Project Scoring Criteria

The list of needed freight and freight rail projects was quantitatively scored and ranked based on the goals and objectives identified in this element. This ranked list, which was evaluated and revised by the CAC, TCC, and WMPO Board, formed the basis of the fiscal constraint analysis determining which projects are anticipated to receive funding in this region between 2020 and 2045, as discussed in Appendix E, Financial Element.

Freight and Freight Rail Scoring System

Scale	Goal	Criteria	Attribute	Score
35	Regional Economic Vitality and Innovation	Improves connectivity of regional assets to freight network	Connection to high priority freight corridor (arterials and Class I)	5
			Connection to a freight asset	5
			Connection to a potential asset	
			Reduces connection distance (new route between assets)	5
		Increases capacity of an identified NC Strategic Corridor	Adds capacity or throughput to priority freight route or Class 1 rail High=10, Medium=5	10
	Transportation Network Efficiency and Safety	Proactively alleviates congestion in WMPO Travel Demand Model 2045 forecasted growth areas	Employment growth area High=5, Medium=2	10
			Population growth area High=5, Medium=2	
		Mitigates congestion and bottlenecks for freight	Annual Average Daily Traffic (AADT)* >2000=5, >3000=10 *Calculated using % Truck Volume from the WMPO's Congestion Management Process (CMP)	5 or 10
			Eliminates at-grade crossing	10
			Level of Service (LOS) C=5, D/E/F=10	
	Supply Chain Resilience and Reliability	Improves safety of corridors connecting freight assets	Crash Rate (High=10, Medium=5, Low=3)	10
			Existing at-grade crossing	5
			Mode convergence corridor	
		Builds reliability for highway and rail freight corridors	Interstate/Freeway/Major Arterial/Strategic Transportation Corridor (STC) designation	5
			Sealed corridor distance increase	10
			CMP delay >60sec=5, >90sec=10	
		Improves vulnerable infrastructure and/or builds redundant infrastructure	Alternative route to critical freight corridor New route=10 Improvement to existing route=5	10
		Improves corridors to serve military movements	Strategic Highway Network (STRAHNET) (or Alternative Route)	5
			Strategic Rail Corridor Network (STRACNET) (or Alternative Route)	
			Freight route to Port (or Alternative Route)	

Policies

The policies below were developed by the Freight and Freight Rail Subcommittee based on the goals and objectives of this element. Freight and freight rail policies will be used to guide action on freight and freight rail issues in the Wilmington Urban Area. Each policy was reviewed through public outreach and by the CAC, TCC, and WMPO Board before being included in this plan.

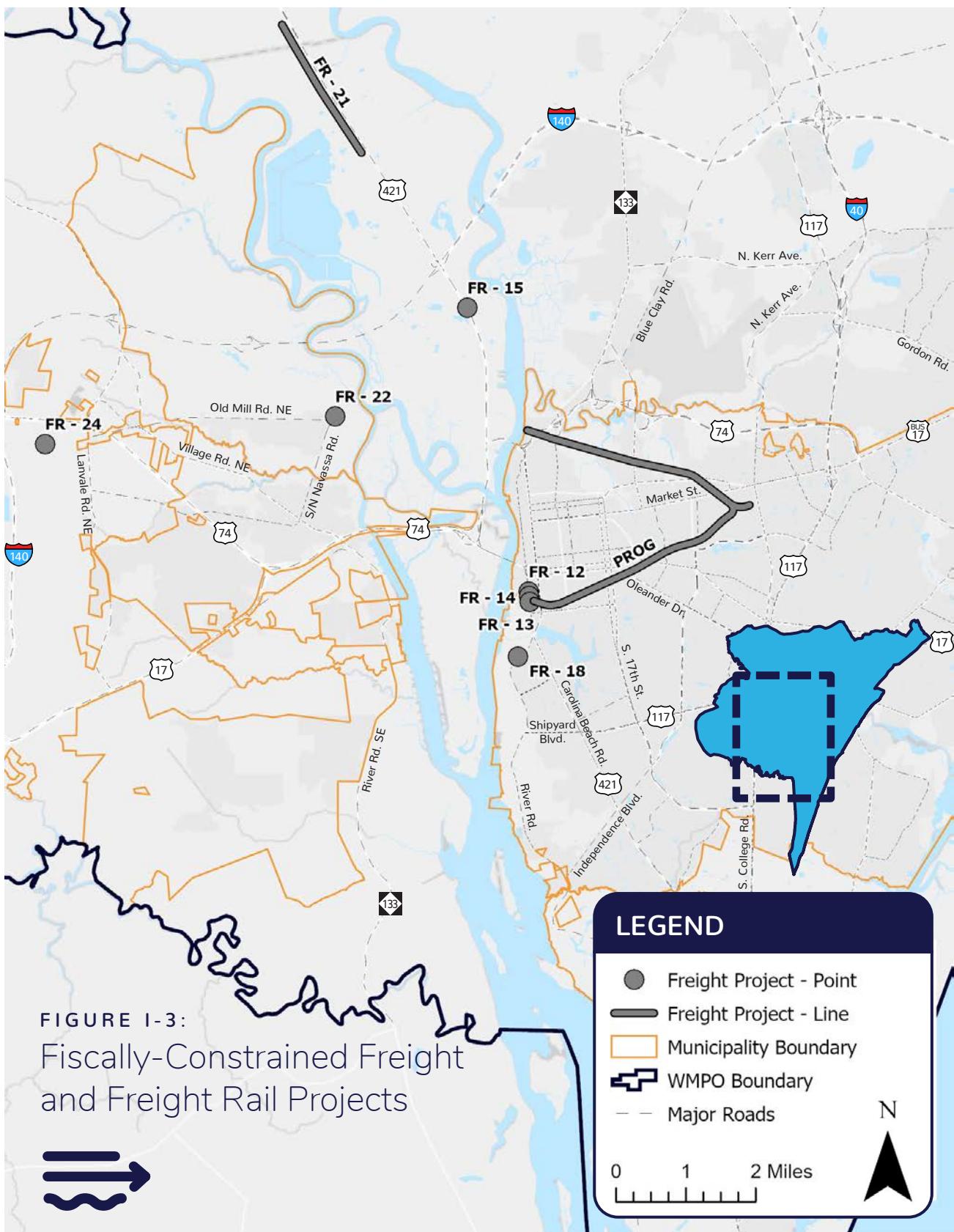
The WMPO will work with member agencies to do the following:

- Accommodate emerging technology and facilitate adaptations relating to changing demands.
- Invest in circulation and safety improvements that mitigate the impact of freight on the community.
- Increase the collection of freight data that can be used to analyze system usage and needs.
- Prioritize the preservation of existing facilities to maintain a state of good repair.
- Build system reliability by decreasing vulnerability, increasing redundancy, and developing rapid response plans for disasters and emergencies.
- Align proposed projects with freight facility investments outside the WMPO boundary through coordination with local, state, and federal agencies.
- Recognize the importance of Strategic Business Plan projects for improved freight movement.

Fiscally-Constrained Freight and Freight Rail Project List

- Fiscally-constrained, programmed in 2018-2027 STIP, 2020-2029 STIP
- Fiscally-constrained projects
- Unfunded during planning horizon

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
1	PROG	Wilmington Beltline Improvements	2035	\$41,400,000
2	FR-18	North Gate Separation	2025	\$2,755,652
3	FR-12	Front Street RR Crossings (Meares)	2025	\$1,095,000
	FR-13	Front Street RR Crossings (Marstellar)		
	FR-14	Front Street RR Crossings (Kidder)		
4	FR-22	Davis Yard At-grade Crossing (Cedar Hill Road Safety Improvement)	2025	\$365,171
5	FR-15	US421 Railroad Crossing	2025	\$365,171
6	FR-21	Extension to Pender Commerce Park	2035	\$9,347,804
7	FR-24	Redesign Railroad Interchange near Northwest District Park (CSX/US Army)	2045	\$15,464,046
8	FR-18	Rail Realignment	2045+	\$1,321,173,874
9	FR-16	South Gate Grade Separation	2045+	\$40,229,403
10	FR-7	Re-establish Rail Connection from Castle Hayne to Wallace	2045+	\$322,207,323
11	FR-23	New Service from Malmo to Whiteville	2045+	\$24,601,891
12	FR-19	Rail Transit on Downtown Wilmington Rail Corridor	2045+	\$43,115,075



Fiscally-Constrained Freight and Freight Rail Project Descriptions

Project Description	PROG
Wilmington Beltline Improvements	
Description: Improvements to the CSX SE Line, or the “Beltline,” including curve realignments, tie and rail rehabilitation, and upgrades to switch operations as well as improvements to existing at-grade crossings (signal upgrades, surface improvements, and selected closures). (Limits: CSX Davis Yard in Navassa to S 2nd Street in Wilmington—approximately 13 miles)	
North Gate Separation	FR-18
Description: Realign track and install new bridge. (Limits: Port of Wilmington North Gate to CSX Davis Yard in Navassa)	
Front Street RR Crossings (Meares)	FR-12
Description: Bring crossing up to modern safety standards. (Limits: Meares Street access to Front Street)	
Front Street RR Crossings (Marstellar)	FR-13
Description: Bring crossing up to modern safety standards. (Limits: Marstellar Street access to Front Street)	
Front Street RR Crossings (Kidder)	FR-14
Description: Bring crossing up to modern safety standards. (Limits: Hess Terminal Road, across from Kidder Road)	
Davis Yard At-grade Crossing (Cedar Hill Road Safety Improvement)	FR-22
Description: Bring rail crossing at Cedar Hill Road (just north of Quality Drive) up to modern safety standards.	
US421 Railroad Crossing	FR-15
Description: Install railroad gates to improve safety. (Limits: Fleming Street to Sutton Steam Plant Road)	
Extension to Pender Commerce Park	FR-21
Description: New track on new location. (Limits: Invista to Pender Commerce Park)	

Redesign Railroad Interchange near Northwest District Park (CSX/US Army)

FR-24

Description: Reroute track/direct turn. (Limits: Old Fayetteville Road to Lanvale Road NE)

Freight Rail Connection - Castle Hayne to Wallace*

FR-7

Description: Restoration of rail service from Castle Hayne to Wallace. The rail corridor is owned and preserved by NCDOT but not currently in service.

City of Wilmington Rail Realignment*

FR-18

Description: Realignment of the existing CSXT rail line that currently runs through the City. Project includes the development of a new freight rail corridor with a new access point at the Port of Wilmington and more direct service to Navassa; and the reconfiguration of the existing corridor for the use of a trolley or other light rail transit.

Cape Fear Crossing*

U-4738

Description: New route on new location, beginning in the vicinity of US17 & I-140 in Brunswick County and continuing across the Cape Fear River to US421 near the Port of Wilmington in New Hanover County. This future toll facility/Interstate will improve traffic flow and enhance freight movements.

*Although not fiscally-constrained within the Freight and Freight Rail Element of this plan, these projects are regionally significant, and alternative funding sources will need to be identified. Tolling was approved as an alternative funding source in order to fiscally-constrain a portion of the Cape Fear Crossing (see Appendix K, Roadway Element).

Freight and Freight Rail Complete Project List

Project ID	Project Name	Project Type
FR-1	Front Street Widening and Redesign	Roadway
FR-2	Dedicated Truck Interstate Access to NC Port	Roadway
FR-3	Leland Causeway Widening	Road Widening
FR-4	Burnett Boulevard Widening at Myers Street	Road Widening
FR-5	Greenfield Street to Woodbine Street Connection	Connection
FR-6	Rail Crossing of the Cape Fear River	Rail
FR-7	Freight Rail Connection Castle Hayne to Wallace	Rail
FR-8	Reroute Burnett Blvd	Reroute

Project ID	Project Name	Project Type
FR-9	Front Street & Burnett Boulevard Turn Lanes	Roadway
FR-10	Carolina Beach Road & Shipyard Boulevard sb RTL	Roadway
FR-11	Shipyard Boulevard at Rutledge Drive AM	Roadway
FR-12	Front Street RR Signals (Meares)	Signals
FR-13	Front Street RR Signals (Marstellar)	Signals
FR-14	Front Street RR Signals (Kidder)	Signals
FR-15	US421 RR Crossing Safety Improvements	Rail
FR-16	NC Port of Wilmington Rail Crossing (South Gate)	Rail
FR-17	NC Port of Wilmington Rail Crossing (North Gate)	Rail
FR-18	Rail Realignment	Rail Realignment
FR-19	Use of Rail Line in Wilmington	Rail
FR-20	Reroute River Road around the Industrial Terminals	Roadway
FR-21	Extension to Pender Commerce Park	Rail
FR-22	Davis Yard At-grade Crossing (Cedar Hill Rd Safety Improvement)	Rail
FR-23	New service Malmo to Whiteville	Rail
FR-24	Redesign railroad interchange near Northwest District Park (CSX/USARMY)	Rail

Sources:

- Cape Fear Transportation 2040 MTP (2015)
- Cape Fear Commutes 2035 MTP (2010)
- North Carolina 2018-2027 STIP (2017)
- North Carolina 2020-2029 STIP (2019)
- North Carolina Statewide Multimodal Freight Plan (2017)
- North Carolina Ports: Economic Contribution Study (2018)
- Wilmington Rail Realignment and Right of Way Use Alternatives Feasibility Study (2017)
- <https://ncports.com/wp-content/uploads/2019/09/Queen-City-Express-CIP-Flyer.pdf>



APPENDIX J:

Public Transportation Element

Current Trends

National, state, and regional trends, along with public input, were studied in order to recognize and understand patterns in public transportation. While urbanization has been a national trend, the overwhelming trend for public transportation has been a decline in ridership at the national, state, and local levels due to economic and lifestyle factors. Another trend that has been identified is reduced or inconsistent federal and state funding, which has led to increased investment at the local level. In response to these trends, unique solutions are beginning to appear in both the public and private sectors along with technology and mode choice solutions.

Economic Factors

The economy has had an impact on ridership figures both locally and nationally, and traditional funding sources are either not keeping up with costs or are inconsistent, forcing systems to adapt by seeking more local funding. The Cape Fear Public Transportation Authority (CFPTA), which operates as Wave Transit, has recognized these changes in revenue sources and identified solutions to financial shortcomings in its Short Range Transit Plan (SRTP). In 2010, the population of the Wilmington region surpassed 200,000, resulting in a loss of \$250,000 in Section 5311 (Rural Area Formula Grant) funding. Other federal funding sources, such as the Job Access and Reverse Commute (JARC) Program (Section 5316) and the New Freedom Program (Section 5317) have been repealed or have expired. State funding, primarily from NCDOT's State Maintenance Assistance Program (SMAP), is unpredictable from one year to the next.

There is a strong correlation between the economy and public transportation ridership. Due to the current low cost of car ownership in the United States, and the preference to drive a car, many public transportation riders are customers who depend on the service as their only form of transportation. According to the most recent SRTP for Wave Transit, ridership has decreased, not only in our local system by 2%, but also in peer transit agencies across the state, including Charlotte (-5%), Fayetteville (-4%), Greensboro (-5%), Greenville (-21%), Raleigh (-14%), and Winston-Salem (-17%). A decrease in ridership can also be attributed to lifestyle and mode choice factors that are more available.

Lifestyle Factors

The urbanization trend has led to an increase in the population of cities. One would expect increased density to lead to increased ridership but there are other factors to consider. The availability of alternative transportation options from Transportation Network Companies (TNCs), along with an increase in telecommuting, are lifestyle factors that could be contributing to the decrease in public transportation use. Technology is allowing workers to forgo their daily commutes and work from home more often. According to analytics and management consulting firm Gallup, in 2015, 37% of workers in the United States said that they had telecommuted. This is up 5% from 2006 and four times higher than in 1995, when the company's annual poll found that only 9% of U.S. workers had telecommuted. Similarly, technology has allowed TNCs such as Uber and Lyft to capture a percentage of what would be public transportation customers. A 2017 University of California, Davis study found that, in major U.S. cities, transit use decreased by an average of 6% among those who had started to use ridesourcing.

Public Opinion

Every transportation network is unique and the Wilmington Urban Area is no exception, which is why it is important to continually engage customers and citizens during the planning process. Public input is an important part of the planning process because it helps planners identify the deficiencies of a transportation network from the public's perspective. Public outreach was a critical part of the development of Cape Fear Moving Forward 2045 as well as recent planning documents developed by Wave Transit that served as references for the development of this plan.

Wave conducted a thorough outreach effort to engage existing and potential riders, along with community stakeholders during the development of the organization's SRTP. Wave held public meetings at Forden Station; hosted other public outreach events; and conducted online and onboard surveys and stakeholder meetings. These outreach efforts revealed a desire for extended trolley service, increased frequency of service on existing routes, greater coverage and access to beaches, and increased on-demand service. Public input also supported improved amenities and increased access to bus stops. These comments reflected the national trend of increased service through increased frequency, while also improving comfort and addressing first mile/last mile accessibility challenges.

Public Sector Services

Public transportation systems struggle with balancing frequency and coverage. Frequency has been shown to offer better service to less customers, while coverage reaches more customers at the cost of service. Bus Rapid Transit (BRT), Fixed Rail Transit, and Demand Response Service (DRT) are becoming more popular because these services specialize in meeting both frequency and coverage needs.

Bus Rapid Transit

BRT is a high-quality, bus-based transit system designed to improve the capacity and reliability of a conventional bus system. BRT is capital-intensive due to the cost of constructing dedicated bus lanes and implementing infrastructure features that mimic Fixed Rail Transit to improve boarding efficiency. BRT is being implemented in Raleigh and shows promise towards increasing choice public transportation ridership. Wave has the potential to introduce some elements of BRT, such as enhanced stations, bus stops, and fare collections that would expedite boarding.

Fixed Rail Transit/Streetcar

Fixed Rail Transit transports passengers in rail cars or streetcars, usually traveling along a single line of rail. The rails are located in the right-of-way and are often separated from other traffic. Fixed Rail Transit is the most capital-intensive transit solution due to high right-of-way, infrastructure, and operation costs and it is only recommended for high density corridors. Fixed Rail Transit offers the best service because of its restricted right-of-way and efficient boarding. Charlotte has successfully launched its light rail, Blue Lynx, that connects the City and the University of North Carolina at Charlotte.

Demand Response Transit

DRT is a common public transit service in areas with low passenger demand, where regular bus service is not considered to be financially viable. The provision of public transportation in this manner emphasizes one of its functions as a social service rather than creating a viable movement network. One of the drawbacks of DRT is the ability to identify demand that justifies service. This is becoming a more viable solution with technology from the private sector gaining traction and helping potential customers identify transportation offerings that they might not have known existed.

Private Sector

Transportation Network Companies

TNCs, such as Uber and Lyft, have had a profound impact on the transportation landscape by being able to directly match transportation demand with supply. While TNCs have potentially taken a share of customers that would otherwise utilize public transportation, they offer a higher level of convenience in regards to location and frequency that may not be available through public transportation. One of the most important aspects of TNCs is the ability to match riders with transportation services through a cellular device. The ability to combine trip source, trip destination, service type, payments, and waivers makes for a seamless transportation experience for the user with high quality service. This type of service is beginning to be introduced in public transportation through Microtransit. Microtransit is a form of demand-responsive transportation that utilizes similar technology to Uber and Lyft with shuttles to transport passengers, providing a more convenient public transportation service. The main benefit of Microtransit is the improved service, which could potentially be a door-to-door solution. However, the introduction of Microtransit to compliment fixed route bus service has not proven to offer any significant cost savings due to the reduced capacity of the smaller buses and vans used. The introduction of electric vehicles and autonomous technology could help to overcome these operational deficiencies.

Shared Mobility

The Federal Highway Administration (FHWA) defines shared mobility as an innovative transportation strategy which allows users short-term access to shared vehicles, bicycles, or other modes on an as-needed basis. Bike sharing, car sharing, and ride sharing, as well as on-demand ride services, are all forms of shared mobility. In particular, bike and scooter share have had a large impact on public transportation. Similar to TNCs, the use of shared mobility has potentially taken customers from public transportation, especially those who only need service for a short distance. Additionally, many TNCs offer ride sharing—examples include UberPool and Lyft's shared ride option.

Technology

The implementation of new technologies will have a profound impact on the service and comfort of public transportation in the future, and its potential is still being fully realized. Popular technologies being implemented include autonomous vehicles, demand route planning, Automatic Passenger Counters (APC), automated fare payment, and WiFi.

Autonomous Vehicles

Autonomous vehicles, while still relatively new and still developing, will have a strong impact if incorporated into public transportation. Labor costs are significant to any transportation service provider and, by reducing operating costs, these providers may be able to add new routes, increase frequency, or make other improvements to public transportation systems. There are still significant safety and privacy barriers that are preventing autonomous vehicles from being implemented at large.

Demand Route Planning

Demand route planning is the ability to react to demand with adaptive routes that link similar trips. This is comparable to what Uber and Lyft do through their pool services. This technology is beginning to be utilized in paratransit and many companies believe that it could also benefit Microtransit.

Automated Fare and Data Collection

New technology is allowing customers to prepay on cards or mobile devices, allowing for more efficient boarding and improved time performance. Data collection of customers is also becoming automated, which allows operations staff to access trip level data in order to improve routes.

WiFi

Many of these new technologies require WiFi to connect the vehicle to the system operators. WiFi is also a comfort feature that could potentially attract more choice riders who may prefer to use their commute time productively rather than being behind the wheel of a car. It is important to be mindful of increased urbanization and decreased ridership trends as well as countermeasures offered by the public and private sector when addressing the public transportation needs of a community.

Resiliency

Devastation caused by natural disasters has led to further emphasis being placed on resiliency of transportation systems at the federal, state, and local levels. Resiliency, which is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions, is of critical importance to the Wilmington Urban Area as the region experienced two significant hurricanes during the development of this plan.

Existing Conditions in the Region

During the development of Cape Fear Moving Forward 2045, the WMPO conducted a survey that included questions related to transit. The survey showed a desire within the region for increased transportation options. While the majority of citizens currently drive a car to travel to school or work, nearly 50% reported that they would prefer to use public transportation for these trips in the future. The most common barriers noted by citizens for impeding their use of public transportation included frequency of service and the comfort of access to bus stops. The input received and trends identified from all of these efforts were used in the development of goals and objectives for this element.

Wave Transit: Governance

In 2004, the City of Wilmington and New Hanover County entered into an interlocal agreement, merging the Wilmington Transit Authority and New Hanover County Transportation Authority to become the Cape Fear Public Transportation Authority (CFPTA). The mission of CFPTA (Wave Transit) is “to develop and maintain an effective, efficient, and safe system of public transportation services within southeastern North Carolina which is responsive to the mobility needs of the community.”

With the creation of the CFPTA, an 11-member Board was appointed to govern the operations of the Authority. The Board was comprised of five members appointed by the New Hanover County Commissioners; five members appointed by the Wilmington City Council; and one member jointly appointed by the New Hanover County Commissioners and the Wilmington City Council to represent human services.

In February 2020, the New Hanover County Commissioners and the Wilmington City Council passed joint resolutions to dissolve the current CFPTA Board and appoint an interim Board consisting of the New Hanover County Manager; the Wilmington City Manager; the Deputy Attorney for New Hanover County; Wilmington City Attorney; the WMPO Executive Director; the Budget Director for the City of Wilmington; the Chief Financial Officer for New Hanover County; and an appointee of choice from both the New Hanover County Commissioners and Wilmington City Council. The interim Board has been tasked with examining the current operational and financial conditions of the Authority and to restructure the system in an effort to increase ridership and provide a fiscally-responsible operating model.

Wave Transit: Infrastructure and Vehicles

Wave Transit has made substantial investments in new facilities in recent years in order to better serve its customers and to accommodate future growth. Wave’s administrative offices are located at Forden Station, which opened in 2011 and is the easternmost transfer facility in the system. In 2015, Wave Transit opened its Operations Center, which provides a consolidated hub for the transit provider’s 73-vehicle fleet, incorporating maintenance facilities and fueling stations, along with vehicle storage. The Downtown Wilmington Multimodal Transportation Center, which is located on 3rd Street, was completed in early 2020 and is now the primary transfer center for all of the routes that serve downtown Wilmington. Wave currently has 441 stops, 25 of which have covered shelters. Improving safety, accessibility, and comfort of customers is of high priority to Wave Transit and the WMPO.

In accordance with the Federal Transit Administration (FTA), any transit agency that owns, operates, or manages capital assets which are used to provide public transportation must develop a Transit Asset Management (TAM) plan, if it receives federal funding. All vehicles currently owned and operated by Wave Transit are inventoried in Wave's current TAM plan. These include:

- (21) heavy, heavy duty (hh) buses
- (2) trolleys
- (16) shuttle buses
- (24) paratransit (PT) vehicles
- (4) vanpool vans

Wave Transit: Routes and Programs

Wave Transit is the primary provider of public transportation within the WMPO planning area, serving the City of Wilmington and New Hanover County as well as Northern Brunswick County. Wave currently offers the following services, which are detailed below.

- Fixed-Route Service (Community Routes)
- Seahawk Shuttle
- Downtown Trolley
- Dial-A-Ride Transportation (DART)
- Vanpool

Fixed-Route Service (Community Routes)

Wave's traditional fixed-route services—its community routes—make up the highest percentage of its service hours and ridership. These fourteen routes, which run on a regular schedule, are primarily on a 60-minute frequency. Exceptions include Route 201, which operates on a 30-minute headway during peak commuting times, and Route 301, which operates on a 3-hour frequency. Operation of Wave's community routes is contracted out to a third party, First Transit. Wave Transit's community routes include:

- | | |
|---|--|
| <ul style="list-style-type: none">• Route 101, Princess Place• Route 103, Oleander East• Route 104, Northeast• Route 105, Medical Center• Route 106, Shipyard Blvd• Route 107, College Road• Route 108, Market Street | <ul style="list-style-type: none">• Route 201, Carolina Beach Road• Route 202, Oleander West• Route 204, Brunswick Connector• Route 205, Longleaf Park• Route 207, North• Route 210, South 17th Street• Route 301, Pleasure Island |
|---|--|

Seahawk Shuttle

The Seahawk Shuttle includes eight fixed-routes that transport primarily students and employees of the University of North Carolina at Wilmington (UNCW). These routes are funded in part by the University through transportation fees included in tuition. The routes, which run on headways that vary from five minutes to 60 minutes, serve the campus and surrounding area, although Route 712 does offer connections to Wave's community routes via Forden Station. Students may utilize the community routes at no cost. The Seahawk

Shuttle is open to the public, but requires standard fare. Operation of the Seahawk Shuttle is also contracted out to First Transit. The current Seahawk Shuttle routes include:

- Route 701, Blue Shuttle
- Route 702, Green Shuttle
- Route 703, Red Shuttle
- Route 704, Yellow Shuttle
- Route 705, Loop Shuttle
- Route 707, Red Express Shuttle
- Route 711, Grey Shuttle
- Route 712, Teal Shuttle

Downtown Trolley

The downtown trolley connects the Central Business District to the Brooklyn Arts, Castle Street, North Waterfront, and South Front Districts. The trolley is free to the public and operates on a fixed route with a 40-minute frequency. Designated as Route 203, the trolley was rebranded as the Port City Trolley in 2019. Operation of the trolley is contracted out to First Transit.

Dial-A-Ride Transportation (DART)

Wave's DART program provides ADA accessible van service to individuals with a disability that prohibits them from utilizing fixed route service, transferring from one bus to another, and/or traveling to or from a bus stop. Potential DART customers must submit an application including certification of the disability by a medical professional. DART service is operated directly by Wave Transit and offers curb-to-curb service, which must be scheduled by the customer.

Vanpool

Wave's vanpool program, the Wave Pool, is a collaboration between the WMPO and CFPTA that provides vans for groups of commuters who live and work in close proximity to share a ride to work. The program may be offered by an employer or set up by a group of employees. The employer (or employees) pay a monthly fee while Wave provides fuel, maintenance, and insurance in addition to the vehicle.

Service Profile by Mode

A detailed service profile for each Wave Transit service can be found in the chart on the following page.

		Service Profile by Mode				
		Community Routes	Seahawk Shuttle	Trolley	DART	Vanpool
Service Type	Fixed Route	Fixed Route	Fixed Route	Demand Response	Shared Ride	
Service Operator	First Transit	First Transit	First Transit	Wave Transit	First Transit	
Service Days	Monday-Sunday	Monday-Friday	Monday-Sunday	Monday-Sunday	Determined by vanpool members	
Service Hours	Monday-Friday 6:00AM-8:00PM Saturday-Sunday 9:00AM-6:00PM	7:00AM-6:40PM	Monday-Friday 7:20AM-8:00PM Saturday-Sunday 10:40AM-6:00PM	Monday-Friday 6:00AM-8:00PM Saturday-Sunday 9:00AM-6:00PM	Determined by vanpool members	
# of Routes	14 Routes	8 Routes*	1 Route	No fixed routes Schedules vary daily based on demand	No set routes Service is determined by vanpool members	
Service Frequency	<ul style="list-style-type: none"> • 12 routes have 60-minute frequency • 1 route has 30-minute peak frequency & 60-minute off-peak frequency • 1 route has 3-hour frequency 	<ul style="list-style-type: none"> • 5 routes have 20-minute frequency* • 1 route has 30-minute frequency* <ul style="list-style-type: none"> • 1 route has 10-minute frequency* • 1 route has 5-minute peak frequency and 10-minute off-peak frequency* 	40 Minutes	No set routes or stop schedules Stop times and locations vary daily based on demand	No set routes Service is determined by vanpool members	
# of Vehicles	36 vehicles distributed between community routes and Seahawk Shuttle routes		2	24	4	
FY 18-19 Ridership	832,146	336,533	30,566	21,628	4,392	
FY 18-19 Operating Costs	\$5,576,597	\$1,278,804	\$334,059	\$1,495,644	\$15,942	

Source: Wave Transit Short Term Efficiencies & Long Term Governing Model,
updated by Wave Transit 2/20/2020

*per the 2019-2020 Seahawk Shuttle Schedule, accessed at:

https://www.wavetransit.com/wp-content/uploads/2019/08/UNCW_Shuttle_Aug19-Web-File.pdf

Identified Future Opportunities

Bus Rapid Transit

The introduction of dedicated lanes will require more funding and signal preemption in order to give transit priority. BRT would provide a high level of service for public transportation riders, while improving congestion by reducing the number of vehicles on the corridor.

The following are corridors in the region that have been identified for potential BRT service—many of the amenity improvements necessary to implement this service are included within this plan:

- US17 BUS/Market Street
- US421/Carolina Beach Road
- US76/17/Oleander Drive
- South 17th Street

Fixed Rail Transit/Street Car

The downtown Wilmington rail corridor, known as the Beltline, has been explored for potential future Fixed Rail Transit. The corridor is currently owned by CSX and is used for freight movement between the Port of Wilmington and Davis Yard. The second phase of the Wilmington Rail Realignment Feasibility Study examined the option of fixed rail transit service along this downtown corridor once freight operations were moved across the river. Another potential corridor is the NCDOT-owned rail right-of-way in downtown Wilmington. Reestablishment of tracks and the opportunity to bring passenger rail to Wilmington is a high priority of the NCDOT Rail Division.

Wave Transit: Fares, Funding, and Performance

Fares

According to Wave's SRTP, peer transit agencies in the Southeast charge between \$1.00 and \$2.25 for regular fixed-route fare. Reduced fares range from \$0.50 to \$1.00. Wave Transit operates with a regular fare of \$2.00 and reduced fare of \$1.00. The slightly higher price of fare compared to peer systems is justified by a higher farebox recovery rate of 21%. The farebox recovery rate is the percentage of the operating costs of a trip that are recovered in passenger fares. Comparable peer systems fall anywhere between 12%-20%. Wave Transit utilizes fares to support capital and operational expenses. This is still not sufficient to run the system, however, which is why it is important to identify funding from other sources.

Funding

Funding will be an important topic moving forward to help Wave realize its full potential as the primary public transportation provider in the Wilmington region. Currently, Wave does not have a dedicated funding source and relies year-to-year on local funding, provided primarily by the City of Wilmington and New Hanover County. There has been a decrease in both federal and state funding in recent years, which has been supplemented by local revenue sources. These changes have been recognized and identified in Wave's SRTP and Short-Term Efficiencies and Long-Term Governing Model. The following offers a summary of Wave Transit's current funding sources and additional funding considerations moving forward.

FTA: Section 5307 (Urbanized Area Formula Grant) currently provides about \$2.4 million to Wave annually, and is the transit provider's largest source of federal funds. Section 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities) currently provides about \$220,000 annually, which is used for operating and administrative costs as well as program support. Wave experienced a loss of \$250,000 from Section 5311 (Rural Area Formula Grant) funding when the population of the region surpassed 200,000 in 2010. Furthermore, the elimination of Section 5316 (JARC) and Section 5317 (New Freedom) cut funding for Route 108 and Route 205.

Fares: Fares account for over 12% of annual revenue per Wave's FY17-18 Budget. A \$0.50 fare increase occurred in 2013, giving Wave one of the highest fares in North Carolina—second only to Charlotte and 62% higher than the state average.

WMPO: The WMPO was designated as a Transportation Management Area (TMA) in 2013 after the 2010 Census determined that the urbanized area had exceeded 200,000 in population. Along with additional monitoring requirements, the WMPO became eligible to receive Federal Surface Transportation Block Grant Program – Direct Attributable (STBG-DA) and Transportation Alternative Set Aside – Direct Attributable (TASA-DA) monies directly and to develop its own localized program for the distribution of these funds. These funds can be flexed into FTA 5307 funding to be utilized for transit. Wave has been awarded these funds annually with the award amount accounting for approximately 20% of their annual 5307 amount. It is critical to note that these are discretionary funds awarded on an annual basis—the amount of funding could be reduced or Wave's eligibility to receive the funds could be removed at any time.

NCDOT: The majority of state funding comes from SMAP, and is unpredictable from one year to the next. This makes it difficult for Wave to budget year-to-year, and is one of the reasons that finding an alternative funding source is such a high priority.

The University of North Carolina at Wilmington: Wave receives revenue from UNCW in lieu of fares for students. Students' transit service fees are remitted directly to the University.

Local/Other: The City of Wilmington and New Hanover County are the primary providers of local funding, with their contributions totaling 28% of operating revenue in Wave's FY17-18 Budget. Additional local funding sources include the Town of Carolina Beach and the Brunswick Consortium, which is comprised of Brunswick County, the Town of Leland, and the Town of Navassa. Other revenue sources include advertising and intercity bus service (Greyhound) contracts. Altogether, these additional local and other sources accounted for 3% of Wave's FY17-18 Budget.

Additional Considerations: Wave has made it a top priority to identify alternative funding sources to account for decreased and inconsistent national and state funding and provide a dedicated funding stream. Wave's SRTP has identified and supports a vehicle registration fee as well as a dedicated transit sales tax. The vehicle registration fee would generate an estimated \$1.3 million annually and maintain the current level of service for the next five years. The sales tax option would generate approximately \$8 million annually and allow for service improvements across the system.

Performance

With the exception of the urban core, the Wilmington region generally features low-to-moderate density. As a result, the need for public transportation for low-income individuals is critical, but providing service efficiently and reliably is more challenging. As part of its SRTP, Wave conducted a peer comparison, which showed that, while Wave has a relatively low cost per revenue hour, the lack of ridership resulted in a higher cost per passenger trip. It was also discovered that Wave has relatively low local funding compared to other systems, which puts Wave at a disadvantage when looking to improve customer comfort and service.

Peer System Operating Environments					
City, State	Service Provider	Passengers per Revenue Hour	Cost per Passenger Trip	Cost per Revenue Hour	Farebox Recovery Rate
Wilmington, NC	Cape Fear Public Transportation Authority	16.98	\$4.80	\$81.51	19.17%
Asheville, NC	Asheville Redefines Transit	22.66	\$3.57	\$80.95	12.86%
Columbia, SC	Central Midlands Transit	14.82	\$6.18	\$91.58	14.63%
Conover, NC	Western Piedmont Regional Transit Authority	8.92	\$9.89	\$88.23	6.97%
Fayetteville, NC	Fayetteville Area System of Transit	18.36	\$3.53	\$64.82	22.02%
Greensboro, NC	Greensboro Transit Authority	26.76	\$3.32	\$88.74	23.21%
Greenville, SC	Greenville Transit Authority	16.45	\$4.18	\$68.81	21.44%
Lakeland, FL	Lakeland Area Mass Transit District	17.02	\$4.74	\$80.65	4.42%
Research Triangle Park, NC	Research Triangle Regional Public Transportation Authority	14.35	\$10.47	\$150.20	11.40%
Roanoke, VA	Greater Roanoke Transit Company	20.94	\$3.18	\$66.68	27.67%
Savannah, GA	Chatham Area Transit Authority	20.27	\$4.77	\$96.61	16.45%
Winston-Salem, NC	Winston-Salem Transit Authority	24.56	\$3.39	\$83.17	15.93%
Peer Average		18.65	\$5.20	\$87.31	16.09%

Source: Wave Transit Short Range Transit Plan

Disaster Response

In preparation for Hurricane Florence in September 2018, Wave Transit evacuated 138 residents, with pets and significant amounts of personal property, to Wake County. Additionally, post-storm, Wave provided transportation to and from medical providers and dialysis centers to 232 evacuees temporarily housed in

shelters. These efforts were acknowledged by many as a standard for how to react during natural disasters and dedicated funding is needed to support continued resiliency in the future.

Other Public Transit Providers

Other programs in the region include Pender Adult Services Transit (PAS-TRAN) and Brunswick Transit System, Inc. (BTS), both Dial-A-Ride services. PAS-TRAN is available to the general public, seniors (65+), and any person with a disability, including area visitors. PAS-TRAN offers a deviated fixed route, allowing riders to be picked up or dropped off at one of four fixed stop locations:

- Wallace Airport-Henderson Field (transfer to Duplin County Transportation)
- Heritage Place Senior Center in Burgaw
- Topsail Senior Center in Hampstead
- Cape Fear Community College (CFCC) North Campus in Castle Hayne (transfer to Wave Transit)

BTS offers Dial-A-Ride transportation to the general public as well as transportation for human services agencies through service contracts. The nonprofit community transportation provider operates 17 vehicles, including ADA accessible vans.

Public Transportation Modal Subcommittee

In order to analyze and propose recommendations for the development of public transportation in the Wilmington Urban Area, the WMPO contacted subject matter experts in the field to form a Public Transportation Subcommittee. Specifically, the WMPO worked with the following organizations to develop the recommendations in this element:

- Wave Transit
- UNCW
- NCDOT Division 3
- NCDOT Transportation Planning
- Brunswick County
- Town of Belville
- BTS
- Wilmington Housing Authority
- Wilmington and Beaches Convention & Visitors Bureau
- Wilmington Rail Realignment
- PAS-TRAN
- Greyhound/Amtrak

During Public Transportation Subcommittee meetings, WMPO staff initiated group discussions by presenting pertinent facts, relevant information, and public survey results related to the current and future state of public transportation within the Wilmington region. Under the direction of the Citizens Advisory Committee (CAC), WMPO staff worked with the Public Transportation Subcommittee to develop recommendations for the following components of this element:

- Goals and Objectives
- Project Scoring Criteria
- Policies

Recommendations from the Public Transportation Subcommittee were presented to the CAC, Technical Coordinating Committee (TCC), and WMPO Board for further review and modification before being incorporated into Cape Fear Moving Forward 2045. Public input was also critical to the development of this element and is further discussed in Appendix D, Public Involvement Element.

Public Transportation Modal Goals and Objectives

Goals and objectives for the development of this element were created over a series of Public Transportation Subcommittee meetings and serve three distinct purposes within this element. First, the goals and objectives guided the overall development of the element. Second, the goals and objectives were used as the criteria on which to base the scoring of public transportation projects in order to determine which projects were of greatest funding priority. Finally, the goals and objectives guided the development of policies which will ultimately be used to guide action on public transportation issues in the Wilmington region over the next 25 years. The mode-specific goals and objectives were reviewed by the CAC, Technical Coordinating Committee (TCC), and WMPO Board, alongside the overall MTP vision and goals, before being utilized in the development of Cape Fear Moving Forward 2045.

The goals and objectives for public transportation can be found below and continued on the following page.

Goal A: Build Community and Political Support for Public Transportation

Objectives:

1. Promote the safety, comfort, and convenience of public transportation
2. Highlight the potential for public transportation to serve as an economic development engine for the region
3. Highlight the opportunity to reduce environmental impacts through the use of public transportation
4. Highlight the benefits of public transportation to the overall transportation network in terms of congestion management and the efficient use of public infrastructure
5. Provide data, logistics, funding dynamics, and recommendations for greater public transportation availability

Goal B: Enhance Economic Development Opportunities and Quality of Life through Public Transportation Services

Objectives:

1. Enhance public transportation service to and/or from potentially high destination areas, such as:
 - a. Major employment centers
 - b. High density population areas
 - c. Educational centers
 - d. Economic development centers
2. Enhance health and livability through public transportation access to resources, such as:
 - a. Healthy food opportunities (grocery stores, farmers' markets, etc.)

- b. Recreation
 - c. Pharmacy
 - d. Medical care
3. Market public transportation services to encourage new regional industry/commerce
 4. Support community development and placemaking efforts along public transportation routes and near public transportation facilities

Goal C: Broaden Base of Public Transportation Ridership in both Rural and Urban Areas

Objectives:

1. Identify and capitalize on unserved and underserved public transportation opportunities for older adults, people with disabilities, and other non-driving populations
2. Identify and capitalize on unserved and underserved choice ridership public transportation opportunities for groups, such as:
 - a. Young adults
 - b. Commuters
 - c. Tourists
 - d. Professionals
3. Identify strategies to broaden the ridership base, such as:
 - a. Express bus routes on major corridors
 - b. Multimodal route connections from public transportation stops to major destinations
 - c. Continue to promote vanpool opportunities
 - d. New public transportation stops near park and ride facilities

Goal D: Connect Public Transportation Routes/Services with Physical Infrastructure

Objectives:

1. Coordinate with appropriate entities to ensure ADA-accessible pedestrian networks exist from public transportation stops to adjacent destinations
2. Increase network of bus shelters, benches, and other amenities at bus stop locations where ridership and potential ridership is highest and where physically possible
3. Coordinate with appropriate entities to prioritize installation of crosswalks at or near bus stop locations where ridership and potential ridership is highest and/or where safety concerns exist

Project Scoring Criteria

The list of needed public transportation projects was quantitatively scored and ranked by the Public Transportation Modal Subcommittee based on the goals and objectives identified in this chapter. The scoring system, developed by the subcommittee, is shown on the following page. This ranked list was then evaluated and revised by the CAC, TCC, and WMPO Board, and used as the basis for the fiscal constraint analysis to determine which projects are anticipated to receive funding in this region between 2020 and 2045.

Public Transportation Scoring System

Scale	Goal	Criteria	Attribute	Score
20	Build Community and Political Support for Public Transportation	Amenity conditions	Stop has no shelter, lighting, bike rack, or bench (2.5 points each)	10
		Emissions	Reduces emissions through alternative fuel source	5
		Data collection	Improves data collection, analysis, or technology	5
35	Enhance Economic Development Opportunities and Quality of Life through Public Transportation Services	Density	Route or amenity density greater than 2,341 persons/sq. mile	5
		Point of Interest	Route or amenity improvement within 1/4 mile of work, school, or medical (6,8,10)	10
		Frequency	Improvement increases frequency or efficiency	10
		Point of Interest	Route or amenity improvement within 1/4 mile of park, grocery, shopping (6,8,10)	10
20	Broaden Base of Public Transportation Ridership in both Rural and Urban Areas	Age/No Car	Route or amenity in location with 26% of population over 65 or over 8% of population with no car (5 points each)	10
		Income	Route or amenity in location with over 27% of population in poverty	10
25	Connect Public Transportation Routes/Services with Physical Infrastructure	Connectivity	Route or amenity connected to existing pedestrian network	5
		ADA	Improves safety or ADA accessibility at stops	10
		Park and Ride	Extended route hours or park and ride	10

Policies

The policies below were developed by the Public Transportation Subcommittee based on goals and objectives of this element. These policies will be used to guide action on public transportation issues in the Wilmington Urban Area. Each policy was reviewed through public outreach and by the CAC, TCC, and WMPO Board before being included in Cape Fear Moving Forward 2045.

The WMPO will work with member agencies to do the following:

- Educate the public and elected officials on the value of our public transportation system such as improvements to air quality, opportunities for economic development, reduced roadway congestion, and increased quality of life.
- Develop land use plans that incentivize increased density and the inclusion of transit elements through infill and new development.
- Improve connectivity of multimodal infrastructure adjacent to bus routes including sidewalks, crosswalks, trails, and park and ride lots.
- Support continued and additional local investment in transit to meet the needs of current customers, while making strategic investments to increase customer base.
- Support capital investments in vehicle fleet to reduce emissions and increase reliability.
- Continue planning efforts and alternative funding efforts in order to meet the transportation needs of the community.
- Maintain pricing that allows public transportation to be a competitive transportation option for customers while valuing tax payer investments.

Fiscally-Constrained Public Transportation Project List

	Fiscally-constrained, programmed in 2018-2027 STIP, 2020-2029 STIP		Fiscally-constrained projects		Unfunded during planning horizon
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Final Rank	Project ID	Project Name	Project Type	Planning Year	Planning Year Cost
1	TA-5222	Replacement LTV*	Vehicle Update	2025	\$624,000
2	TA-5221	Replacement LTV*	Vehicle Update	2025	\$226,000
3	TA-5223	Replacement Bus*	Vehicle Update	2025	\$3,234,000
4	TG-6178	Route 201 Upgrade Amenities and Bus Stops (Carolina Beach Road)	Amenity Upgrades	2025	\$66,000
5	TD-5291	Route 204 Amenity Upgrades (Brunswick Connector)	Amenity Upgrades	2030	\$136,000
6	TD-5292	Route 202 Amenity Upgrades (Oleander West)	Amenity Upgrades	2030	\$136,000
7	TD-5296	Route 205 Amenity Upgrades (Long Leaf Park)	Amenity Upgrades	2030	\$166,000

Final Rank	Project ID	Project Name	Project Type	Planning Year	Planning Year Cost
8	TD-5298	Route 101 Amenity Upgrades (Princess Place)	Amenity Upgrades	2030	\$196,000
9	TD-5290	Route 106 Amenity Upgrades (Shipyard Blvd)	Amenity Upgrades	2030	\$76,000
10	TG-4796	Routine Capital - Bus Stop Shelters, Benches, Shop Equipment, Spare Parts, Engines, Farebox, Service Vehicles, etc.*	Maintenance	2030	\$420,000
11	PT-40	Independence Blvd & Park Avenue	Amenity Upgrades	2025	\$2,275
12	PT-17	Sigmon Road at Walmart (Wilmington)	Amenity Upgrades	2025	\$25,028
13	PT-33	Military Cutoff Road & Old MacCumber Station Road	Amenity Upgrades	2025	\$25,028
14	PT-65	Dawson Street & 9th Street	Amenity Upgrades	2025	\$25,028
15	PT-94	17th Street at Food Lion Plaza	Amenity Upgrades	2025	\$25,028
16	PT-152	Earlier Weekday Service on High Ridership Routes (108)	Route	2025	\$42,655
17	PT-15	Market Street & Kerr Avenue	Amenity Upgrades	2025	\$25,028
18	PT-28	Randall Pkwy & Brailsford Drive	Amenity Upgrades	2025	\$25,028
19	PT-29	Market Street & Covil Avenue	Amenity Upgrades	2025	\$25,028
20	PT-73	S 5th Avenue & Dawson Street	Amenity Upgrades	2025	\$2,275
21	PT-74	S 10th Street & Meares Street	Amenity Upgrades	2025	\$2,275
22	PT-151	Earlier Weekday Service on High Ridership Routes (105)	Route	2025	\$63,427
23	PT-153	Earlier Weekday Service on High Ridership Routes (201)	Route	2025	\$80,025
24	PT-21	Oleander Drive & Hawthorne Drive	Amenity Upgrades	2025	\$2,275
25	PT-154	Earlier Weekday Service on High Ridership Routes (205)	Route	2025	\$36,910
26	PT-160	WiFi on Buses	Technology	2025	\$144,504
27	PT-79	Wellington Avenue & Flint Drive	Amenity Upgrades	2025	\$2,275
28	PT-80	Greenfield Street & S 13th Street	Amenity Upgrades	2025	\$25,028
29	PT-26	NHC Government Center at Government Center Drive	Amenity Upgrades	2025	\$25,028
30	PT-77	Wellington Avenue & Silver Stream Lane	Amenity Upgrades	2025	\$2,275
31	PT-155	Upgrade Route 107 to Hourly to Align with Route 301	Route	2025	\$209,079
32	PT-90	Wellington Avenue & 17th Street	Amenity Upgrades	2025	\$2,275
33	PT-30	New Centre Drive at Bob King Buick	Amenity Upgrades	2025	\$2,275
34	PT-41	Wilshire Blvd at Berkshires at Pelican Cove	Amenity Upgrades	2025	\$2,275
35	PT-99	Carolina Beach Road & S College Road	Park and Ride	2025	\$6,149

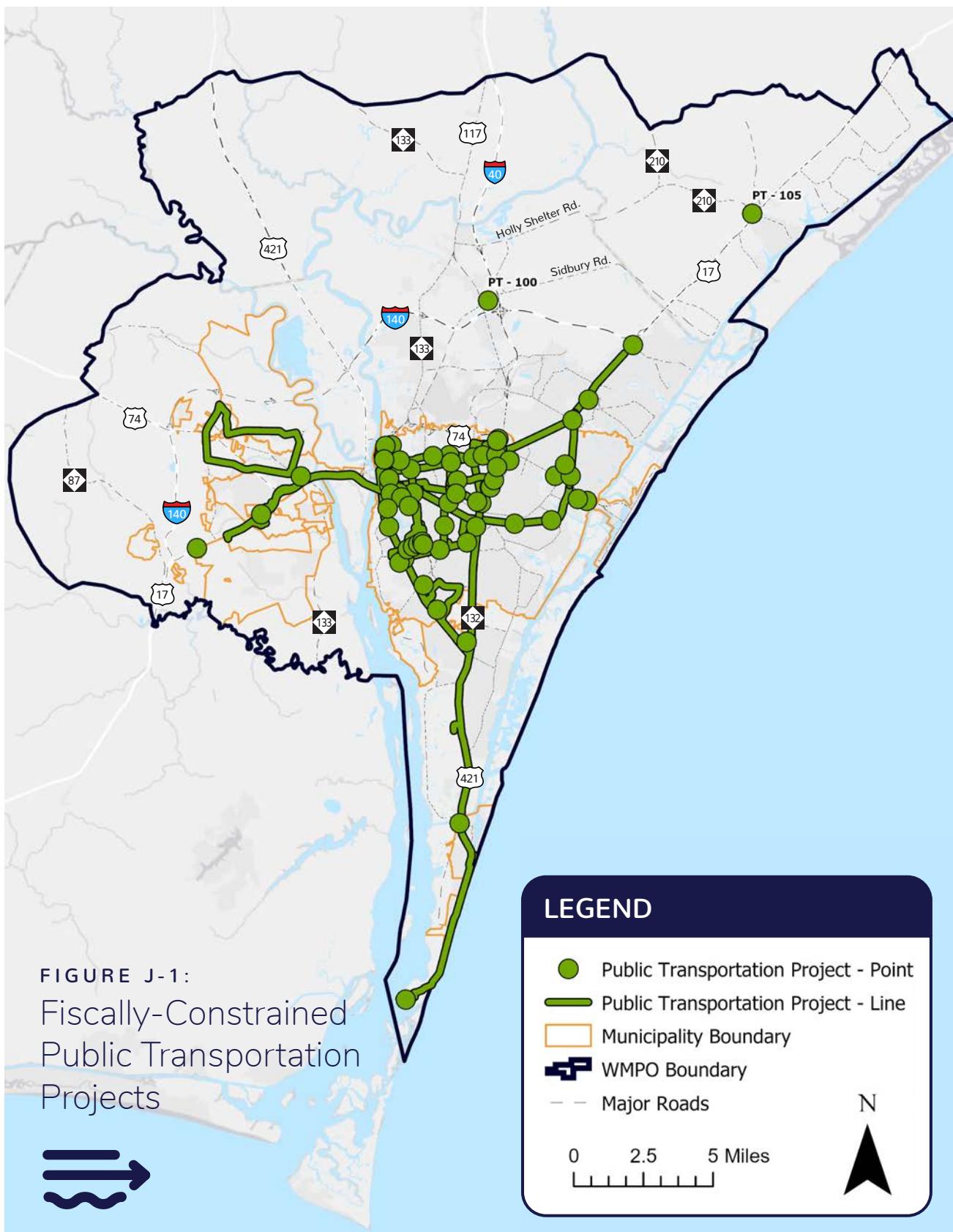
Final Rank	Project ID	Project Name	Project Type	Planning Year	Planning Year Cost
36	PT-104	US17 at Walmart	Park and Ride	2025	\$6,149
37	PT-45	Marion Drive & Rutledge Drive	Amenity Upgrades	2025	\$2,275
38	PT-13	Nixon Street & N 5th Avenue	Amenity Upgrades	2025	\$861
39	PT-12	Nixon Street & N 8th Street	Amenity Upgrades	2025	\$861
40	PT-146	Route 301 Hourly Frequency	Route	2030	\$1,268,927
41	PT-159	Creekwood On-Demand Service Off Peak Hours (101)	Route	2030	\$881,120
42	PT-150	Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (205)	Route	2030	\$840,034
43	PT-27	S College Road & Randall Pkwy	Amenity Upgrades	2030	\$29,014
44	PT-64	S 5th Avenue & Castle Street	Amenity Upgrades	2030	\$29,014
45	PT-42	Wilshire Blvd & S Kerr Avenue	Amenity Upgrades	2030	\$2,638
46	PT-135	Extend Trolley Service Frequency	Route	2035	\$2,942,069
47	PT-148	Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (108)	Route	2035	\$1,125,428
48	PT-9	Route 104, 30-Minute Frequency	Route	2035	\$1,471,034
49	PT-91	Village Road at Food Lion	Amenity Upgrades	2035	\$33,635
50	PT-44	Carolina Beach Road at Roses	Amenity Upgrades	2035	\$33,635
51	PT-16	Market Street & Lullwater Drive	Amenity Upgrades	2035	\$33,635
52	PT-35	S 16th Street & Wright Street	Amenity Upgrades	2035	\$33,635
53	PT-18	S College Road (SB) at University Drive	Amenity Upgrades	2035	\$33,635
54	PT-118	Galleria Mall	Park and Ride	2035	\$8,264
55	PT-119	Mayfaire Mall	Park and Ride	2035	\$8,264
56	PT-22	Oleander Drive & Giles Avenue	Amenity Upgrades	2035	\$3,058
57	PT-11	Princess Place Drive & N 25th Street	Amenity Upgrades	2035	\$1,157
58	PT-147	Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (105)	Route	2040	\$1,940,010
59	PT-149	Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (201)	Route	2040	\$2,447,704
60	PT-157	Pleasure Island Trolley, with Bus Stop at Ferry, and Amenities	Route	2040	\$1,705,332
61	PT-19	S College Road & Wilshire Blvd	Amenity Upgrades	2040	\$38,993
62	PT-132	Satellite Beach Parking with Bus Station Hub	Route/Park and Ride	2040	\$237,180
63	PT-156	Route 204 Extended Service to 9pm and Weekends	Route	2040	\$130,295
64	PT-25	S College Road (NB) at University Drive	Amenity Upgrades	2040	\$38,993

Final Rank	Project ID	Project Name	Project Type	Planning Year	Planning Year Cost
65	PT-53	Carolina Beach Road & Tennessee Avenue (BOA)	Amenity Upgrades	2040	\$38,993
66	PT-103	Market Street & Porters Neck Road	Park and Ride	2040	\$9,581
67	PT-100	Cape Fear Community College North Campus Park and Ride	Park and Ride	2040	\$9,581
68	PT-37	Shipyard Blvd & Commons Drive	Amenity Upgrades	2040	\$3,545
69	PT-66	Lake Avenue & S College Road	Amenity Upgrades	2040	\$3,545
70	PT-98	Carolina Beach Road at Snow's Cut Bridge	Park and Ride	2040	\$9,581
71	PT-102	Market Street & Middle Sound Loop Road	Park and Ride	2040	\$9,581
72	PT-105	US17 & NC210/Island Creek Road	Park and Ride	2040	\$9,581
73	PT-78	Wellington Avenue & Troy Drive	Amenity Upgrades	2040	\$3,545
74	PT-70	S 5th Avenue & Ann Street	Amenity Upgrades	2040	\$3,545
75	PT-5	New Route through Masonboro Loop Road with Hourly Service, Heavy Duty Bus	Route	2045	\$1,976,947
76	PT-8	New Route to Porters Neck, Heavy Duty Bus	Route	2045	\$1,976,947
77	PT-112	I-140 & US17	Park and Ride	2045	\$274,957
78	PT-162	Military Cutoff Road High Density Local Route	Route	2045	\$588,642
79	PT-140	Public Transportation to and from the Ferry	Route	2045	\$1,976,947
80	PT-107	Wave Central Station - Forden Station	Additional Parking	2045	\$274,957
81	PT-10	Princess Place Drive & Montgomery Avenue	Amenity Upgrades	2045	\$45,203
82	PT-87	Rankin Street & 11th Street	Amenity Upgrades	2045	\$45,203
83	PT-67	Shipyard Blvd & S 41st Street	Amenity Upgrades	2045	\$45,203
84	PT-161	Solar Lights at Bus Stops	Technology	2045	\$330,084
85	PT-34	Gordon Road at Food Lion	Amenity Upgrades	2045	\$45,203
86	PT-38	Independence Blvd & Canterbury Drive	Amenity Upgrades	2045	\$45,203
87	PT-47	Market Street & N 16th Street	Amenity Upgrades	2045	\$45,203
88	PT-121	Fairfield Park	Park and Ride	2045	\$11,106
89	PT-120	Barclay West	Park and Ride	2045	\$11,106
90	PT-31	Eastwood Road & Rogersville Road	Amenity Upgrades	2045	\$4,109
91	PT-82	Wilmington Multimodal Transportation Center (Phase 1B)**	Facility	2025	\$1,700,000
92	PT-124	Wrightsville Beach On-Demand (Shuttle Route) \$200,000 Operation Cost	Route	2045+	\$1,765,925
93	PT-158	Service to Riverlights Development	Route	2045+	\$1,976,947
94	PT-75	Cypress Grove Drive & Doctors Circle	Amenity Upgrades	2045+	\$45,203
95	PT-76	Medical Center Drive at Delaney Radiologists	Amenity Upgrades	2045+	\$45,203

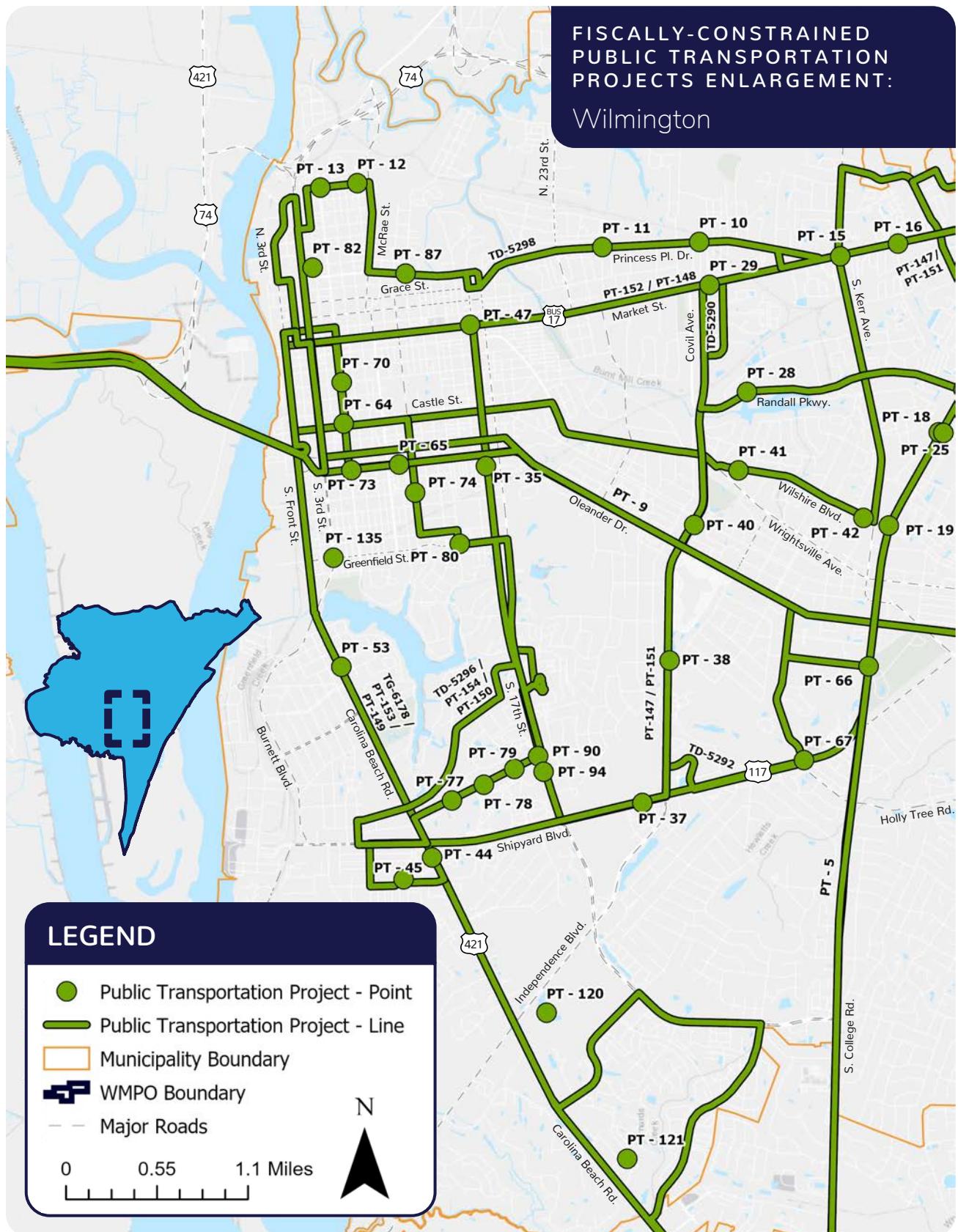
Final Rank	Project ID	Project Name	Project Type	Planning Year	Planning Year Cost
96	PT-36	S 17th Street & Glen Meade Road	Amenity Upgrades	2045+	\$45,203
97	PT-39	Independence Blvd (Independence Mall Transfer Station)	Amenity Upgrades	2045+	\$45,203
98	PT-56	Mount Misery Road at Food Lion	Amenity Upgrades	2045+	\$45,203
99	PT-123	Leland Town Hall	Park and Ride	2045+	\$11,106
100	PT-57	Village Road & S Navassa Road	Amenity Upgrades	2045+	\$45,203
101	PT-58	West Gate Drive at Walmart (Leland)	Amenity Upgrades	2045+	\$45,203
102	PT-59	N Front Street & Harnett Street	Amenity Upgrades	2045+	\$45,203
103	PT-109	I-140 & US74/76	Park and Ride	2045+	\$11,106
104	PT-137	Carolina Beach Road & Golden Road	Amenity Upgrades	2045+	\$41,094
105	PT-62	Carl Winner Avenue & Carolina Beach Avenue N	Amenity Upgrades	2045+	\$45,203
106	PT-92	N Lake Park Blvd at Town Hall	Amenity Upgrades	2045+	\$45,203
107	PT-114	US17 & Sidbury Road	Park and Ride	2045+	\$11,106
108	PT-20	Oleander Drive at Whole Foods	Amenity Upgrades	2045+	\$4,109
109	PT-55	Main Street & Church Street (Navassa)	Amenity Upgrades	2045+	\$45,203
110	PT-101	I-40 & Holly Shelter Road	Park and Ride	2045+	\$274,957
111	PT-126	Service to Bayshore Walmart	Route	2045+	\$55,844
112	PT-50	Carolina Beach Road & Silva Terra Drive	Amenity Upgrades	2045+	\$45,203
113	PT-49	Carolina Beach Road & Independence Blvd	Amenity Upgrades	2045+	\$45,203
114	PT-48	Carolina Beach Road & Southern Blvd	Amenity Upgrades	2045+	\$4,109
115	PT-106	US17/74/76 & NC133/River Road SE (Belville)	Park and Ride	2045+	\$274,957
116	PT-88	16th Street & Kidder Street	Amenity Upgrades	2045+	\$4,109
117	PT-122	Terminus of Independence Blvd	Park and Ride	2045+	\$11,106
118	PT-125	Trolley Replacements	Vehicle Update	2045+	\$7,330,254
119	PT-142	Automatic Passenger Counter (APC)	Technology	2045+	\$539,273
120	PT-145	Modern Fare Collection Service	Technology	2045+	\$1,485,126
121	PT-116	US421 & Cowpens Landing Road	Park and Ride	2045+	\$274,957
122	PT-32	Wrightsville Avenue & Jones Road	Amenity Upgrades	2045+	\$4,109
123	PT-97	Front Street & Ann Street	Amenity Upgrades	2045+	\$4,109
124	PT-136	Electric Bus Investment	Vehicle Update	2045+	\$14,216,250

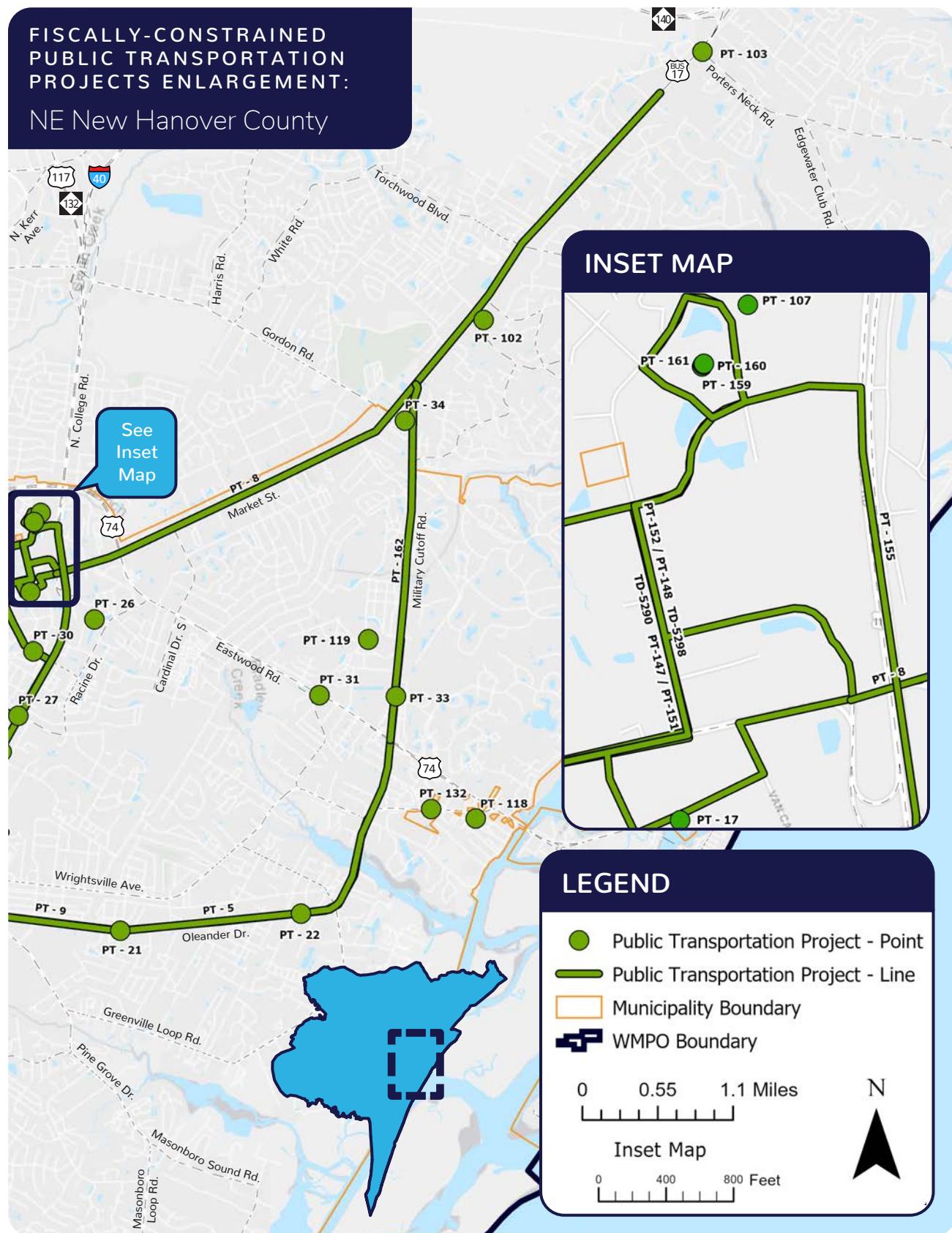
* Not shown on map

** Alternative funding from WMPO's Direct Attributable program identified after the financial forecast was developed











Fiscally-Constrained Public Transportation Project Descriptions

Replacement LTV	TA-5222
Description: Routine vehicle replacement	
Replacement LTV	TA-5221
Description: Routine vehicle replacement	
Replacement Bus*	TA-5223
Description: Routine vehicle replacement	
Route 201 Upgrade Amenities and Bus Stops (Carolina Beach Road)	TG-6178
Description: Amenity upgrades at multiple stops along Route 201	
Route 204 Amenity Upgrades (Brunswick Connector)	TD-5291
Description: Amenity upgrades at multiple stops along Route 204	
Route 202 Amenity Upgrades (Oleander West)	TD-5292
Description: Amenity upgrades at multiple stops along Route 202	
Route 205 Amenity Upgrades (Long Leaf Park)	TD-5296
Description: Amenity upgrades at multiple stops along Route 205	
Route 101 Amenity Upgrades (Princess Place)	TD-5298
Description: Amenity upgrades at multiple stops along Route 101	
Route 106 Amenity Upgrades (Shipyard Blvd)	TD-5290
Description: Amenity upgrades at multiple stops along Route 106	

Routine Capital - Bus Stop Shelters, Benches, Shop Equipment, Spare Parts, Engines, Farebox, Service Vehicles, etc.**TG-4796**

Description: Routine capital including bus stop shelters, benches, shop equipment, spare parts, engines, farebox, service vehicles, etc.

Independence Blvd & Park Avenue**PT-40**

Description: Amenity upgrades including bench, trash can, and bike rack

Sigmon Road at Walmart (Wilmington)**PT-17**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Military Cutoff Road & Old MacCumber Station Road**PT-33**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Dawson Street & 9th Street**PT-65**

Description: Amenity upgrades including shelter, bench, trash can, bike rack

17th Street at Food Lion Plaza**PT-94**

Description: Amenity upgrades including shelter, bench, trash can, bike rack

Earlier Weekday Service on High Ridership Routes (108)**PT-152**

Description: Earlier weekday service on Route 108 requiring additional hours and operational costs but potentially no new buses

Market Street & Kerr Avenue**PT-15**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Randall Pkwy & Brailsford Drive**PT-28**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Market Street & Covil Avenue**PT-29**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

S 5th Avenue & Dawson Street**PT-73**

Description: Amenity upgrades including bench, trash can, and bike rack

S 10th Street & Meares Street**PT-74**

Description: Amenity upgrades including bench, trash can, and bike rack

Earlier Weekday Service on High Ridership Routes (105)**PT-151**

Description: Earlier weekday service on Route 105 requiring additional hours and operational costs, but potentially no new buses

Earlier Weekday Service on High Ridership Routes (201)**PT-153**

Description: Earlier weekday service on Route 201 requiring additional hours and operational costs but potentially no new buses

Oleander Drive & Hawthorne Drive**PT-21**

Description: Amenity upgrades including bench, trash can, and bike rack

Earlier Weekday Service on High Ridership Routes (205)**PT-154**

Description: Earlier weekday service on Route 205 requiring additional hours and operational costs but potentially no new buses

WiFi on Buses**PT-160**

Description: Install WiFi system on community routes

Wellington Avenue & Flint Drive**PT-79**

Description: Amenity upgrades including bench, trash can, and bike rack

Greenfield Street & S 13th Street

PT-80

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

NHC Government Center at Government Center Drive

PT-26

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Wellington Avenue & Silver Stream Lane

PT-77

Description: Amenity upgrades including bench, trash can, and bike rack

Upgrade Route 107 to Hourly to Align with Route 301

PT-155

Description: Upgrade Route 107 to hourly to align with Route 301 requiring additional frequency and operational costs, but potentially no new buses

Wellington Avenue & 17th Street

PT-90

Description: Amenity upgrades including bench, trash can, and bike rack

New Centre Drive at Bob King Buick

PT-30

Description: Amenity upgrades including bench, trash can, and bike rack

Wilshire Blvd at Berkshires at Pelican Cove

PT-41

Description: Amenity upgrades including bench, trash can, and bike rack

Carolina Beach Road & S College Road

PT-99

Description: Park and Ride - Existing parking available (10 spaces min); signage and service need to be added

US17 at Walmart

PT-104

Description: Park and Ride - Existing parking available (10 spaces min); signage and service need to be added

Marion Drive & Rutledge Drive**PT-45**

Description: Amenity upgrades including bench, trash can, and bike rack

Nixon Street & N 5th Avenue**PT-13**

Description: Amenity upgrades - bench

Nixon Street & N 8th Street**PT-12**

Description: Amenity upgrades - bench

Route 301 Hourly Frequency**PT-146**

Description: Upgrade Route 301 to hourly frequency

Creekwood On-Demand Service Off Peak Hours (101)**PT-159**

Description: Provide on-demand service during off-peak hours requiring additional hours and operational costs, but potentially no new buses

Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (205)**PT-150**

Description: Upgrade Route 205 to 30-minute frequency during rush hour times

S College Road & Randall Pkwy**PT-27**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

S 5th Avenue & Castle Street**PT-64**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Wilshire Blvd & S Kerr Avenue**PT-42**

Description: Amenity upgrades including bench, trash can, and bike rack

Extend Trolley Service Frequency

PT-135

Description: Purchase two (2) additional trolleys to increase frequency (will also require additional operational costs)

Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (108)

PT-148

Description: Upgrade Route 108 to 30-minute frequency during rush hour times

Route 104, 30-Minute Frequency

PT-9

Description: Express route from downtown Wilmington to Mayfaire, requiring additional capital and operating costs

Village Road at Food Lion

PT-91

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Carolina Beach Road at Roses

PT-44

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Market Street & Lullwater Drive

PT-16

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

S 16th Street & Wright Street

PT-35

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

S College Road (SB) at University Drive

PT-18

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Galleria Mall

PT-118

Description: Park and Ride - Existing parking available (10 spaces min); signage and service need to be added

Mayfaire Mall**PT-119**

Description: Park and Ride - Existing parking available (10 spaces min); signage and service need to be added

Oleander Drive & Giles Avenue**PT-22**

Description: Amenity upgrades including bench, trash can, and bike rack

Princess Place Drive & N 25th Street**PT-11**

Description: Amenity upgrades - bench

Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (105)**PT-147**

Description: Upgrade Route 105 to 30-minute frequency during rush hour times

Rush Hour Service on High Ridership Routes 8-11am and 3-5pm (201)**PT-149**

Description: Upgrade Route 201 to 30-minute frequency during rush hour times

Pleasure Island Trolley, with Bus Stop at Ferry, and Amenities**PT-157**

Description: New trolley route from Carolina Beach Town Hall to the Aquarium requiring additional capital and operation costs

S College Road & Wilshire Blvd**PT-19**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Satellite Beach Parking with Bus Station Hub**PT-132**

Description: Park and Ride - no existing parking is available but parking could be provided by potential future development; additional signage and service would need to be added

Route 204 Extended Service to 9pm and Weekends**PT-156**

Description: Extend weekday service of Route 204 to 9:00pm and add weekend service requiring additional frequency and operational costs, but potentially no new buses

S College Road (NB) at University Drive

PT-25

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Carolina Beach Road & Tennessee Avenue (BOA)

PT-53

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Market Street & Porters Neck Road

PT-103

Description: Existing parking available (10 spaces min); signage and service need to be added

Cape Fear Community College North Campus Park and Ride

PT-100

Description: Existing parking available (10 spaces min); signage and service need to be added

Shipyard Blvd & Commons Drive

PT-37

Description: Amenity upgrades including bench, trash can, and bike rack

Lake Avenue & S College Road

PT-66

Description: Amenity upgrades including bench, trash can, and bike rack

Carolina Beach Road at Snow's Cut Bridge

PT-98

Description: Existing parking available (10 spaces min); signage and service need to be added

Market Street & Middle Sound Loop Road

PT-102

Description: Existing parking available (10 spaces min); signage and service need to be added

US17 & NC210/Island Creek Road

PT-105

Description: Existing parking available (10 spaces min); signage and service need to be added

Wellington Avenue & Troy Drive

PT-78

Description: Amenity upgrades including bench, trash can, and bike rack

S 5th Avenue & Ann Street**PT-70**

Description: Amenity upgrades including bench, trash can, and bike rack

New Route through Masonboro Loop Road with Hourly Service, Heavy Duty Bus**PT-5**

Description: New route on Masonboro Loop Road requiring additional bus for hourly service, operational costs

New Route to Porters Neck, Heavy Duty Bus**PT-8**

Description: Extend existing route requiring an additional bus for new route and operational costs

I-140 & US17**PT-112**

Description: Park and Ride - no existing parking is available but parking could be provided by potential future development; additional signage and service would need to be added

Military Cutoff Road High Density Local Route**PT-162**

Description: Local Mayfaire Route providing transportation to local stores requiring a new route and all associated costs

Public Transportation to and from the Ferry**PT-140**

Description: Trolley route in Carolina Beach providing access to the Ferry

Wave Central Station - Forden Station**PT-107**

Description: Park and Ride - not enough existing parking available - potential future development; signage and service would need to be added

Princess Place Drive & Montgomery Avenue**PT-10**

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Rankin Street & 11th Street

PT-87

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Shipyard Blvd & S 41st Street

PT-67

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Solar Lights at Bus Stops

PT-161

Description: Upgrade 50% of shelters to solar powered lights, improving safety and visibility - locations to be those stops identified as needing lighting

Gordon Road at Food Lion

PT-34

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Independence Blvd & Canterbury Drive

PT-38

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Market Street & N 16th Street

PT-47

Description: Amenity upgrades including shelter, bench, trash can, and bike rack

Fairfield Park

PT-121

Description: Park and Ride - existing parking available (10 spaces min); signage and service need to be added

Barclay West

PT-120

Description: Park and Ride - existing parking available (10 spaces min); signage and service need to be added

Eastwood Road & Rogersville Road

PT-31

Description: Amenity upgrades including bench, trash can, and bike rack

Wilmington Multimodal Transportation Center (Phase 1B)**PT-82**

Description: The rehabilitation and re-use of the building/property located at 525 North 4th Street is being identified as the Wilmington Multimodal Transportation Center Phase 1B

Public Transportation Complete Project List

Project ID	Project Name	Project Type
PT - 1	Light Rail	Rail
PT - 2	Bus Transport: Surf City	Route
PT - 3	Seasonal Service	Route
PT - 4	Improve Transit on Oleander	Improvement
PT - 5	Masonboro Bus	Route
PT - 6	Connect Citizens with Entertainment and Arts	Route
PT - 7	Light Rail System from Downtown to ILM	Rail
PT - 8	Market Street Extension	Route
PT - 9	Route 104, 30 Minute Frequency	Route
PT - 10	Princess Place Dr at Montgomery Ave	Amenity Upgrades
PT - 11	Princess Place Dr at N 25Th St	Amenity Upgrades
PT - 12	Nixon St & N 8th St	Amenity Upgrades
PT - 13	Nixon St at N 5th St	Amenity Upgrades
PT - 14	N 4th St at ABC Alley	Amenity Upgrades
PT - 15	Market St & Kerr Ave	Amenity Upgrades
PT - 16	Market St at Lullwater Dr	Amenity Upgrades
PT - 17	Sigmon Rd at Walmart (Wilmington)	Amenity Upgrades
PT - 18	S College Rd at University Dr	Amenity Upgrades
PT - 19	S College Rd at Wilshire Blvd	Amenity Upgrades
PT - 20	Oleander Dr at Whole Foods	Amenity Upgrades
PT - 21	Oleander Dr at Hawthorne Dr	Amenity Upgrades
PT - 22	Oleander Dr at Giles Ave	Amenity Upgrades
PT - 23	Wrightsville Ave at Cape Fear Memorial Hospital	Amenity Upgrades
PT - 24	S College Rd at Kmart	Amenity Upgrades
PT - 25	S College Rd at University Dr	Amenity Upgrades
PT - 26	NHC Govt Center at Government Center Dr	Amenity Upgrades
PT - 27	S College & Randall Pkwy	Amenity Upgrades

Project ID	Project Name	Project Type
PT - 28	Randall Pkwy at Brailsford Dr	Amenity Upgrades
PT - 29	Market St at Covil Ave	Amenity Upgrades
PT - 30	New Centre Dr at Bob King Buick	Amenity Upgrades
PT - 31	Eastwood Rd at Rogersville Rd	Amenity Upgrades
PT - 32	Wrightsville Avenue at Jones Rd	Amenity Upgrades
PT - 33	Military Cutoff Rd at Old Macumber Station Rd	Amenity Upgrades
PT - 34	Gordon Rd at Food Lion	Amenity Upgrades
PT - 35	S 16th St at Wright St	Amenity Upgrades
PT - 36	S 17th St at Glen Meade Rd	Amenity Upgrades
PT - 37	Shipyard Boulevard at Commons Dr	Amenity Upgrades
PT - 38	Independence Blvd at Canterbury Dr	Amenity Upgrades
PT - 39	Independence Blvd (Oleander Mall)	Amenity Upgrades
PT - 40	Independence Blvd at Park Ave	Amenity Upgrades
PT - 41	Wilshire Blvd at Berkshires at Pelican Cove	Amenity Upgrades
PT - 42	Wilshire Blvd at S Kerr Ave	Amenity Upgrades
PT - 43	Independence Blvd (Oleander Mall)	Amenity Upgrades
PT - 44	Carolina Beach Rd at Roses	Amenity Upgrades
PT - 45	Marion Dr at Rutledge Dr	Amenity Upgrades
PT - 46	Monkey Junction Transfer Station	Amenity Upgrades
PT - 47	Market St at N 16th St	Amenity Upgrades
PT - 48	Carolina Beach Rd at Southern Blvd	Amenity Upgrades
PT - 49	Carolina Beach Rd at Independence Blvd	Amenity Upgrades
PT - 50	Carolina Beach Rd at Silva Terra Dr	Amenity Upgrades
PT - 51	S 17th St at John D Barry Dr	Amenity Upgrades
PT - 52	Carolina Beach Rd at Medical Center Dr	Amenity Upgrades
PT - 53	Carolina Beach Rd at Tennessee Ave (BOA)	Amenity Upgrades
PT - 54	S Front St at Castle St	Amenity Upgrades
PT - 55	Main St at Church St (Navassa)	Amenity Upgrades
PT - 56	Mount Misery Rd at Food Lion	Amenity Upgrades
PT - 57	Village Rd & S Navassa Rd	Amenity Upgrades
PT - 58	West Gate Dr at Walmart (Leland)	Amenity Upgrades
PT - 59	N Front St Harnett St	Amenity Upgrades
PT - 60	N College Rd at Danny Pence Dr	Amenity Upgrades

Project ID	Project Name	Project Type
PT - 61	Halyburton Memorial Pkwy at Ballfields	Amenity Upgrades
PT - 62	Carl Winner Ave at Carolina Beach Ave N	Amenity Upgrades
PT - 63	S 17th St at Little John Cir	Amenity Upgrades
PT - 64	S 5th St at Castle St	Amenity Upgrades
PT - 65	Dawson St at 9th St	Amenity Upgrades
PT - 66	Lake Ave at S College Rd	Amenity Upgrades
PT - 67	Shipyard Blvd at S 41st St	Amenity Upgrades
PT - 68	Independence Blvd at Converse Dr	Amenity Upgrades
PT - 69	S 41st St at Hoggard High	Amenity Upgrades
PT - 70	5th St at Ann St	Amenity Upgrades
PT - 71	S 17th St at Hospital Plaza Dr/Savanna Ct	Amenity Upgrades
PT - 72	S 17th St at Doctors Circle	Amenity Upgrades
PT - 73	S 5th St at Dawson St	Amenity Upgrades
PT - 74	S 10th St at Meares St	Amenity Upgrades
PT - 75	Cypress Grove Dr at Doctors Cir	Amenity Upgrades
PT - 76	Medical Center Dr at Delaney Radiologists	Amenity Upgrades
PT - 77	Wellington Ave at Silver Stream Ln	Amenity Upgrades
PT - 78	Wellington Ave at Troy Dr	Amenity Upgrades
PT - 79	Wellington Ave at Flint Dr	Amenity Upgrades
PT - 80	Greenfield St at S 13th St	Amenity Upgrades
PT - 81	NC133/River Road at Belville Elementary School	Amenity Upgrades
PT - 82	Wilmington Multimodal Transportation Center	Facility
PT - 83	US117/NC133 at Old Blossom Ferry Road	Amenity Upgrades
PT - 84	US421 at Blueberry Road	Amenity Upgrades
PT - 85	US17 at NC210	Amenity Upgrades
PT - 86	Downtown Transfer Station	Amenity Upgrades
PT - 87	Rankin St at 11th St	Amenity Upgrades
PT - 88	16th St at Kidder St	Amenity Upgrades
PT - 89	Market St at YMCA	Amenity Upgrades
PT - 90	Wellington at 17th St	Amenity Upgrades
PT - 91	Village Road at Food Lion	Amenity Upgrades
PT - 92	N Lake Park Blvd at Town Hall	Amenity Upgrades
PT - 93	Carolina Beach Road at Harris Teeter	Amenity Upgrades

Project ID	Project Name	Project Type
PT - 94	17th St at Food Lion Plaza	Amenity Upgrades
PT - 95		Amenity Upgrades
PT - 96	Carolina Beach Rd At S College Rd (Monkey Junction)	Amenity Upgrades
PT - 97	Front St at Ann St	Amenity Upgrades
PT - 98	Carolina Beach Rd at Snow's Cut Bridge	Park and Ride
PT - 99	Carolina Beach Rd at S College Rd	Park and Ride
PT - 100	Cape Fear Community College North Campus Park and Ride	Park and Ride
PT - 101	I-40 at Holly Shelter Rd	Park and Ride
PT - 102	Market St at Middle Sound Loop Rd	Park and Ride
PT - 103	Market St at Porters Neck Rd	Park and Ride
PT - 104	US17 at Walmart	Park and Ride
PT - 105	US17 at Island Creek Rd (NC210)	Park and Ride
PT - 106	US17/74/76 at River Rd (NC133) - Belville	Park and Ride
PT - 107	Wave Central Station - Forden Station	Park and Ride
PT - 108	River Road (NC133)	Park and Ride
PT - 109	I-140 at US74/76	Park and Ride
PT - 110	I-140 at Castle Hayne Rd	Park and Ride
PT - 111	I-140 at Cedar Hill Rd	Park and Ride
PT - 112	I-140 at US17	Park and Ride
PT - 113	I-140 at US421	Park and Ride
PT - 114	US17 at Sidbury Rd	Park and Ride
PT - 115	Mt Misery Rd at US74/76	Park and Ride
PT - 116	US421 at Cowpens Landing Rd	Park and Ride
PT - 117	Downtown Station (2nd & Market Streets)	Park and Ride
PT - 118	Galleria Mall	Park and Ride
PT - 119	Mayfaire Mall	Park and Ride
PT - 120	Barclay West	Park and Ride
PT - 121	Fairfield Park	Park and Ride
PT - 122	Terminus of Independence Boulevard	Park and Ride
PT - 123	Leland Town Hall	Park and Ride
PT - 124	Add Bus Stop to Wrightsville Beach	Stop
PT - 125	Trolley Replacements	Project
PT - 126	Bus Stop at Market St. Walmart	Stop

Project ID	Project Name	Project Type
PT - 127	Maglev between Wilmington/ILM/Leland/Jacksonville	Light rail
PT - 128	Stop Along Historic Coastline	Route
PT - 129	"Party Bus"	Route
PT - 130	Mass Transit between Wilmington and Myrtle Beach	Route
PT - 131	Bus Stop Near Walmart/Lowe's Entrance	Stop
PT - 132	Satellite Beach Parking with Bus Station Hub	Park and Ride
PT - 133	Ferry from Leland into Wilmington	Park and Ride
PT - 134	Parking	Park and Ride
PT - 135	Extend Trolley Service	Route
PT - 136	Electric Bus Investment	Project
PT - 137	Shelter Needed	Amenity Upgrade
PT - 138	Maglev Train to RDU and CLT	Light rail
PT - 139	Light Rail	Light rail
PT - 140	Public Transportation to and from the Ferry	Route
PT - 141	Shipyard Bus Pullout (U-5534N)	Upgrade
PT - 142	Automatic Passenger Counter (APC)	Facility
PT - 143	Rail Realignment Part A	Rail
PT - 144	Rail Realignment Part B (Alternative 1)	Rail
PT - 145	Modern Fare Collection Service	Facility
PT - 146	Route 301 Hourly Frequency	Route
PT - 147	Rush Hour Service on High Ridership Routes 8-11AM And 3-5PM(105)	Route
PT - 148	Rush Hour Service on High Ridership Routes 8-11AM And 3-5PM(108)	Route
PT - 149	Rush Hour Service on High Ridership Routes 8-11AM and 3-5PM (201)	Route
PT - 150	Rush Hour Service on High Ridership Routes 8-11AM and 3-5PM(205)	Route
PT - 151	Earlier Weekday Service on High Ridership Routes (105)	Route
PT - 152	Earlier Weekday Service on High Ridership Routes (108)	Route
PT - 153	Earlier Weekday Service on High Ridership Routes (201)	Route
PT - 154	Earlier Weekday Service on High Ridership Routes (205)	Route
PT - 155	Upgrade Route 107 to Hourly to Align with Route 301	Route
PT - 156	Route 204 Extended Service to 9PM and Weekends	Route
PT - 157	Pleasure Island Trolley, with Bus Stop at Ferry, and Amenities	Route

Project ID	Project Name	Project Type
PT - 158	Service to River Lights Development	Route
PT - 159	Creekwood On Demand Service Off Peak Hours	Route
PT - 160	Wifi on Buses	Amenity Upgrades
PT - 161	Solar Lights at Bus Stops	Amenity Upgrades
PT - 162	Military Cutoff Rd High Density Local Route	Route
PT - 163	Rail Realignment Part B (Alternative 3)	Rail
PT - 164	Rail Realignment Part B (Alternative 5)	Rail

Sources:

- North Carolina 2018-2027 STIP (2017)
- North Carolina 2020-2029 STIP (2019)
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- Wave Transit Short-Term Efficiencies and Long-Term Governing Model (2018)
- Trends in Public Transportation Ridership: Implications for Federal Policy (2018)
- APTA: 2019 Public Transportation Fact Book (2019)
- FHWA: Shared Mobility Current Practices and Guiding Principles
<https://ops.fhwa.dot.gov/publications/fhwahop16022/fhwahop16022.pdf>
- “In U.S., Telecommuting for Work Climbs to 37%”
<https://news.gallup.com/poll/184649/telecommuting-work-climbs.aspx>
- Clewlow, Regina R. and Gouri S. Mishra (2017) Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-17-07
- FTA: TAM Plans
<https://www.transit.dot.gov/TAM/TAMPlans>
- FTA: National Transit Database, 2016 National Transit Summary and Trends, October 2017
<https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/66011/2016-ntst.pdf>
- Pender Adult Services, Inc., PAS-TRAN
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- Brunswick Transit System
<http://www.brunswicktransit.org/>

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APPENDIX K: Roadway Element

Current Trends

While the WMPO is dedicated to creating a balanced, multimodal transportation system, automobile use is and will continue to be the predominant mode of transportation for many people in the region. Land use patterns determine travel needs and the demands placed on roadways. Changes to roads, whether widening, bypasses, or simply a more context-sensitive street design, often reflect the adjoining land uses.

Rapid population growth is ongoing in both Brunswick County and Pender County and the region as a whole continues to experience steady growth in residential and commercial property development. Recently adopted land use plans have included considerations for higher residential densities and mixed-use development in focused locations. Concentrated development creates favorable conditions for operating a public transportation route to an area and may shift travel demand, reducing the number of vehicle miles traveled (VMT).

By identifying national and state trends, the WMPO can better prepare the local transportation network to meet future transportation needs.

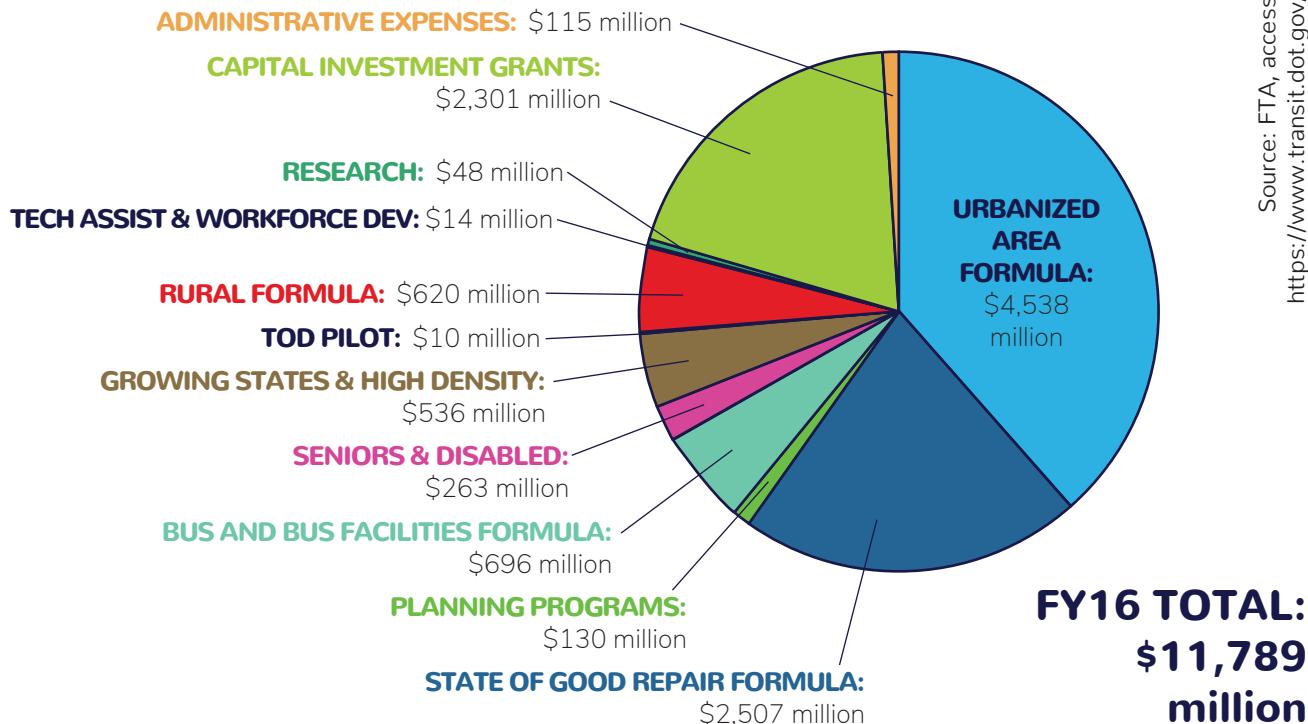
National Trends: the U.S. Department of Transportation

Funding

The federal government influences infrastructure development at the national level by developing policy and funding sources to guide state project and program implementation. On December 4, 2015, President Obama signed Public Law 114-94, the Fixing America's Surface Transportation (FAST) Act. The FAST Act funds surface transportation programs including federal-aid highways, with \$305 billion dedicated through FY2020. Setting the course for transportation investment in highways, the FAST Act aims to:

- Improve mobility on United States highways
- Create jobs and support economic growth
- Accelerate project delivery and promote innovation

FAST ACT AUTHORIZED FUNDING



Source: FTA, accessed at:
<https://www.transit.dot.gov/FAST>

While the FAST Act provides a stable, guaranteed federal funding allotment for state Departments of Transportation (DOTs) through FY2020, current roadway infrastructure needs well outpace available traditional funding sources. The FAST Act also established the Infrastructure for Rebuilding America (INFRA) Discretionary Grant program. This program offers state DOTs an additional opportunity to fund innovative projects, placing an emphasis on the movement of freight and positive contributions to the economy. Additionally, selection criteria favors projects with existing, non-federal funding already dedicated as well as innovative project strategies like Public-Private Partnerships (P3s). NCDOT was awarded \$147 million in the 2018 grant cycle for a project involving widening improvements to I-95, the conversion of US70 to future I-42, and the installation of 300 miles of fiber optic cable to expand broadband access to portions of rural North Carolina.

Congress has also continued to authorize funding for the Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant program, formally known as the Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program. Like the INFRA Grant program, BUILD selection criteria includes innovation and the leveraging of local funding. NCDOT has been successful in securing numerous federal BUILD Grants for infrastructure improvements. Most recently, during the 2019 grant cycle, NCDOT was awarded \$22.5 million for a \$685.1 million roadway resiliency improvement project that will widen, raise, and rebuild portions of I-95 in the Lumberton area.

Other federal funding programs exist to provide transportation funding. Recently, the Federal Highway Administration (FHWA) has shifted focus to P3s as an innovative, non-traditional funding opportunity. Developed in partnership with the U.S. DOT, Public-Private Partnership (P3) Procurement: A Guide for Public Owners is now available to provide guidance and a tool kit for attaining and implementing roadway and transit projects through this newly-encouraged funding source.

Innovation and Technology

Autonomous vehicles will significantly affect how people and goods are moved throughout the United States and the world. The regulations and principles that will guide the introduction of this emerging technology will be just as important as the technology itself. The U.S. DOT has begun to address these issues in its document, Ensuring American Leadership in Automated Vehicle Technologies. Priorities include:

- Protecting Users and Communities
 - Prioritize safety
 - Emphasize security and cybersecurity
 - Ensure privacy and data security
 - Enhance mobility and accessibility
- Promoting Efficient Markets
 - Remain technology-neutral
 - Protect American innovation and creativity
 - Modernize regulations
- Facilitating Coordinated Efforts
 - Promote consistent standards and policies
 - Ensure a consistent federal approach
 - Improve transportation system-level effects

Innovations in traditional roadway use and technologies have begun to emerge. Semi-autonomous vehicles are continually developing new features, further advancing vehicles toward full autonomy. Fully autonomous freight and transit vehicles are already being produced and tested in pilot programs across the United States. In response to these advancements, many states are beginning to consider infrastructure and technology needs within the existing system to support these innovations. The following are assumptions that can be made about the onset of autonomous vehicles:

Benefits of Passenger Automation

- Safety: Ninety-four percent of serious crashes are due to human error. Autonomous vehicles, that are connected and communicating with one another, would be less likely to be involved in crashes.
- Economic and Societal Benefits: Eliminating the majority of crashes could reduce the economic and societal cost of lost workplace productivity and loss of life and decreased quality of life injuries.
- Efficiency and Convenience: Autonomous vehicles could contribute to smoother traffic flow and reduced congestion.
- Mobility: Autonomous vehicles could provide mobility to millions of people who are unable to operate a vehicle on their own or who do not have access to a vehicle.

Additional Considerations

- Parking: Less parking may be needed with widespread implementation of autonomous vehicles. Minimum parking requirements for developments may be able to be reduced or even eliminated, leading to more peripheral development.

- Increased VMT: With those who were previously unable to drive on their own becoming mobile, there is an expected increase in VMT which will have to be addressed through increased roadway capacity or more efficient travel modes such as microtransit or carpooling.
- Congestion: Smoother traffic flow and new opportunities for seniors and the disabled could create more trips, placing even more vehicles on the road.
- Vehicle Ownership: Autonomous vehicles might end traditional vehicle ownership as we know it in favor of transportation as a service.
- Fuel Source: With the advancements in electric vehicle (EV) technology that will likely occur by the time autonomous vehicles become mainstream, the provision of charging stations will become increasingly important.

Autonomous Vehicles in the Movement of Freight

The benefits of autonomous trucks will first be recognized through platooning. Truck platooning is when two or more trucks use vehicle-to-vehicle communication technology and automated support to travel in convoy. While the driver is responsible for steering, acceleration and braking is controlled by the lead truck, maintaining a set distance between the vehicles. This allows for shorter following distances, which reduce aerodynamic drag providing energy savings and lower vehicle emissions. The speed of the lead truck may be controlled manually or by adaptive cruise control (ACC). Truck platooning also improves safety by reducing driver workload and decreasing reaction time with automatic emergency braking (AEB) and other automated support features.

The emergence of this rapidly advancing technology confirms the need for a well-maintained roadway network as well as the potential for additional capacity. While full autonomy will likely increase the efficiency and travel time reliability of vehicles on the roadway network, it may also increase the number of vehicles and encourage urban sprawl. Transportation and land use planners and decision makers should continue to coordinate planning efforts in the future.

Intelligent Transportation Systems

In addition to maintaining the condition of the existing roadway network to accommodate autonomous vehicles, there has been ongoing recognition at the federal level to incorporate broadband components into surface transportation projects. An Executive Order was signed by President Obama in 2012 directing FHWA to assist states with the planning and implementation of broadband technology. The inclusion of broadband technologies will provide economic vitality to rural areas throughout the U.S. while allowing advancements in Intelligent Transportation Systems (ITS) and network data collection.

The U.S. DOT has found that the greatest benefits to the safety and mobility of the transportation system has been through the implementation of ITS technologies. The agency has identified the following as the most prominent ITS technologies being implemented across the country:

- Electronic Toll Collection (ETC), a payment collection system consisting of vehicle-mounted transponders and electronic readers mounted over a toll road
- Ramp Meters (RMs), which control the ramps entering a controlled-access facility with a traffic signal
- Red Light Cameras (RLCs), which detect motor vehicles that have entered an intersection while the movement is on red and collect a photograph of the violation

- Traffic Signal Coordination (TSC), which synchronizes signalized intersections along a common corridor or route during peak hours to give priority to high traffic movements
- Transit Signal Priority (TSP), which utilizes a signal preemption system to give priority to transit at intersections
NOTE: Preemption systems are also used by emergency vehicles
- Traveler Information Systems (TIS), which allow transportation system users, across all modes, to make informed decisions about intended mode, route, and departure time

There are likely to be rapid advancements in ITS technologies over the life of this plan.

State and Regional Trends: NCDOT and the WMPO Region

NCDOT is responsible for one of the nation's largest highway systems. U.S. and N.C. routes make up nearly 80,000 miles of roadway, reaching every corner of the state. From planning to building to maintaining, the Division of Highways is responsible for all aspects of the state's highways and roadsides, as well as more than 13,500 bridges, to ensure that traffic moves safely and efficiently. The Division of Highways is tasked with building and maintaining essential highway connections to transport people and goods as well as support jobs, economic development, business opportunities, and the quality of life in North Carolina.

The roadway system in the Wilmington region relies on a combination of NCDOT and locally-maintained roadways. As a result of rapid population growth, local street networks have developed around residential and commercial development with little to no consideration for multimodal accommodations or alternate, redundant routes. Inconsistent coordination between land use and transportation planning has also contributed to the fragmented growth of the roadway network. This method of development has increasingly relied on a few primary routes and neglects investment in alternate routes to manage ever growing congestion.

Some of the limited connectivity in the transportation network can be attributed to the region's unique geography, as towns are separated by waterways such as the Cape Fear River and the Intracoastal Waterway. Moving forward, the region will have to focus on mobility and modernization, highway assets, and programs and plans to address future transportation needs.

Funding

Of NCDOT's annual funding, 73% is sourced from state gas taxes and vehicle registration fees; 26% from federal funds; and the remaining 1% from local funds. Due to increasing vehicle fuel efficiency and the introduction of vehicles that run on alternative fuel sources, gas tax revenues are anticipated to begin declining. This will be a national trend, and states will have to find new ways to make up for this decreasing revenue source. One potential new source may be a tax placed on VMT. This number is expected to outpace gallons of gasoline consumption and continue to increase over the life of this plan.

There has been a recent trend among NCDOT Division 3 and the WMPO's member jurisdictions to utilize the WMPO's Surface Transportation Block Grant Program-Direct Attributable (STBGP-DA) allocation toward roadway projects. The WMPO is eligible to receive this federal funding directly due to its designation as a Transportation Management Area (TMA). Federal funds require a minimum 20% local match and, since becoming eligible to receive them in 2013, the WMPO has developed a local prioritizing process for awarding these funds. The City of Wilmington has utilized some of these funds to install emergency vehicle signal

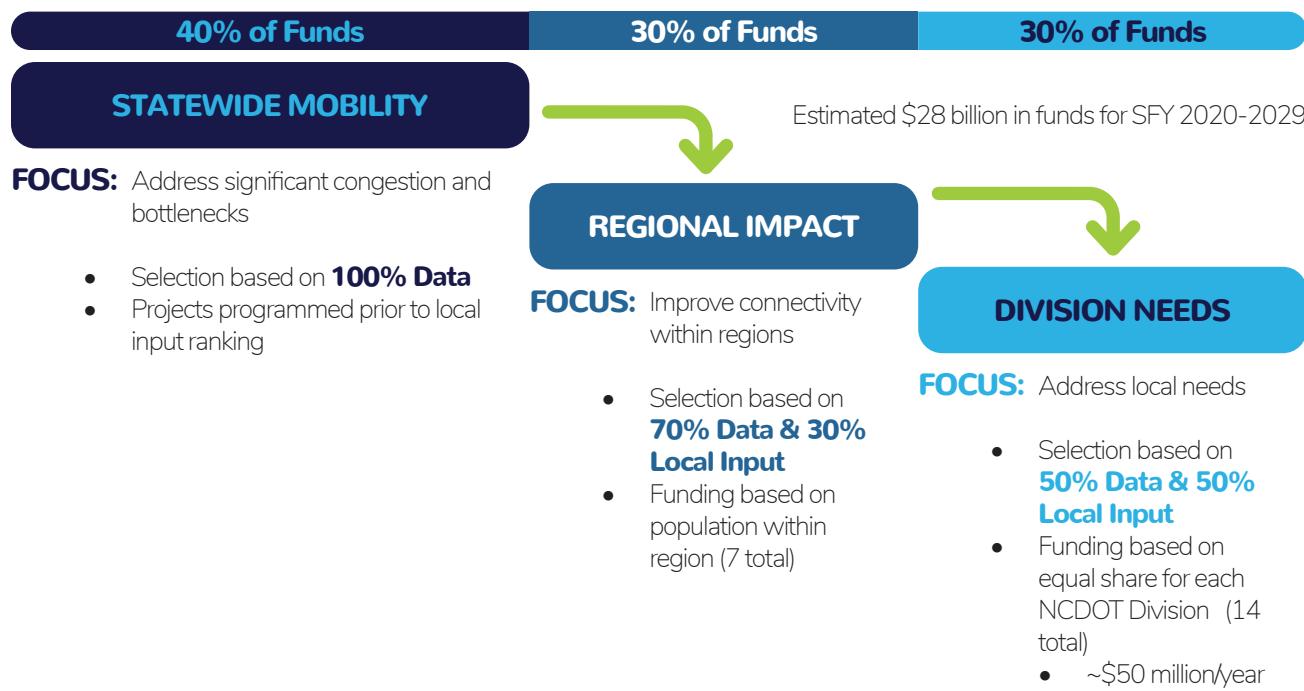
preemption at numerous traffic signals. Division 3 has received an allocation of this funding to install a traffic signal and pedestrian facilities on US421 in Carolina Beach.

Capital Investments

Forty-eight percent of NCDOT's annual budget is dedicated to construction funding. In order to distribute this funding to projects throughout North Carolina, the Strategic Transportation Investments (STI) formula was developed and passed into law in 2013. The law outlined a statewide funding plan for transportation investments, requiring NCDOT to develop a quantitative method to evaluate transportation projects. Revenues were divided into three funding "buckets" of Statewide Mobility, Regional Impact, and Division Needs. The law established eligible projects and evaluation criteria for each tier. NCDOT's Prioritization Process was established to facilitate the application of the STI Law.

HOW STI WORKS

Source: NCDOT



The Regional Impact and Division Needs funding categories allow Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), and NCDOT Divisions to apply points toward the final score of preferred projects. NCDOT's Prioritization Process provides scored projects to be programmed within NCDOT's State Transportation Improvement Program (STIP). This 10-year program is updated every two years.

Capital improvement projects on locally maintained roadways within the WMPO planning area are funded by cities and towns through collected property and sales tax revenues. A Capital Improvement Plan (CIP) is developed by a local jurisdiction in order to prioritize local project needs. The process for developing these plans varies for each jurisdiction. These localities also have the option of enacting and collecting a motor

vehicle license fee or a bond referendum (by voter approval) to supplement typical capital revenue sources. Counties in North Carolina do not maintain local roadways.

Operations & Maintenance Investments

The State Asset Management Unit develops and implements a comprehensive strategy for keeping North Carolina's transportation system in a good working order, while making the most efficient use of taxpayer dollars. Examples of NCDOT's assets include highways, bridges, equipment and rest areas. Twenty-eight percent of NCDOT's budget is allocated to maintenance and primarily supports projects that maintain the state's existing transportation system. This includes resurfacing highways, bridge replacement and paving unpaved secondary roads. Funds are programmed within the STIP and distributed across the state based on need.

Incorporated cities and towns are responsible for maintaining locally owned infrastructure. Local tax dollars, in addition to Powell Bill allocations, contribute to these street maintenance budgets. Similar to additional revenue sources for capital investments, cities and towns also have the option of enacting and collecting a motor vehicle license fee or a bond referendum (by voter approval) to supplement typical maintenance revenue sources.

Resiliency

A major recent focus of NCDOT has been improving and implementing resilient infrastructure in response to several major weather events over the last few years. Resiliency is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions. Future major events are inevitable, thus necessitating the need to consider potential impacts during the planning and design phases of transportation infrastructure. NCDOT, as a result of major flooding impacts from Hurricanes Matthew and Florence, prioritized funding for improvements along the I-95 and I-40 corridors. The agency has been successful in securing both INFRA and BUILD grants to contribute to the estimated \$685 million project.

During the life of this plan, a key focus for both NCDOT and the WMPO will be to determine a metric for evaluating projects for resiliency. This plan recommends considerations for resiliency during the planning, design, and construction of transportation projects.

Safety

In an effort to improve safety on the roadway network, NCDOT has also placed an emphasis on modernization improvements to existing infrastructure. The department has supported and implemented relatively new and innovative corridor, intersection, and interchange designs into its roadway projects, along with technology and policies that incorporate all users of the transportation network.

Reduced-Conflict Intersection

One of the most utilized projects by NCDOT to maximize efficiency and improve the safety of a corridor is a Reduced-Conflict Intersection (RCI). Corridors with increasing traffic volumes and high crash rates are good candidates for an RCI, previously known as a Superstreet. Although there are variations to the design, all RCIs function the same by reducing the potential conflict points where users of the network may collide.

The US17 corridor in Leland has multiple examples of RCIs and others have been planned in the region to maximize efficiency of the existing infrastructure before resorting to expansion.

Diverging Diamond Interchange

Diverging Diamond Interchanges (DDIs) provide increased safety and mobility while offering a lower cost option to traditional interchanges. The interchange functions by crossing the right side of the road to the left side and then returning to its original side. This action removes conflicting left-turning movements—on the left side of the road, there is no opposing through movement. DDIs also reduce the number of potential conflict points, offering a safe alternative to traditional interchange design. Additionally, these interchanges can accommodate a greater capacity of left-turning movements.

A DDI was constructed at the US17/74/76/Causeway Interchange with NC133/Village Road NE in Leland.

Continuous Flow Intersection

This intersection design is similar to a DDI where the left side of the roadway is crossed to the right. Continuous Flow Intersections (CFIs) differ, however, as they are intended for use on at-grade, four-legged intersections. The left turn crossover prior to the main intersection allows for the left and through movements to operate simultaneously. CFIs also reduce the number of potential conflict points as compared to traditional intersection design.

A CFI has been selected by NCDOT as the preferred alternative for the NC132/College Road and US421/Carolina Beach Road intersection improvement project in New Hanover County.

Quadrant Roadway Intersection

Quadrant Roadway (QR) Intersection design offers an increase in operational efficiency through a reduction in travel time and delay at intersections of two heavily utilized roadways. QRs remove the left-turning movements from the four legs of the intersection and reroute these movements to roadways intersecting the main arterial roadways elsewhere.

As part of the Kerr Widening roadway project, a QR design was implemented at the intersection of US17 BUS/Market Street and Kerr Avenue in Wilmington. Additionally, NCDOT has selected a quadrant design as the preferred alternative for improvements to the US17/76/Oleander Drive and US117/NC132/College Road intersection in Wilmington.

Complete Streets Policy

NCDOT's "Complete Streets" policy, which was updated in 2019, requires the consideration and incorporation of multimodal facilities in the design and construction of new transportation projects as well as improvements to existing transportation infrastructure. The policy is part of a national movement. The Complete Streets Act of 2009—which recognizes the significant influence of street design on public health, safety, the environment, economic vitality, and quality of life—directs state DOTs and MPOs to adopt policies supporting innovative and inclusive transportation planning and to apply them to federally funded transportation projects. The WMPO Board adopted its "Complete Streets" policy in 2009, requiring all transportation projects within

the WMPO planning boundary to be designed in a balanced, responsible, and equitable way in order to accommodate and encourage travel by bicyclists, public transportation vehicles and their passengers, and pedestrians of all ages and abilities.

Intelligent Transportation Systems

Another continually advancing technology likely to have a substantial impact on roadways in the region is ITS. Components of this broad term include traffic signal monitoring and coordination, signal preemption, and TIS. The City of Wilmington currently operates a Traffic Management Center (TMC), which monitors a system of 226 traffic signals inside city limits and in some portions of unincorporated New Hanover County, through a contract with NCDOT. The operation and monitoring of these signals allows for real-time solutions to heavy congestion, accidents, or other events having a major impact on the flow of traffic. The constantly monitored system can be adjusted to better accommodate traffic in many of these instances. Benefits of this system management include improved safety through a potential reduction in crashes; increased mobility due to decreasing congestion; and positive environmental benefits resulting from the reduction of vehicles hindered by traffic. Traffic video camera images of the regional system are shared with NCDOT's Traveler Information Management System (TIMS), connecting the existing performance of the regional network with a system monitoring the statewide network. The continuation and expansion of this program is recommended, and its positive future impacts will depend greatly on regular investments to upgrade the system's technology, as well as the integration of new advancements in communication technologies as they become available.

System User Data Collection

The prevalence of technology in vehicles has allowed for data collection with greater sample sizes and coverage. Through cellular triangulation, GPS in cars, and smartphone applications, data can be collected remotely from a large sample size. The benefits of cellular data collection, as opposed to Bluetooth detection systems, is that this collection method does not require infrastructure to sense vehicles. Additionally, data can be collected in all weather conditions, and cellular data has a greater coverage. Drawbacks to the utilization of cellular data is that the data is typically owned by a private entity, such as a cellphone company, and often can only be attained and understood by working with a consultant that has relationships with these entities and the software to analyze the raw data. The federal government has introduced the National Performance Management Research Data Set (NPMRDS), which offers travel time and delay data nationwide for major roadways. This dataset is being utilized in the development of the WMPO's Congestion Management Process (CMP) 2020 Biennial Report.

Another method that the WMPO has historically utilized for calculating average travel time and delays for the CMP Biennial Report is floating car studies. Floating car studies involve the use of a handheld GPS and travel by vehicle along a corridor during peak travel hours. The GPS device provides positioning and a time stamp, which are used to determine average speeds and delays. This method of data collection is both time consuming for staff and expensive to collect. Additionally, this method provides only a snapshot of a corridor as opposed to cellular data, which monitors a corridor continuously.

The WMPO Congestion Management Process

The results of the 2010 Census revealed that the WMPO's Urbanized Area population had exceeded

200,000 people. In 2012, the WMPO was designated as a TMA. In addition to becoming eligible to receive federal direct attributable funding, the WMPO was also required to develop and maintain a CMP. Congestion management is the application of strategies to improve transportation system performance and reliability by reducing the adverse impacts of congestion on the movement of people and goods. Requirements of the CMP include:

- Development of congestion management objectives
- Establishment of measures of multimodal transportation system performance
- Collection of data and system performance monitoring to define the extent and duration of congestion and determine the causes of congestion
- Identification of congestion management strategies
- Implementation of strategies, including identification of an implementation schedule and possible funding sources for each strategy
- Evaluation of the effectiveness of implemented strategies

The WMPO utilized a cooperative process with the City of Wilmington's traffic engineering staff to develop the CMP, which was adopted by the WMPO Board in 2014. The CMP identified the region's critical roadway corridors and established multimodal performance measures to monitor congestion along each corridor.

1. Travel Time Performance Measures

- Average travel time (AM/PM)
- Average delay (AM/PM)
- Hotspot identification

2. Safety Performance Measures

- Rear end collisions
- Bicycle crashes
- Pedestrian crashes

3. Volume Performance Measures

- Average vehicle count
- Truck percentage
- Bicycle counts (AM/PM)
- Pedestrian counts (AM/PM)

4. Transit Performance Measures

- Transit boarding

Additionally, the process identified mitigation strategies to employ in order to reduce congestion along each identified corridor. The WMPO monitors these corridors on a biennial basis, producing a report that evaluates congestion changes within the network and makes recommendations on mitigation strategies to implement. These strategies were considered throughout the development of this plan as potential projects and policies. Metrics collected through system monitoring were also used to score and prioritize roadway projects.

Data Collection and Analysis

Travel time performance measures have historically been collected by the WMPO and City of Wilmington Traffic Engineering staff. This data has primarily been collected through floating car studies, which uses handheld GPS devices to collect data on speed and travel time. With advancements in data collection technologies, the WMPO will utilize NPMRDS on available corridors for the 2020 CMP Biennial Report in place of time-consuming floating car studies.

Safety performance measure data was collected by the NCDOT Traffic Safety Unit through their Traffic Engineering Accident Analysis System (TEAAS) program. This program aggregates and geo-locates traffic incidents from law enforcement officials throughout the state of North Carolina. This program was used to collect data for rear end collisions, bicycle crashes, and pedestrian crashes.

Volume performance measures were provided by WMPO data collection efforts. The WMPO's Traffic Counter Program collects traffic counts on major roadways within the region on an annual basis. The program utilizes pneumatic tube counters and magnetic traffic analyzers to gather vehicular and truck counts, and video collection counts for bicycles and pedestrians.

Transit performance measure data was provided by the Cape Fear Public Transportation Authority (Wave Transit). Passenger totals are aggregated for each roadway segment and a score is provided depending on the number of passengers.

The WMPO developed a systematic process to disperse performance measure points to represent the collected data in order to compare data performance across segments. Mitigation strategies were assigned to address travel time, safety, volume, and transit performance.

CMP Segment Scoring	
Performance Measures	Points Possible
Travel Time	2 points per minute of delay
Safety	30
Volume	50
Transit	10

The Wilmington Regional Travel Demand Model

The Wilmington Regional Travel Demand Model is a long-range, traffic forecasting tool that analyzes the relationship between transportation and land use. These models are utilized to evaluate the future transportation network based on forecasted land use, demographics, and facilities. Although future transportation networks will include multimodal accommodations, travel demand models are typically used for the evaluation of roadway improvements.

The Wilmington Regional Model that was developed in the early 2010s was a collaborative effort between

NCDOT, the WMPO, and a consultant, CDM Smith. The model was validated to a base year of 2010 with a 2040 planning horizon and was used to evaluate the impacts to the existing network of roadway projects for the development of the 2040 MTP. In order to successfully utilize the Wilmington Regional Model to estimate the potential future impacts of the proposed roadway project network in 2045, the model needed to be updated to a base year of 2015 and a planning horizon of 2045.

NCDOT and WMPO staff coordinated with planning staff from each member jurisdiction to develop and verify socioeconomic data in order to update the base year of the model to 2015. Typically, data from the 2015 American Community Survey (ACS) would have been used but, given the enormous and rapid growth of the region, staff desired to develop an approach specific to the region. A unique method of estimating households was used, where the number of new housing units since 2010, determined from tax records, was added to the 2010 number of occupied housing units. 2015 employment data was taken from InfoUSA. The same group worked to develop growth rate estimates for each county based on areas experiencing the highest growth and presumed future development. These estimated rates were established at a Traffic Analysis Zone (TAZ) level. Planning staff from each county assigned a high, medium, or low designation for population and employment for each TAZ. These assignments were then applied to established rates determined by NCDOT.

The existing roadway network of 2015 was also determined, and the list of existing and committed projects was reviewed and added.

Results

Utilizing the future growth rates that were established by the WMPO's member jurisdictions, the model provides density and growth projections for population and employment in the year 2045. The Wilmington Regional Model was then used to evaluate the following scenarios:

1. Base Year (2015)
2. 2045 No MTP Projects (NO BUILD)
3. 2045 MTP Projects without the Cape Fear Crossing
4. 2045 All MTP Projects (including the Cape Fear Crossing)
5. Change between No MTP Projects and MTP Projects without the Cape Fear Crossing

An LOS analysis, which is a derivative of the volume over capacity (V/C) for roadways, was completed for each of the above scenarios. This is a basic operation used to determine if a road is experiencing overcrowding and congestion, based upon its given capacity.

The V/C equation is a common way to visualize the current and future projections of roadway congestion along roadway segments and has long been used by transportation planners and engineers to evaluate the functionality of corridors. However, this type of analysis fails to show changes in flow from one road segment to another and is limited in its usefulness for evaluating the entire transportation network. As transportation systems become more complex and diverse, the practicality of the simple V/C ratio shrinks as the metric's ability to evaluate the network as a whole fails to account for the use of other modes of transportation. A new metric to assess a corridor's overall effectiveness will likely be determined during the life of this plan.

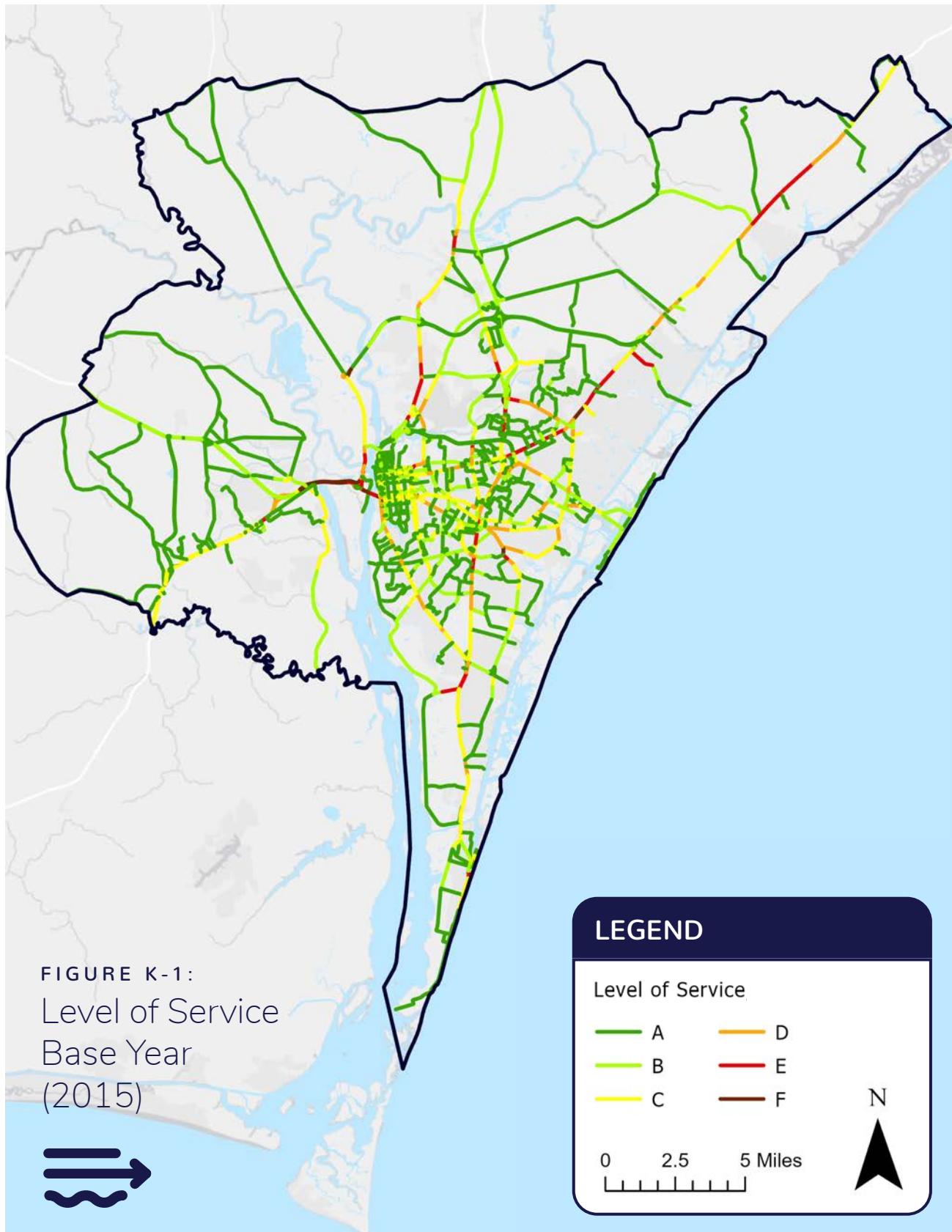
The following V/C ratios were used to determine grades:

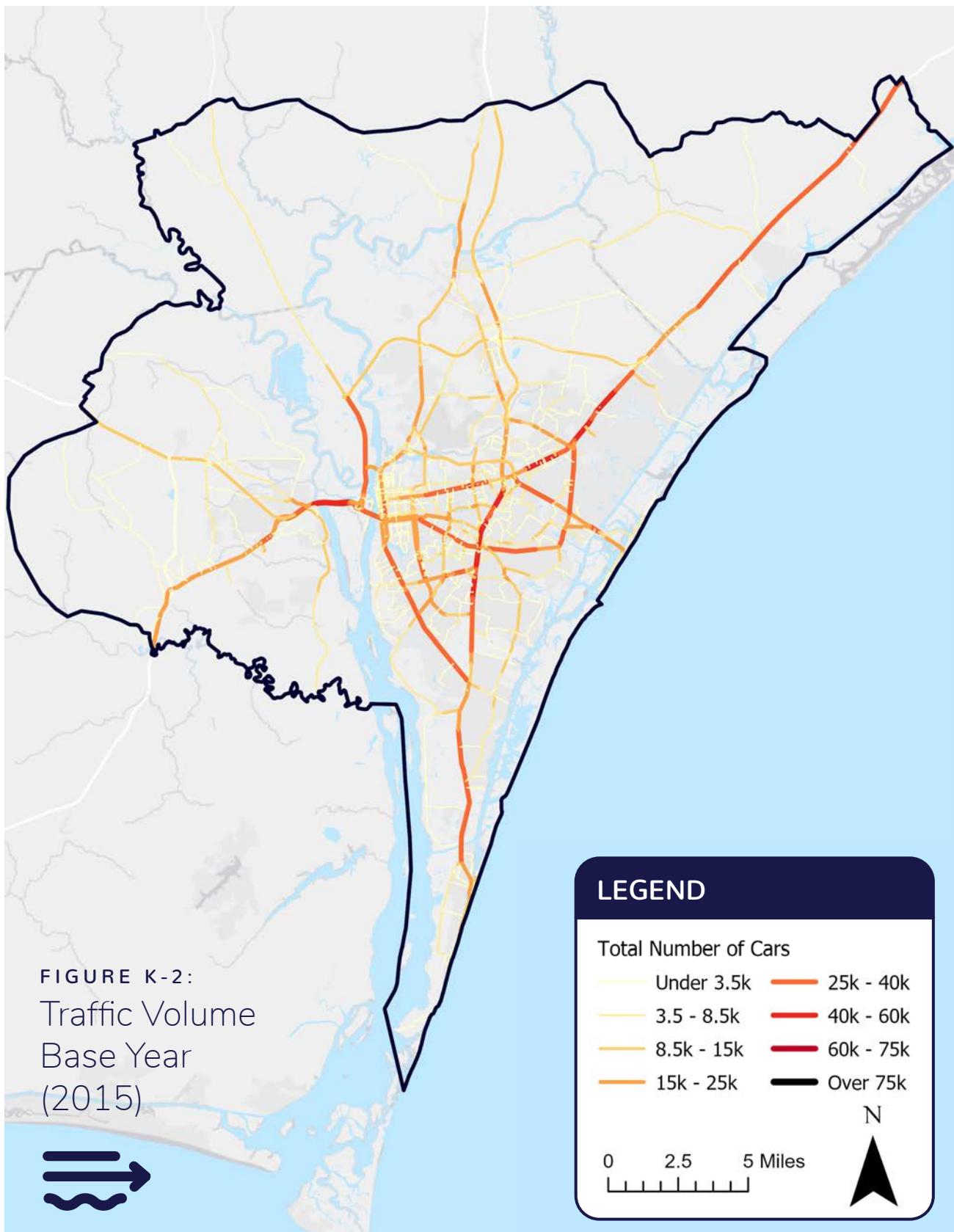
Major Roads		Minor Roads	
LOS	V/C Ratio	LOS	V/C Ratio
A	Less than .3	A	Less than .33
B	.31 to .49	B	.34 to .55
C	.50 to .70	C	.56 to .76
D	.71 to .85	D	.77 to .87
E	.86 to .99	E	.88 to .99
F	1 and above	F	1 and above

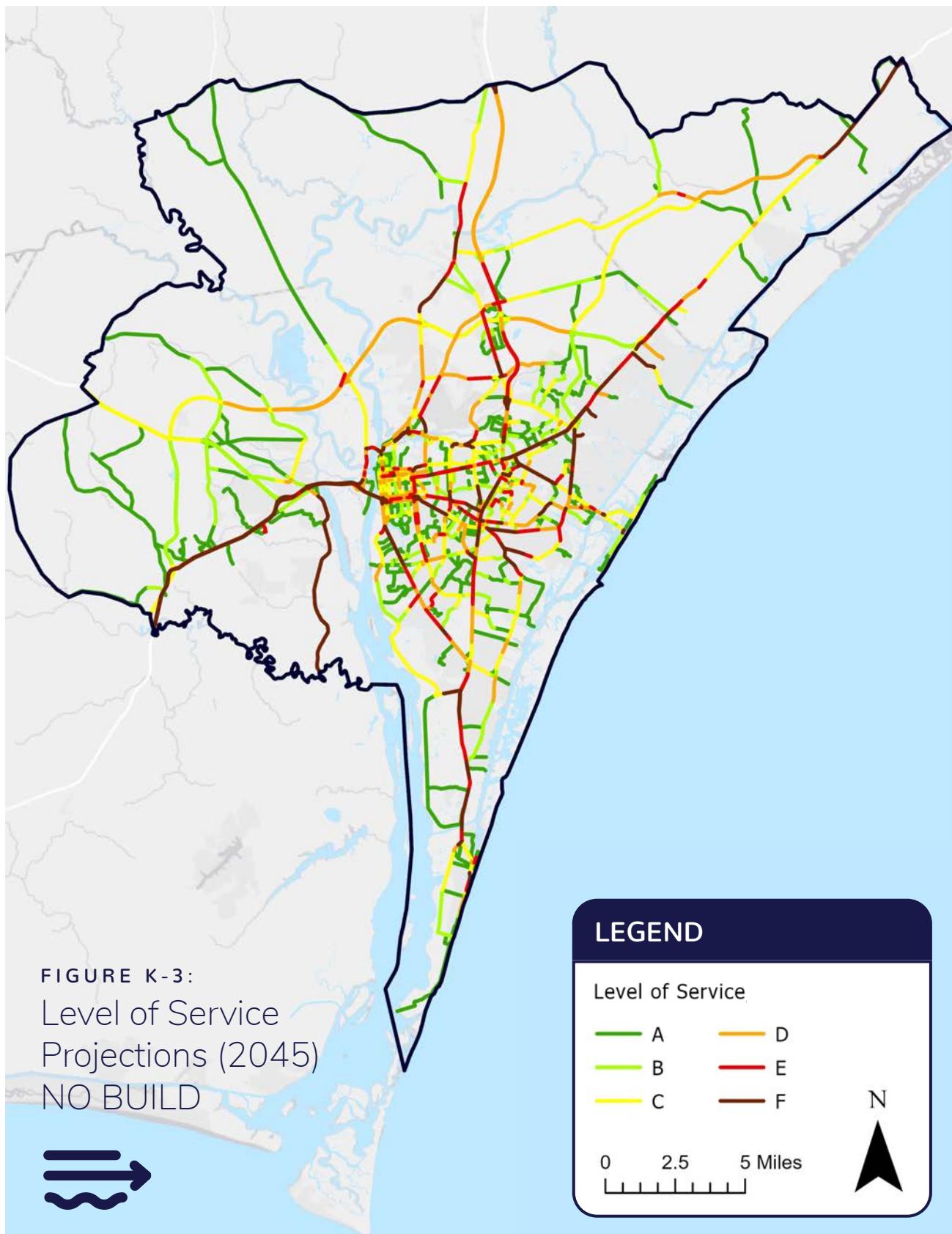
Population growth in the region has caused numerous issues in roadway transportation, namely delays and congestion. The roadway projects outlined in this plan are a starting point to address the extreme need for improvements to the roadway network. The model demonstrates that the implementation of Cape Fear Moving Forward 2045 roadway projects maintained or improved the LOS in 67% of the transportation network within the WMPO planning boundary, despite the booming population.

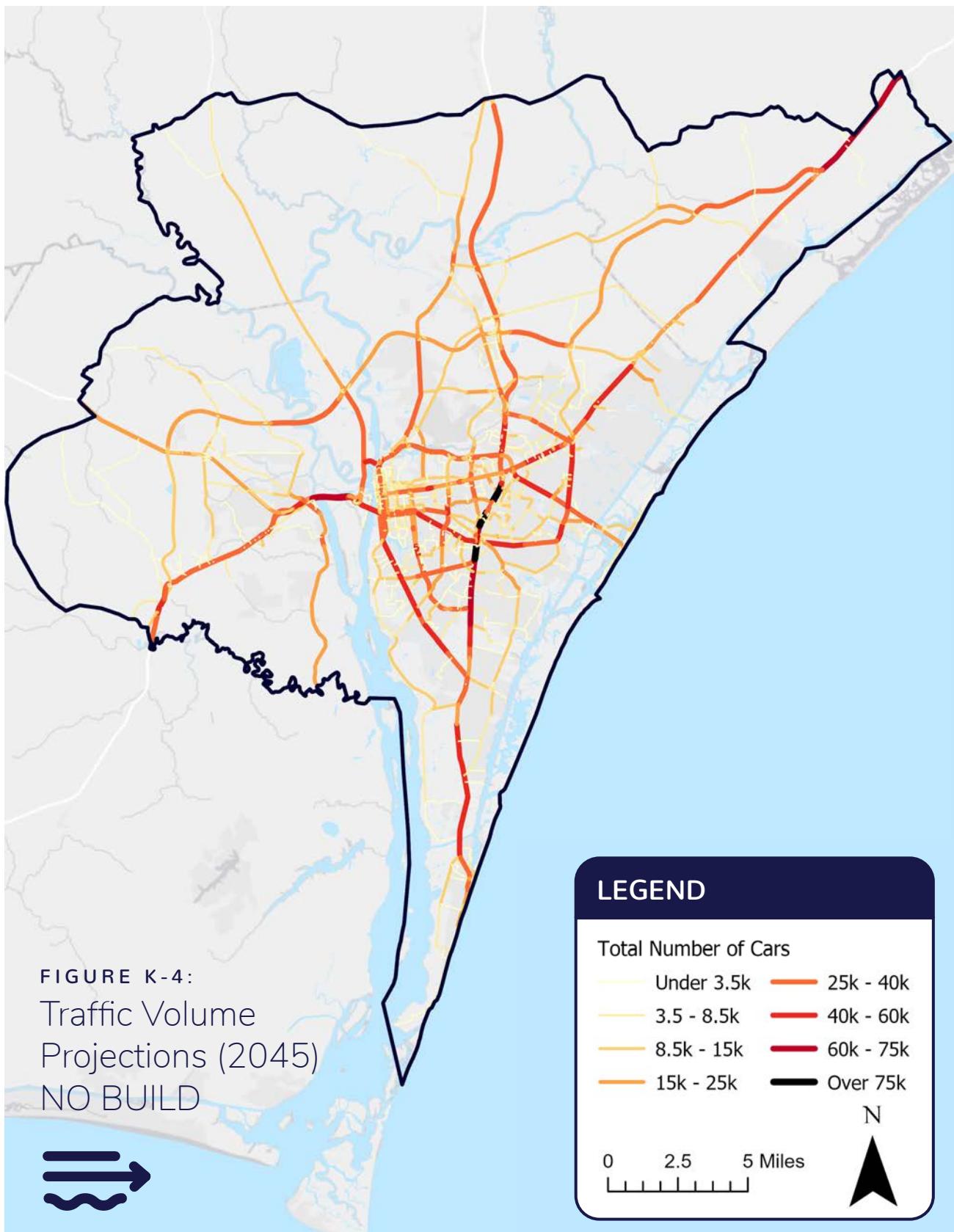
The results shown do not account for improvements to bicycle and pedestrian facilities or public transportation improvements, which could lead to changing preferences and increased transportation mode choices. Upgrades to the multimodal network and an increase in roadway congestion will likely increase the number of individuals who opt to utilize alternative modes of transportation rather than single occupancy vehicles (SOVs).

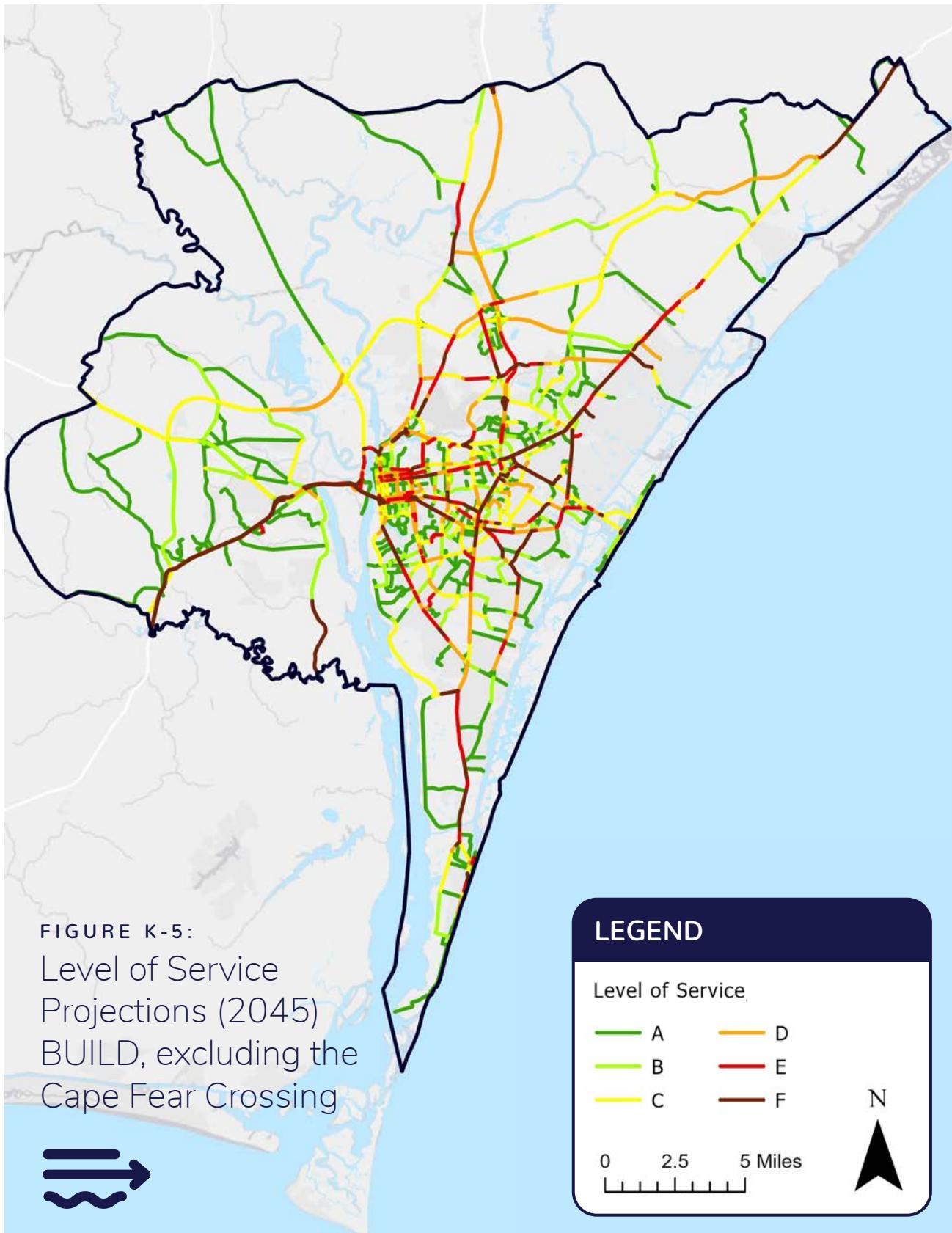
Maps depicting the results of the model—LOS analysis and traffic volume (total number of cars) for each scenario—can be found on the following pages.

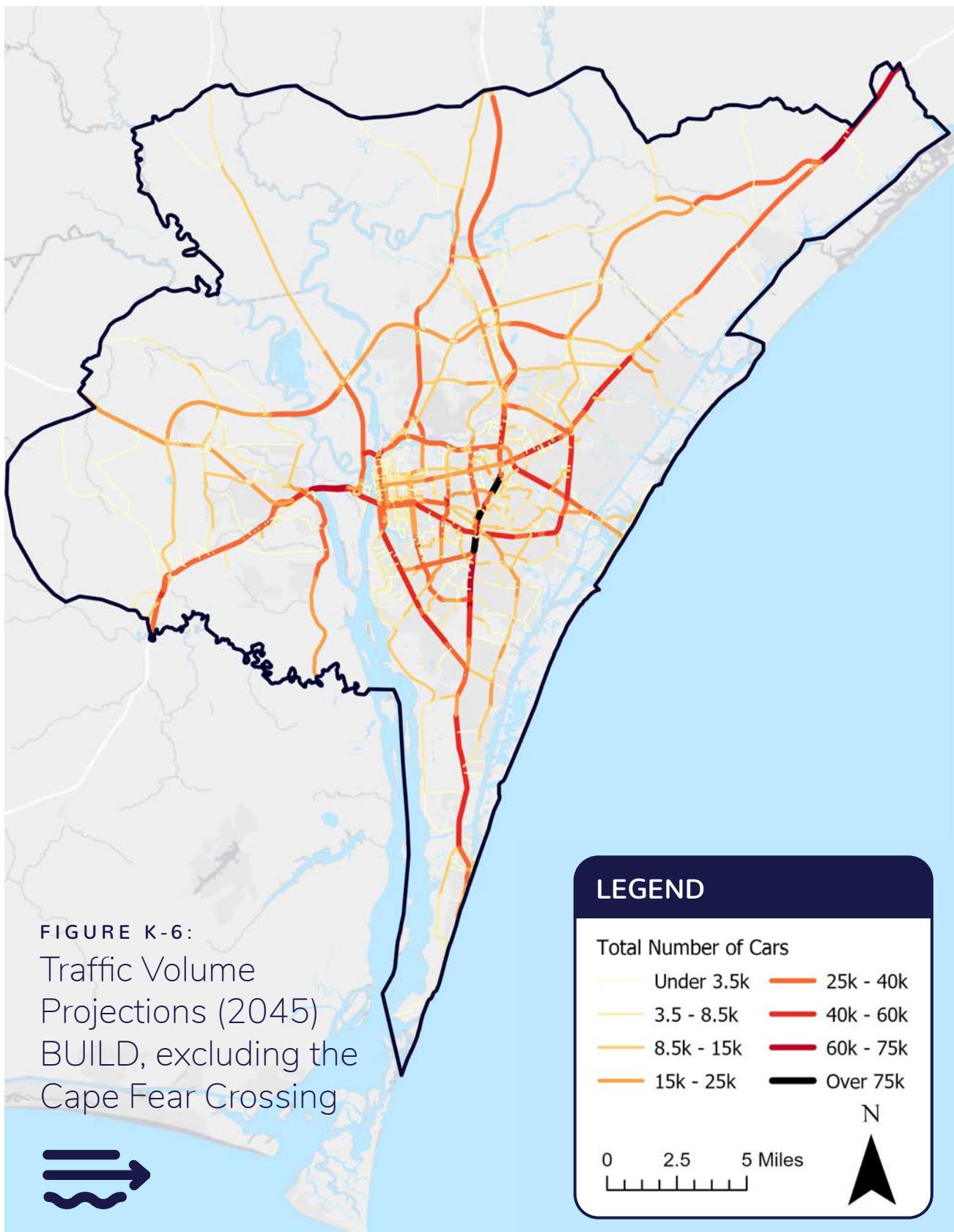


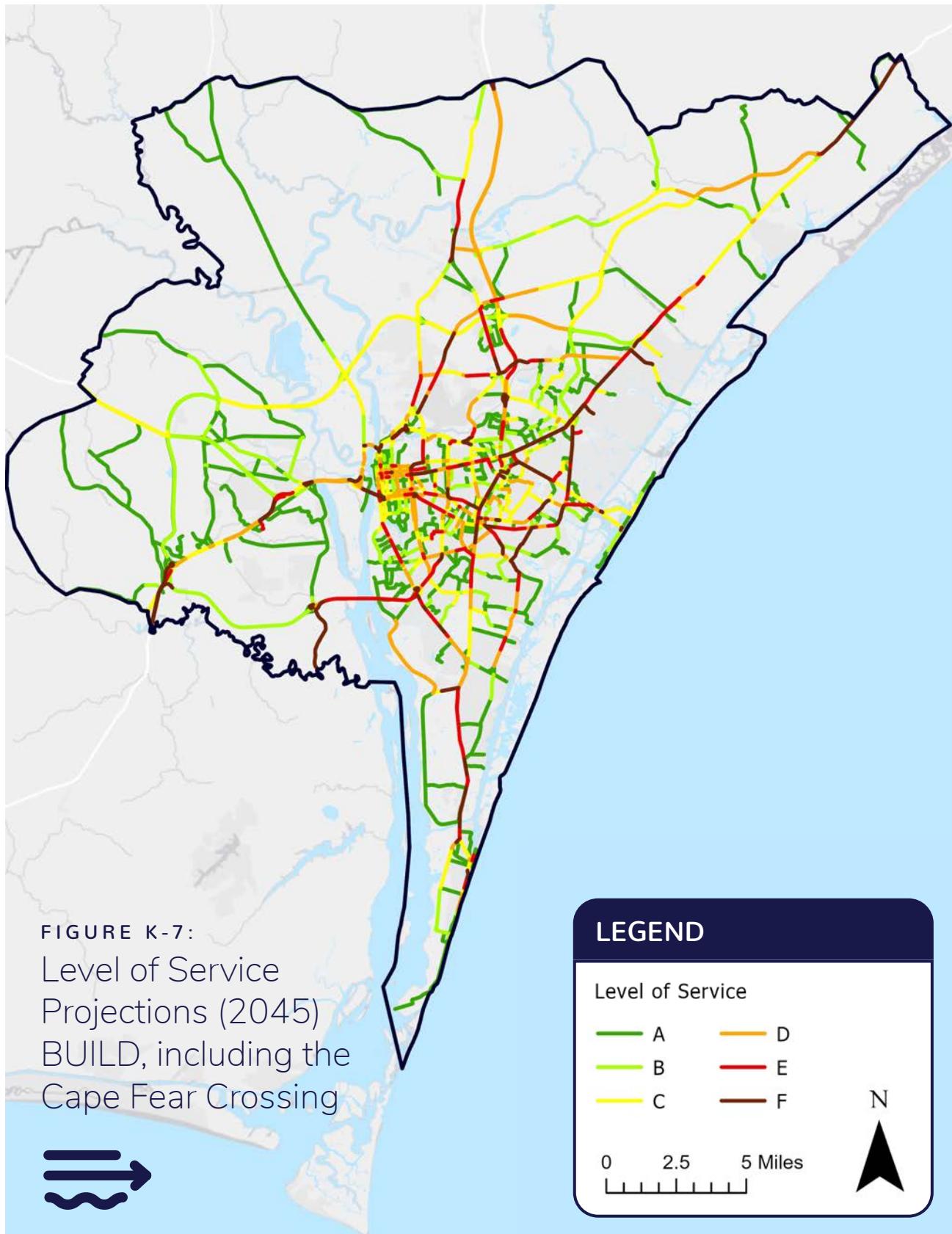


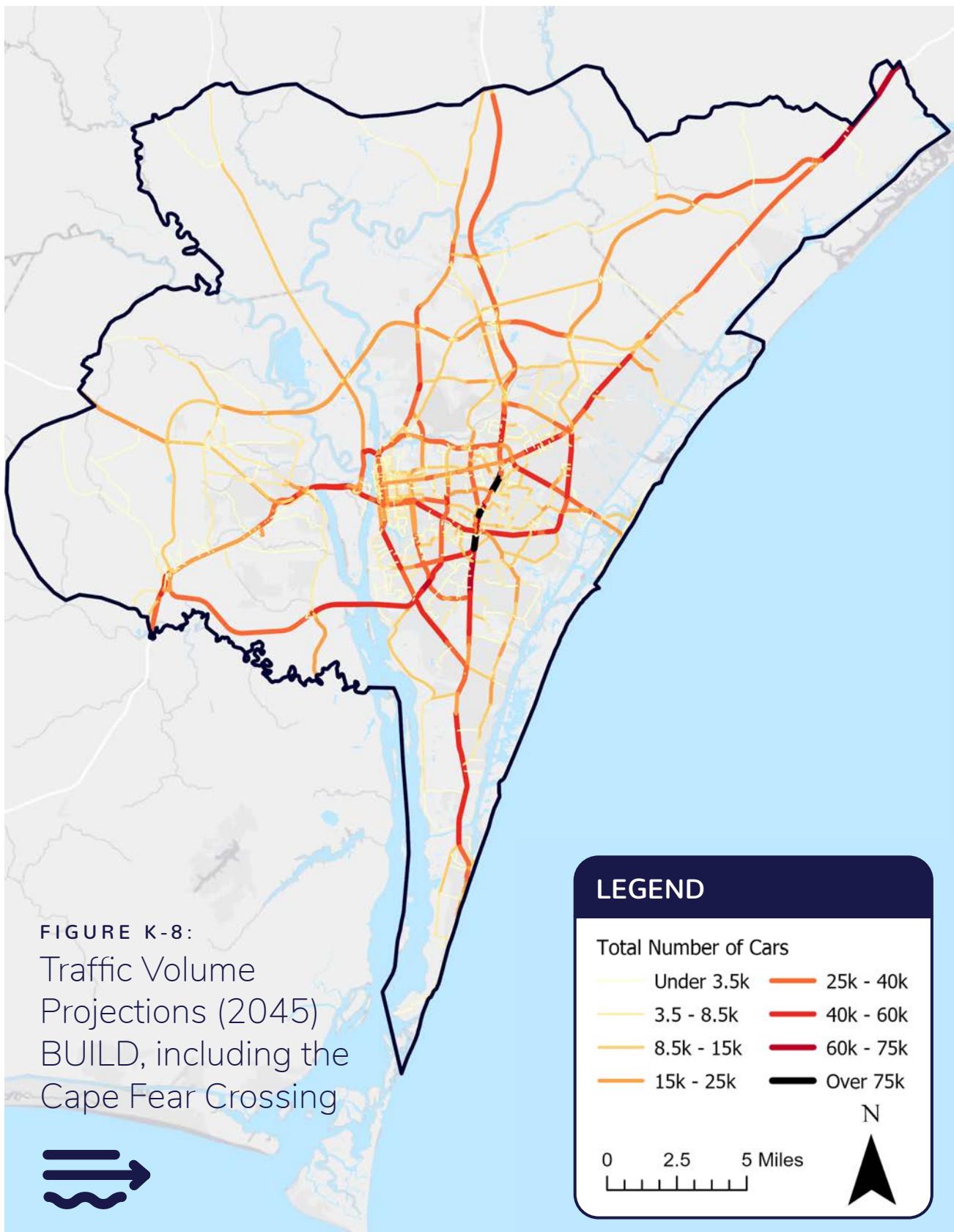


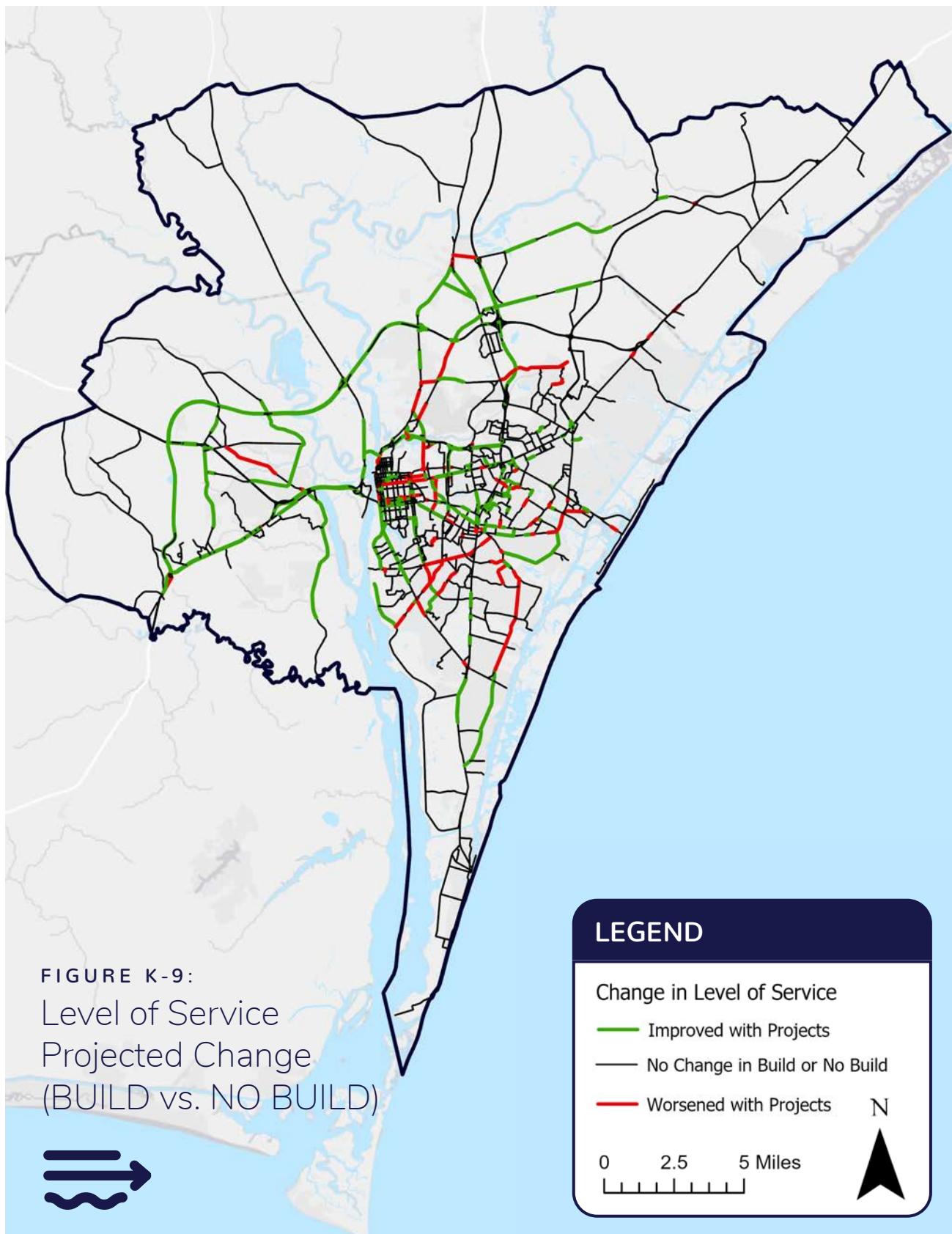


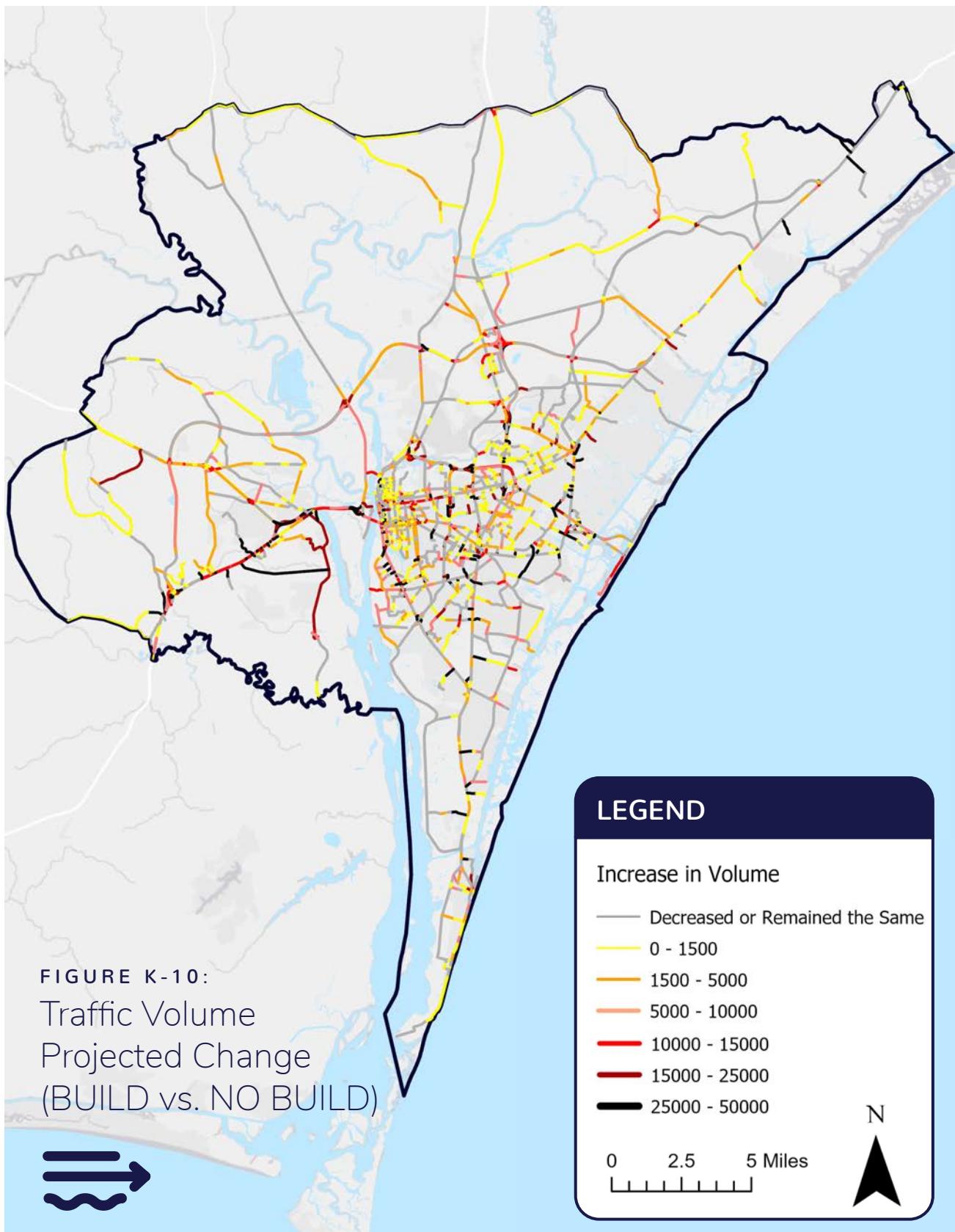












Roadway Modal Subcommittee

In order to analyze and propose recommendations for the development of roadway projects in the Wilmington Urban Area, the WMPO contacted subject matter experts to form a Roadway Subcommittee. Specifically, the WMPO worked with the following organizations to develop the recommendations in this element:

- Citizens Advisory Committee (CAC)
- City of Wilmington Planning
- New Hanover County Planning
- Pender County Planning
- Brunswick County Planning
- NC Ports Authority
- NCDOT Traffic Safety Unit
- NCDOT Division 3
- NCDOT Transportation Planning Branch
- Wilmington and Beaches Convention & Visitors Bureau
- Wilmington Chamber of Commerce
- Brunswick County Tourism Development Authority
- Pender County Tourism
- Pender County Emergency Management

During Roadway Subcommittee meetings, WMPO staff initiated group discussions by presenting pertinent facts, relevant information, and public survey results related to the current and future state of roadways throughout the Wilmington Urban Area. Under the direction of the CAC, WMPO staff worked with the Subcommittee to develop recommendations for the following components of this element:

- Goals and Objectives
- Project Scoring Criteria
- Policies

Recommendations from the Roadway Subcommittee were presented to the CAC, Technical Coordinating Committee (TCC), and WMPO Board for further review and modification before being incorporated into Cape Fear Moving Forward 2045. Public input was also critical to the development of this element and is further discussed in the Public Involvement Element (Appendix D).

Roadway Modal Goals and Objectives

Goals and objectives for the development of this element were created over a series of Roadway Subcommittee meetings and serve three distinct purposes within this element. First, the goals and objectives guided the overall development of the element. Second, the goals and objectives were used as the criteria on which to base the scoring of roadway projects in order to determine which projects were of greatest funding priority. Finally, the goals and objectives guided the development of policies which will ultimately be used to guide action on roadway issues in the Wilmington region over the next 25 years. The mode-specific goals and objectives were reviewed by the CAC, Technical Coordinating Committee (TCC), and WMPO Board, alongside

the overall MTP vision and goals, before being utilized in the development of Cape Fear Moving Forward 2045.

The goals and objectives for roadway can be found below and continued on the following page.

Goal A: Safe – Reduces injuries and improves safety for all users

Objectives:

1. Reduce the rate of crashes
2. Reduce the severity of crashes
3. Reduce the number of conflict points on existing facilities
4. Reduce the vulnerability of bicyclists and pedestrians on existing facilities
5. Reduce transit time for public safety officers and emergency vehicles
6. Reduce the risk of flooding

Goal B: Efficient – Moves the most people and goods in a cost effective manner

Objectives:

1. Reduce or maintain rate of mean travel time for people and freight
2. Reduce VMT
3. Maximize throughput for each lane mile for both people and freight
4. Reduce cumulative peak demand delay
5. Enhance and incorporate the rapid restoration of reliability

Goal C: Appropriate – Contributes to the quality of life and character of the region through proper design

Objectives:

1. Minimize disparity between actual and intended functional classification of existing roadways
2. Improve/enhance access and mobility in the transportation network
3. Enhance the cultural, aesthetic, and environmental character of the community and ensure environmental justice

Goal D: Responsible – Protects existing investments and limits environmental and social impacts

Objectives:

1. Improve/maintain existing multimodal connectivity
2. Improve/maintain existing network integrity
3. Prioritize projects that demonstrate existing community support through inclusion in a previously adopted plan
4. Reduce or mitigate existing impacts of stormwater runoff into environmentally sensitive areas

Goal E: Integrated – Links with other transportation and land use plans as well as future infrastructure investments

Objectives:

1. Accommodate employment growth areas
2. Accommodate population growth areas
3. Accommodate freight/industrial growth areas
4. Coordinate transportation investments with utility investments

5. Accommodate seasonal and academic induced growth and demand
6. Support emergency evacuation
7. Address multiple challenges outside of traditional transportation planning (land use, water management issues, etc.)

Goal F: Multimodal – Provides a choice of modes for most trips

Objectives:

1. Include appropriate bicycle/pedestrian facilities for mobility and access along corridors
2. Include accommodations for transit along appropriate corridors
3. Provide infrastructure for identified roadway Transportation Demand Management (TDM) initiatives
4. Incorporate projects that are identified for future critical transit routes and nodes

Goal G: Sustainable – Uses innovation to build a resilient network capable of adapting to future demands

Objectives:

1. Prioritize projects that give preferential treatment to higher-value trips (ports, airports, domestic business services, medical centers)
2. Leverage regional assets (ports, airports, beaches/tourism)
3. Encourage economic development along critical corridors
4. Implement projects that improve the reliability and resiliency of overall supply chain
5. Identify roadway investments that increase capacity without requiring road construction (High-Occupancy Vehicle (HOV) and High-Occupancy Toll (HOT) lanes, signaling, preemption signaling for emergency management, innovation, etc.)
6. Support projects that provide considerations for evolving and future demands
7. Build resiliency to extreme events and hazards by designing and constructing less vulnerable infrastructure to minimize loss and employing rapid restoration techniques after a disaster

Goal H: Innovative – Transportation solutions that support innovation, resiliency, and regional economic vitality

Objectives:

1. Consider and support projects that leverage external funding mechanisms
2. Consider and support projects that facilitate future adaptations and new technology to accommodate changing demands

Project Scoring Criteria

The list of needed roadway projects was quantitatively scored and ranked based on the goals and objectives identified in this element as noted in the matrix on the following page. This ranked list, which was evaluated and revised by the CAC, TCC, and WMPO Board, served as the basis for the fiscal constraint analysis determining which projects are anticipated to receive funding in this region between 2020 and 2045.

Roadway Scoring System

Scale	Goal	Criteria	Attribute	Score
20	Safe	Reduce the rate of crashes	Crash rate (High=10, Medium=5, Low=3, none=0)	10
		Reduce the severity of crashes	Crash severity in corridor/intersection (K/A=10, B=5, C/PD=3, none=0)	10
15	Efficient	Reduce or maintain rate of mean travel time for people and freight	Segment V/C % (E/F=10, D=6, C=4, A/B=0)	10
		Reduce VMT	New route/new location for connectivity (Y/N)	5
10	Appropriate	Reduce the vulnerability of bicyclists and pedestrians on existing facilities	Functional classification of existing roadway (Arterial=5, Collector=3, Local=1)	5
			Existing facility BikePed accommodations (none=5, shoulders=3, sidewalk/bike lane/multi-use path (MUP)= 3, existing complete street=0)	5
5	Responsible	Prioritize projects that demonstrate existing community support	Is project in a community adopted plan (Y/N)	5
15	Integrated	Accommodate population growth areas	Projected 2045 Population or Employment growth area (High= 5, Medium= 3, Low= 1)	10
		Accommodate freight/industrial growth areas	Project located on a corridor for commercial or industrial land uses (Y/N)	5
10	Multimodal	Include bicycle/pedestrian facilities for mobility and access along appropriate corridors	Project located on corridor with bicycle/pedestrian infrastructure or proposed facilities in a WMPO adopted plan (Y/N)	5
		Include accommodations for transit along appropriate corridors	Project located on corridor with existing fixed route service, or a corridor identified for future service expansion (Y/N)	5
15	Sustainable	Prioritize projects for higher-value trips / Leverage regional assets (ports, airports, beaches/tourism, business services, medical centers)	Project is located on a Strategic Transportation Corridor (STC) or Strategic Highway Network (STRAHNET) Corridor (Y/N)	5
			Project is located on a WMPO CMP defined freight, destination, or tourist corridor (Y/N)	5
			Project is located within 1 mile of a critical facility or 1 mile of a tourist-defined Point of Interest (POI) (Critical facility=5, POI=3, Both bonus +2)	5
10	Innovative	Implement projects that improve the reliability and resiliency of the overall supply chain	Located on or direct access to an interstate, designated future interstate, or US Route (Y/N)	5
		Identify roadway investments that increase capacity without requiring road construction (HOV, HOT, signaling, preemption signaling, innovation)	Will the improvement require roadway construction (Y/N)	5

Policies

Demand on existing roadways in the Wilmington region will increase over current conditions as the population continues to grow. Strategic investments in the roadway network will be required to consider a diverse array of transportation options that facilitate the movement of people and goods both regionally and locally. Trends indicate a future need for increased roadway capacity for passenger automobiles, freight vehicles, and public transit. Additionally, there is a recognized need for increased accommodation for bicycle infrastructure and pedestrian sidewalks and crossings throughout the region.

Roadway system improvements to mitigate travel demand growth and accommodate mode choice are critical plan objectives vital to maintaining the high quality of life and existing economic development opportunities in the region. Transportation systems, especially roadway networks, benefit from effective coordination with land use planning. By understanding planned land use, a region can proactively develop projects to increase connectivity and improve balance between accessibility and mobility under future travel demand conditions.

The policies below were developed by the Roadway Subcommittee based on the goals and objectives of this element. Roadway policies will be used to guide action on roadway issues in the Wilmington Urban Area. Each policy was reviewed through public outreach and by the CAC, TCC, and WMPO Board before being included in Cape Fear Moving Forward 2045.

The WMPO will work with member agencies to do the following:

- Improve known locations and conditions that contribute to higher incident rate and/or injury severity rate within crash data on existing roadways.
- Encourage suitability of roadway infrastructure design relative to adjacent land uses and functional characteristics of the route.
- Transportation planning and development, expansion, and investment in transportation facilities should be coordinated with land use planning.
- Organize and communicate funding mechanisms available to improve local roadways impacted by land use and development activity.
- Support the integration of appropriate multimodal network facilities into roadway project design based on adopted plans and polices of WMPO counties and municipalities.
- Seek continued funding to maintain, improve, and expand ITS implementation including investment in emerging technology for congestion management.
- Enhance coordination between the WMPO and NCDOT to fund critical improvements to the transportation network given the forecasted rate of growth and anticipated future conditions.
- Support corridor preservation that is vital to implementing projects by utilizing North Carolina General Assembly identified techniques such as advanced right-of-way acquisition and the filing of transportation corridor maps.

Fiscally-Constrained Roadway Project List



Fiscally-constrained,
programmed in
2018-2027 STIP,
2020-2029 STIP



Fiscally-constrained
projects



Unfunded during
planning horizon

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
1	R-3300	Future NC417/Hampstead Bypass	2025	\$205,485,000
2	U-5863	NC133/Castle Hayne Road Widening	2025	\$30,374,000
3	U-5704	US17/76/Oleander Drive & US117/NC132/College Road Interchange	2025	\$55,300,000
4	U-5790	US421/Carolina Beach Road Widening & Intersection Improvements	2025	\$25,094,000
5	U-5734	US421/Front Street Widening	2025	\$26,000,000
6	U-5729	US421/Carolina Beach Road Upgrade	2025	\$13,000,000
7	U-4751	Military Cutoff Road Extension	2025	\$47,650,000
8	U-4434	Independence Blvd Extension	2025	\$151,499,000
9	U-5732	US17/NC210 Superstreet	2025	\$19,389,000
10	R-2633***	I-140/Wilmington Bypass	2025	\$88,810,000
11	U-5731	US74/NC133/Isabel Holmes Bridge Flyovers	2025	\$36,000,000
12	U-5792	US74/MLK Jr Pkwy & US117/NC132/College Road Intersection	2025	\$25,110,000
13	U-5710	US74/Eastwood Road & Military Cutoff Road	2025	\$29,637,000
14	U-4902	US17 BUS/Market Street Access Management Improvements (includes US74/MLK Jr Pkwy & Market Street Interchange & RW-188)	2025	\$59,300,000
15	U-3338	Kerr Avenue & MLK Jr Pkwy Interchange	2025	\$20,500,000
16	U-5702	US117/NC132/College Road Access Management	2025	\$100,966,000
17	U-5881	US117/NC132/College Road Upgrade Roadway	2025	\$81,700,000
18	U-5914	NC133/River Road SE Modernize Roadway	2025	\$1,800,000
19	U-5926	New Route 23rd Street to 26th Street	2025	\$5,322,000
20	U-6235*	Wilmington Signal Preemption Phase II	2025	\$1,271,020
21	U-6083	N 23rd Street Widening	2030	\$23,000,000
22	U-6080	Kerr Avenue Widening	2030	\$25,900,000

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
23	U-5954	NC133/Castle Hayne Road & N 23rd Street Roundabout	2030	\$2,350,000
24	U-6201	Kerr Avenue Extension	2030	\$5,400,000
25	U-6199	Wilmington Citywide Signal System*	2030	\$15,960,000
26	U-6128	US17/76/Oleander Drive & Greenville Loop Road/Greenville Avenue Intersection	2035	\$9,500,000
27	U-6202	Gordon Road Widening	2035	\$85,115,000
28	RW-216*	City of Wilmington Signal Ethernet Improvements	2025	\$338,604
29	RW-124	US117/Shipyard Blvd Speed Sensors & Warning System	2025	\$20,000
30	RW-219	US17 BUS/Market Street Road Diet (I of II)	2025	\$2,620,000
31	RW-10	New Centre Drive Extension to Clear Run Drive	2025	\$1,290,000
32	RW-176	US74/76/Andrew Jackson Hwy & Old Fayetteville Road Interchange	2030	\$43,410,000
33	RW-17	US17/76/Oleander Drive Access Management Improvements	2030	\$20,860,000
34	RW-220	US17 BUS/Market Street Road Diet (II of II)	2030	\$4,230,000
35	RW-92	US17/76/Dawson Street Streetscape Improvements	2030	\$6,370,000
36	RW-106	US17/Ocean Hwy E to NC133/River Road SE Connector Road	2030	\$48,110,000
37	RW-93	US17/76/Wooster Street Streetscape Improvements	2030	\$6,280,000
38	RW-26	Blue Clay Road Modernization	2030	\$1,420,000
39	RW-6	Hoover Road Modernization	2030	\$4,620,000
40	RW-83	Dogwood Lane Extension	2035	\$63,220,000
41	RW-20	US17/74/76/Causeway Improvements (Phase 2)	2035	\$92,090,000
42	RW-115	Internal Port Access Road	2035	\$34,010,000
43	RW-77	Basin Street Extension	2035	\$39,430,000
44	RW-13	Godfrey Creek Road Extension to US17/NC210	2035	\$25,780,000
45	RW-181	I-140 & Blue Clay Road Interchange	2035	\$24,870,000
46	RW-99	Murrayville Road Modernization & Extension	2035	\$60,250,000
47	RW-222	Independence Blvd Road Widening	2035	\$23,620,000
48	RW-42	US17 Access Management Improvements	2035	\$6,700,000
49	RW-129	Navaho Trail & Masonboro Loop Road Roundabout (Northern Intersection)	2035	\$1,790,000

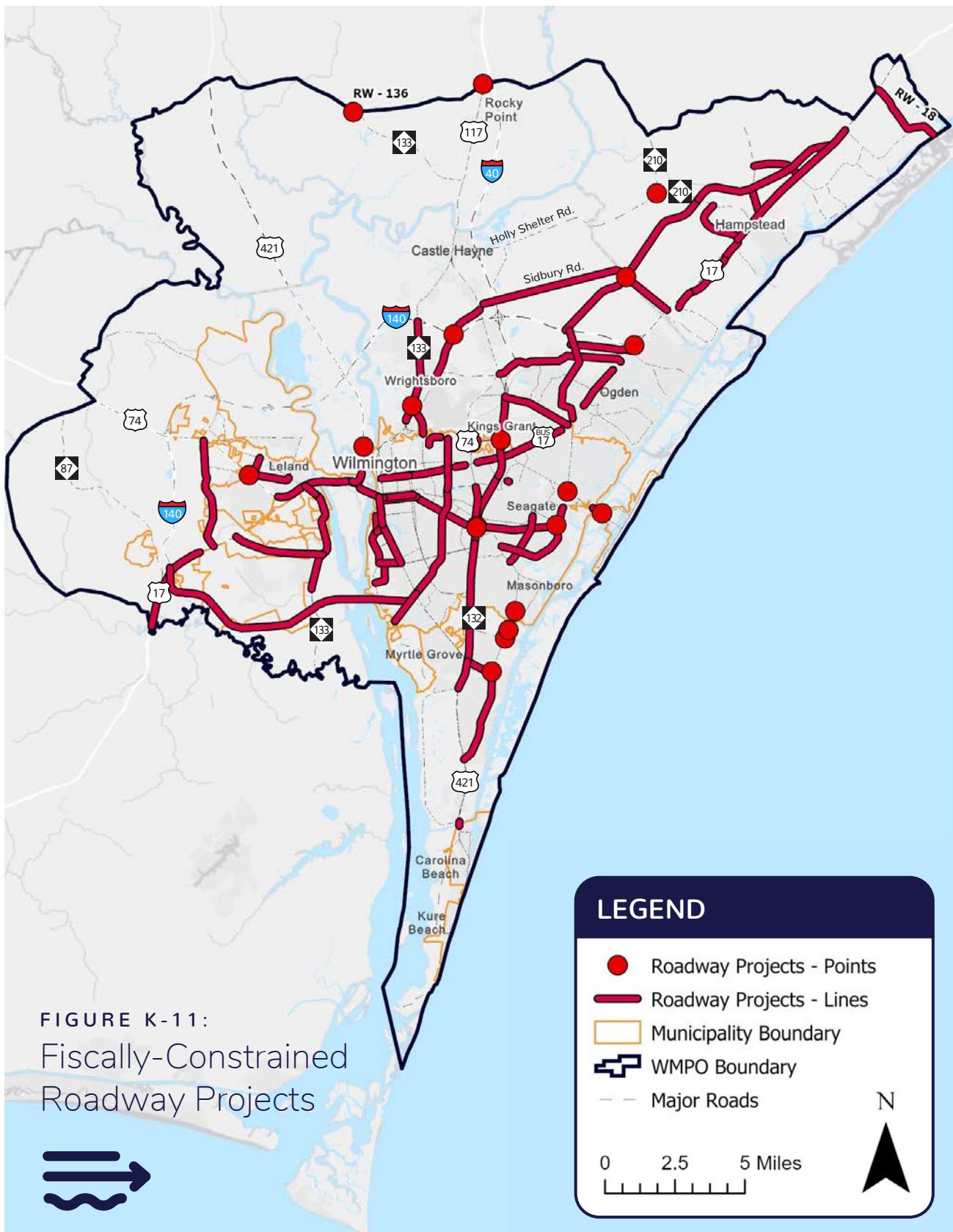
Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
50	RW-16	Myrtle Grove Road Widening	2035	\$79,670,000
51	RW-25	Piner Road Widening & Intersection Realignment	2035	\$21,200,000
52	RW-193	Myrtle Grove Road/Piner Road/Masonboro Loop Road Roundabouts	2035	\$10,080,000
53	RW-191	Mohican Trail & Masonboro Loop Road Roundabout	2035	\$10,700,000
54	RW-192	Navaho Trail & Masonboro Loop Road Roundabout (Southern Intersection)	2035	\$9,660,000
55	RW-78	Old Fayetteville Road Modernization	2035	\$3,521,006
56	RW-175	NC210 & Island Creek Road Intersection	2035	\$1,560,000
57	RW-166	Future NC417/Hampstead Bypass & Sidbury Road Interchange	2035	\$22,340,000
58	RW-127	US76/421/17/17 BUS/Cape Fear Memorial Bridge Replacement	2040	\$377,480,000
59	RW-223	Independence Blvd Access Management	2040	\$89,110,000
60	RW-221	US421/Snow's Cut Bridge Replacement	2040	\$149,090,000
61	RW-7	Lanvale Road NE Widening	2040	\$64,620,000
62	RW-18	Sloop Point Road Modernization	2040	\$8,870,000
63	RW-226	US421/74/NC133 & US17/76 Merge Lane Addition	2040	\$20,660,000
64	RW-123	Burnett Blvd Widening	2045	\$8,798,055
65	RW-102	Greenville Loop Road Widening	2045	\$81,450,000
66	RW-202	US74/Salisbury Street & US76/Causeway Drive Roundabout	2045	\$53,290,000
67	RW-51	NC133/River Road SE Widening	2045	\$164,990,000
68	RW-5	US74/76/Heide Trask Bridge Replacement	2045	\$234,500,000
69	RW-29	Center Drive Extension (Segment 1)	2045	\$15,080,000
70	RW-30	Center Drive Extension (Segment 2)	2045	\$31,600,000
71	RW-31	Center Drive Extension (Segment 3)	2045	\$12,000,000
72	RW-186	US17/17 BUS & NC140 Interchange Improvements	2045	\$21,310,000
73	RW-55	River Road Realignment	2045	\$20,270,000
74	RW-23	Sidbury Road Modernization	2045	\$19,200,000
75	RW-35	Harrison Creek Road Extension (Segment 3)	2045	\$45,350,000
76	RW-57	Plantation Road Extension	2045	\$103,470,000
77	RW-137	US17 & NC210 Intersection Improvements	2045	\$2,280,000

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost
78	RW-136	NC210 & NC133 Intersection Improvements	2045	\$2,950,000
79	U-4738**	Cape Fear Crossing (Funded Portion)	2045	\$158,670,000
80	RW-215	Kerr Avenue Extension II	2045+	\$319,570,000
81	RW-214	US74/76/Wrightsville Avenue & Airlie Road Intersection Improvements	2045+	\$50,800,000
82	RW-61	River Road Widening	2045+	\$313,440,000
83	RW-94	Castle Hayne Road Streetscape	2045+	\$24,410,000
84	RW-73	Village Road Widening	2045+	\$133,580,000
85	RW-41	US74 Upgrade (Control of Access)	2045+	\$636,510,000
86	RW-1	Bradley Creek Bridge on US17/76/Oleander Drive	2045+	\$38,521,448
87	RW-224	Pine Grove Drive Road Widening	2045+	\$65,470,000
88	RW-212	Burnett Blvd Realignment	2045+	\$35,260,000
89	RW-225	Murrayville Road & I-40 Interchange	2045+	\$52,640,000
90	RW-24	Holly Shelter Road Improvements	2045+	\$29,630,000
91	RW-97	NC210 Improvements	2045+	\$51,720,000
92	RW-117	River Road Realignment	2045+	\$13,500,000
93	RW-60	US17 Safety Improvements	2045+	\$38,130,000
94	RW-3	NC133 to I-40 Connector Road & Interchange	2045+	\$34,150,000
95	RW-203	US74/Salisbury Street & N Lumina Avenue Roundabout	2045+	\$2,410,000
96	RW-227	US74/W Salisbury Street & N Lumina Avenue Streetscape	2025	\$1,292,737
97	RW-160	Lanvale Road & Old Fayetteville Road Intersection Improvements	2045+	\$360,000
98	RW-213	Waynick Blvd/Lumina Avenue/Causeway Drive Intersection Improvements	2045+	\$17,110,000
99	RW-8	Holly Shelter Road to Sidbury Road Connector Road	2045+	\$35,680,000
100	RW-76	Blueberry Road Widening	2045+	\$12,710,000
101	RW-22	NC87/US17 S Overpass Interchange	2045+	\$35,050,000

* Not shown on map for clarity (Citywide improvements)

** Anticipated toll revenues were included in the financial forecast for this plan in order to fiscally constrain a portion of this project

*** I-140 funded by GARVEE Bonds; Construction complete 2017, to be paid back through 2025

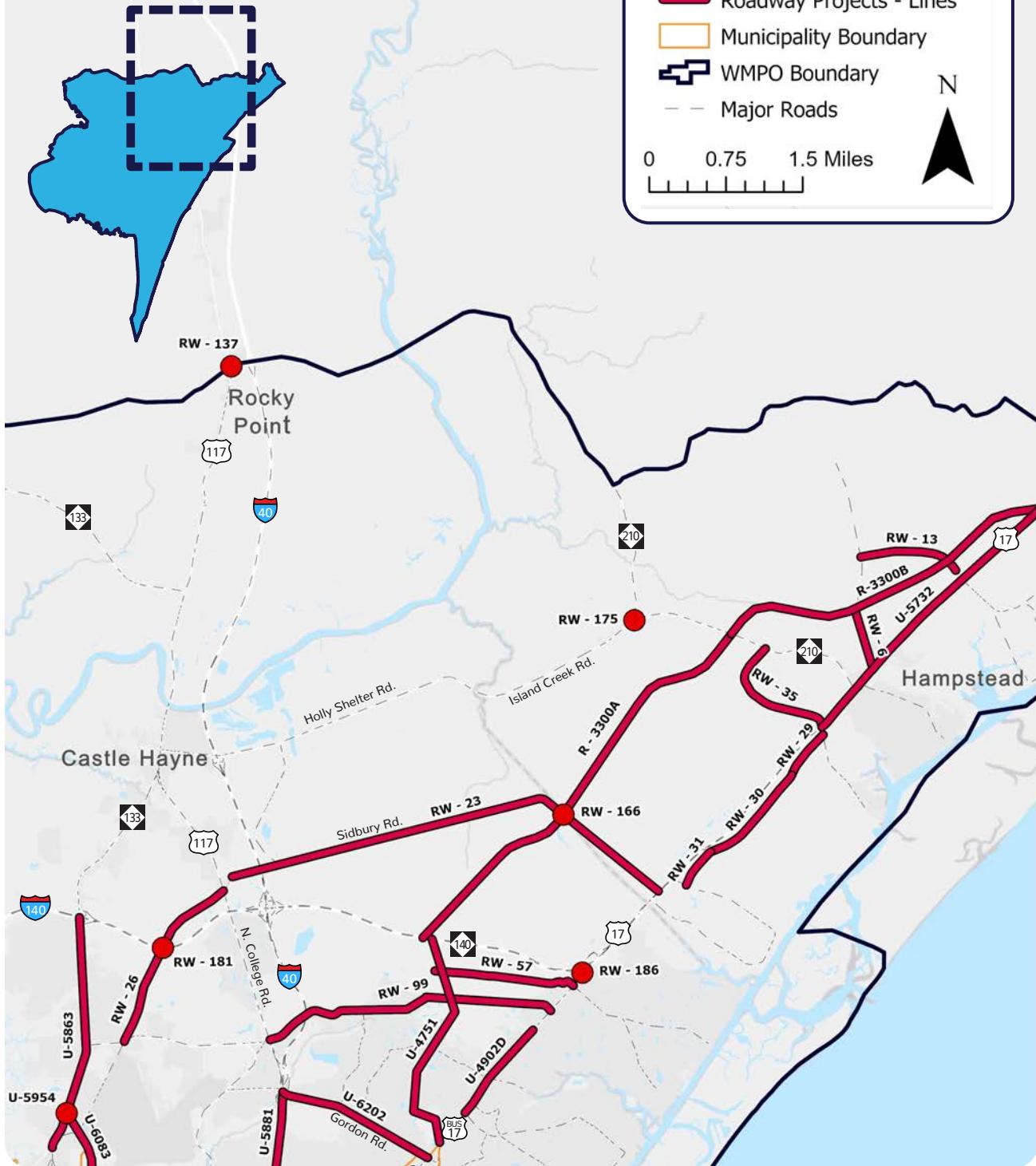






**FISCALLY-CONSTRAINED
ROADWAY PROJECTS
ENLARGEMENT:**

NE New Hanover & Pender Counties



LEGEND

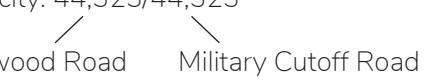
- Roadway Projects - Points
- Roadway Projects - Lines
- Municipality Boundary
- WMPO Boundary
- - - Major Roads

0 0.75 1.5 Miles



Fiscally-Constrained Roadway Project Descriptions

The following pages contain purpose and need statements, project facts, and proposed project cross-sections for each of the fiscally-constrained roadway projects. The following notes apply:

- Number of Existing Travel Lanes:
 - At-grade intersections: all lanes at the stop bar were counted
 - Grade-separated intersections/interchanges: all lanes entering the intersection/interchange were counted (typically counted farther back than at a traditional at-grade intersection)
- Existing Capacity: For intersections, capacity numbers are given for each of the intersecting roads, separated by a forward slash and in the order that the roads are listed in the project name. Example:
 - Project Name: US74/Eastwood Road & Military Cutoff Road
 - Existing Capacity: 44,323/44,323
 
- Daily Traffic Volume (Vehicles per Day): For intersections, daily traffic volume numbers are given for each of the intersecting roads, separated by a forward slash and in the order that the roads are listed in the project name. Example:
 - Project Name: US74/Eastwood Road & Military Cutoff Road
 - Daily Traffic Volume (Vehicles per Day): 21,294/33,138
 
- Crash Rate: Based on the number of crashes per 100,000 vehicles
- Total (Proposed) Lanes:
 - At-grade intersections: all lanes at the stop bar were counted
 - Grade-separated intersections/interchanges: all lanes entering the intersection/interchange were counted (typically counted farther back than at a traditional at-grade intersection)

Future NC417/ Hampstead Bypass

Project ID: R-3300

The purpose of this project is to increase capacity and improve congestion and safety on US17 by providing a controlled access freeway to bypass Hampstead.

Project Facts

From	US17/Wilmington Bypass south of Hampstead
To	US17 north of Hampstead
Route Number(s)	(Future) NC417
Length (miles)	12.3
Jurisdiction(s)	New Hanover County, Pender County
Facility Classification	Freeway
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Road on New Location	S of NC210 N of NC210	6 4	Y	12'	46'	Separated 10' MUP	2025 \$205.5



NC133/Castle Hayne Road Widening

Project ID: U-5863

The purpose of this project is to increase capacity and improve intermodal relationships on NC133/Castle Hayne Road between I-140 and Division Drive.

Project Facts

From	I-140/ US17 Bypass
To	Division Drive
Route Number(s)	NC133
Length (miles)	3.7
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	19,603
Daily Traffic Volume (Vehicles per Day)	17,525
Crash Rate	173

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	3	Y	12'	17.5'-23'	5' Bike Lane	2025	\$30.4

US17/76/Oleander Drive & US117/NC132/College Road Interchange

Project ID: U-5704

The purpose of this project is to improve capacity and safety at the intersection of Oleander Drive and College Road.

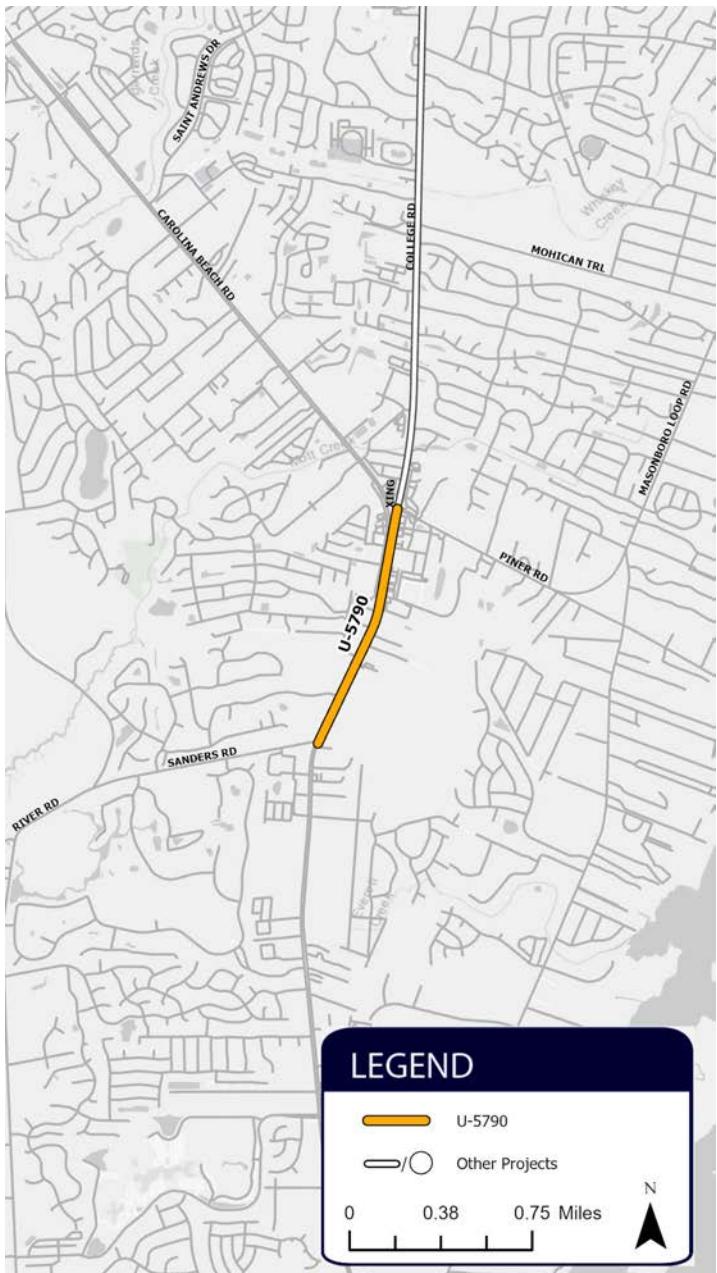
Project Facts

Route Number(s)	US17/76 US117/NC132			
Jurisdiction(s)	City of Wilmington			
Facility Classification	Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	3	4	5	5
Existing Capacity	73,800/55,000			
Daily Traffic Volume (Vehicles per Day)	30,550/50,421			
Crash Rate	84			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
Intersection Improvement	3	3	4	4	Y	N	11'	10' Painted with Ped Heads at each Intersection						
Additional Notes				Planning Horizon Year			Planning Year Cost (millions)							
Quadrant design				2025			\$55.3							



US421/Carolina Beach Road Widening & Intersection Improvements

Project ID: U-5790

The purpose of this project is to improve capacity and connectivity along US421/Carolina Beach Road between S College Road and Sanders Road.

Project Facts

From	NC132/ S College Road
To	Sanders Road
Route Number(s)	US421
Length (miles)	1.0
Jurisdiction(s)	New Hanover County
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	24,624
Daily Traffic Volume (Vehicles per Day)	21,039
Crash Rate	227

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening with CFI at US421 & NC132/ S College Road	6	Y	12'	35'	10' MUP	2025	\$25.1

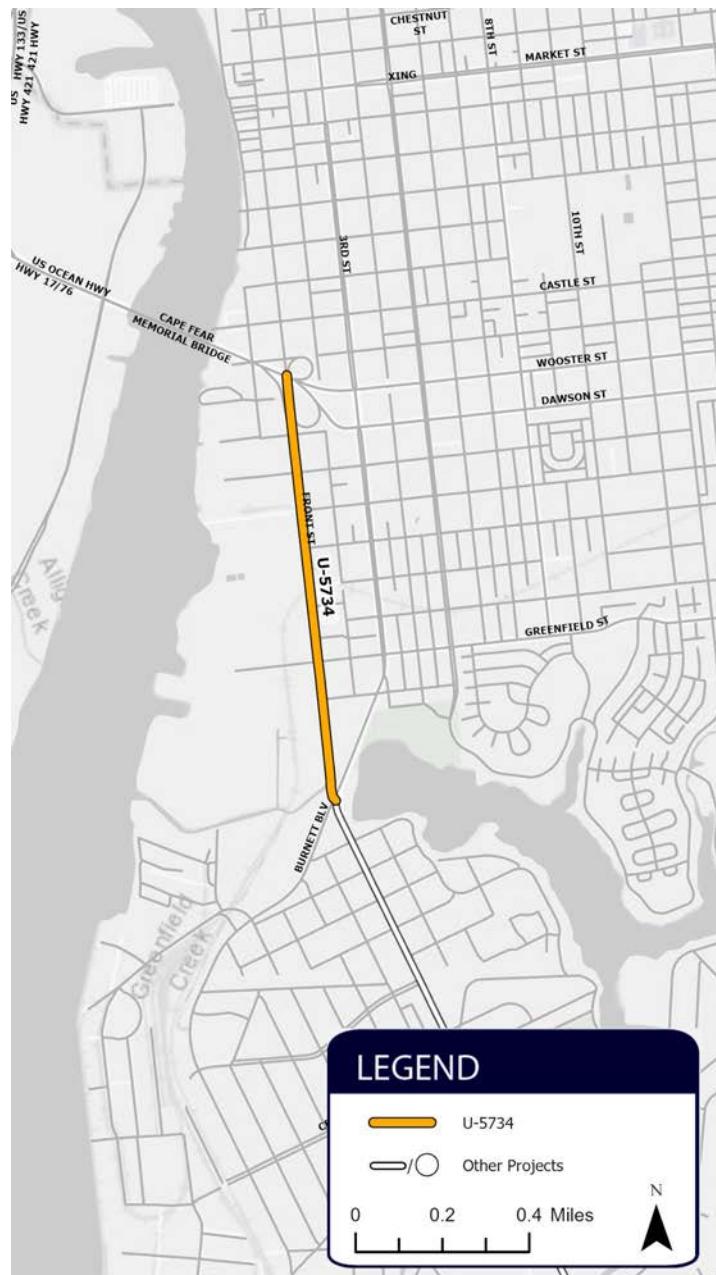
US421/Front Street Widening

Project ID: U-5734

The purpose of this project is to increase capacity and enhance economic development by widening Front Street between the Cape Fear Memorial Bridge and Burnett Blvd, which serves as a freight corridor to the Port of Wilmington.

Project Facts

From	Cape Fear Memorial Bridge
To	Burnett Blvd
Route Number(s)	US421
Length (miles)	1.0
Jurisdiction(s)	City of Wilmington
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	18,035
Daily Traffic Volume (Vehicles per Day)	15,375
Crash Rate	55



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	Y	12'	17.5'	Separated 10' MUP	2025	\$26.0



US421/Carolina Beach Road Upgrade

Project ID: U-5729

The purpose of this project is to improve safety and increase capacity on US421/Carolina Beach Road between Burnett Blvd and US117/Shipyard Blvd.

Project Facts

From	Burnett Blvd
To	US117/ Shipyard Blvd
Route Number(s)	US421
Length (miles)	1.5
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	44,323
Daily Traffic Volume (Vehicles per Day)	32,316
Crash Rate	242

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Access Management Improvements	4	Y	12'	23'	5' Sidewalk 4' Bike Lane	2025	\$13.0

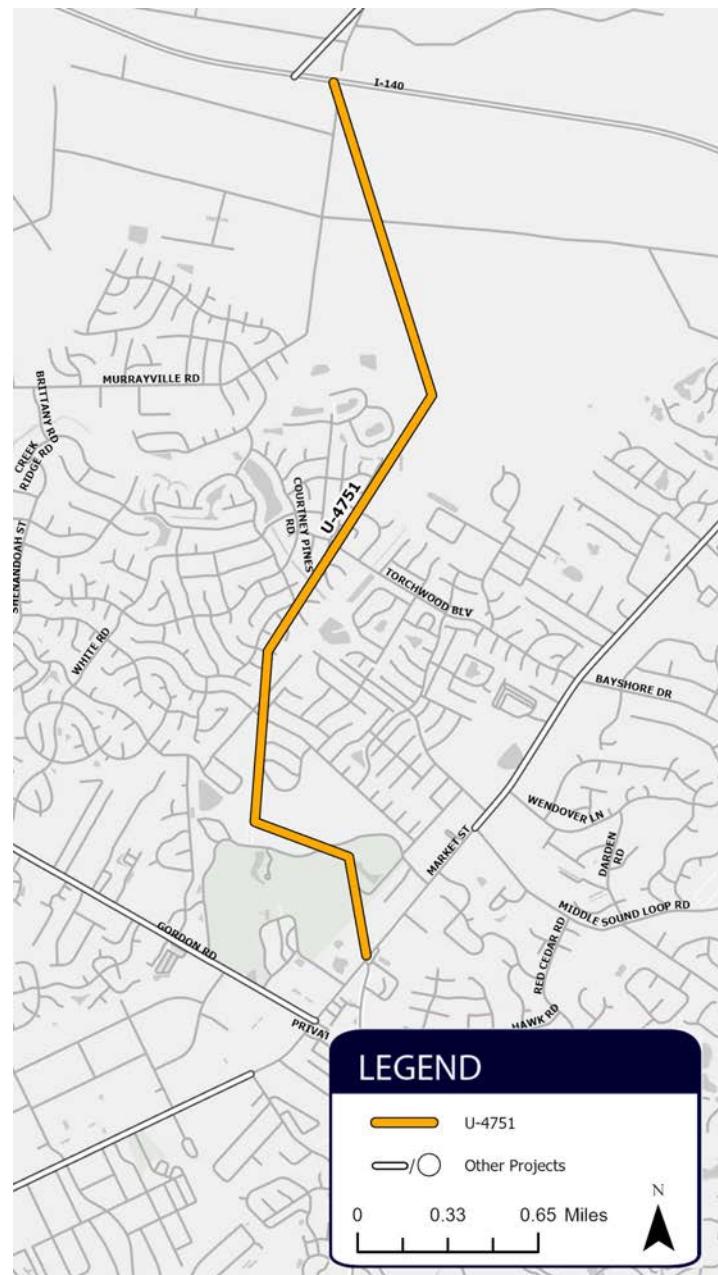
Military Cutoff Road Extension

Project ID: U-4751

The purpose of this project is to increase capacity and improve connectivity by extending Military Cutoff Road to the future NC417/Hampstead Bypass.

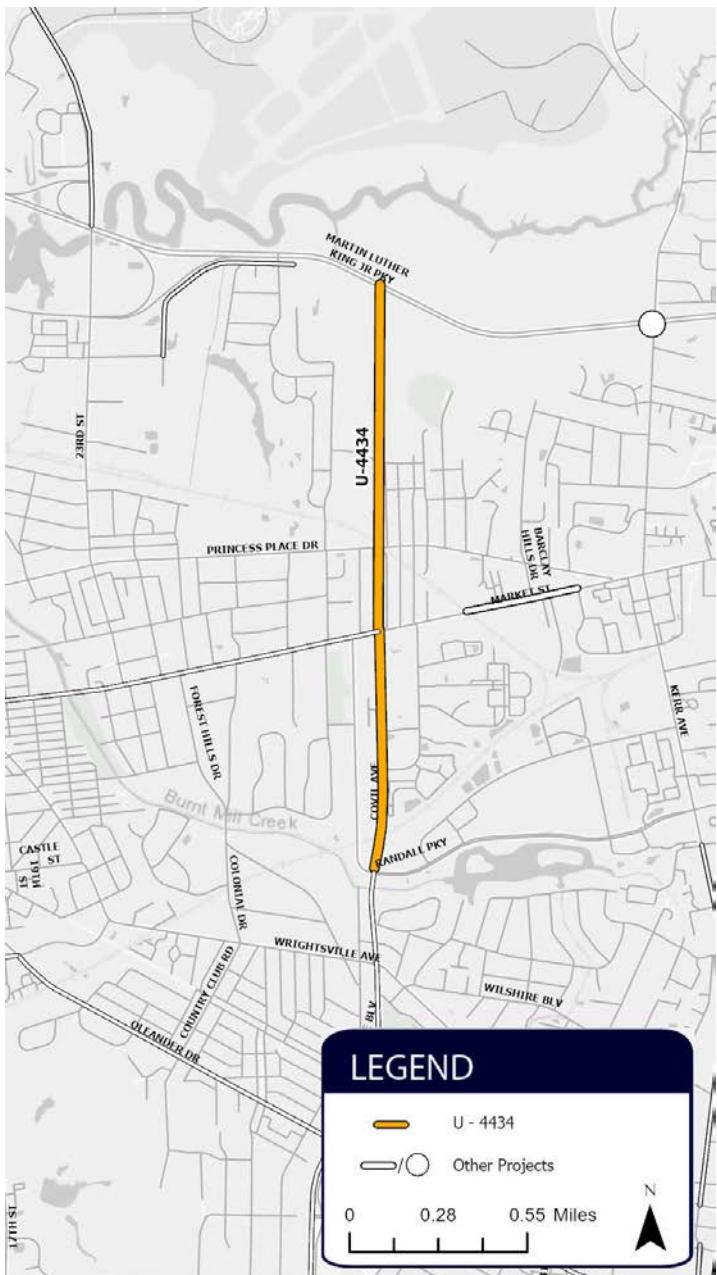
Project Facts

From	Military Cutoff Road terminus
To	Proposed Interchange at I-140 & Hampstead Bypass
Route Number(s)	N/A
Length (miles)	3.6
Jurisdiction(s)	New Hanover County
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	6	Y	12'	30'-46'	10' MUP	2025	\$47.6



Independence Blvd Extension

Project ID: U-4434

The purpose of this project is to improve connectivity and multimodal interrelationships by extending Independence Blvd to US74/MLK Jr Pkwy.

Project Facts

From	Randall Pkwy
To	US74/ MLK Jr Pkwy
Route Number(s)	N/A
Length (miles)	1.8
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	4	Y	12'	23'	10' MUP	2025	\$151.5

US17/NC210 Superstreet

Project ID: U-5732

The purpose of this project is to increase capacity and improve congestion along US17/NC210 between Washington Acres Road and Sloop Point Loop Road.

Project Facts	
From	Washington Acres Road
To	Sloop Point Loop Road
Route Number(s)	US17/NC210
Length (miles)	5.5
Jurisdiction(s)	Pender County
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	44,323
Daily Traffic Volume (Vehicles per Day)	30,587
Crash Rate	202



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Access Management Improvements	4	Y	12'	23'	5' Sidewalk 14' Outside Travel Lanes	2025	\$19.4



US74/NC133/ Isabel Holmes Bridge Flyovers

Project ID: U-5731

The purpose of this project is to improve capacity and operation at the intersection of US421 and the Isabel Holmes Bridge.

Project Facts				
Route Number(s)	US74/NC133, US421			
Jurisdiction(s)	New Hanover County			
Facility Classification	Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	3	3	0	4
Existing Capacity	49,800/41,300			
Daily Traffic Volume (Vehicles per Day)	36,919/24,204			
Crash Rate	85			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Intersection Improvement	NB	SB	EB	WB	Y	Y	12'	N/A			
	3	3	0	2							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
Convert at-grade intersection to free-flowing trumpet interchange				2025		\$36.0					

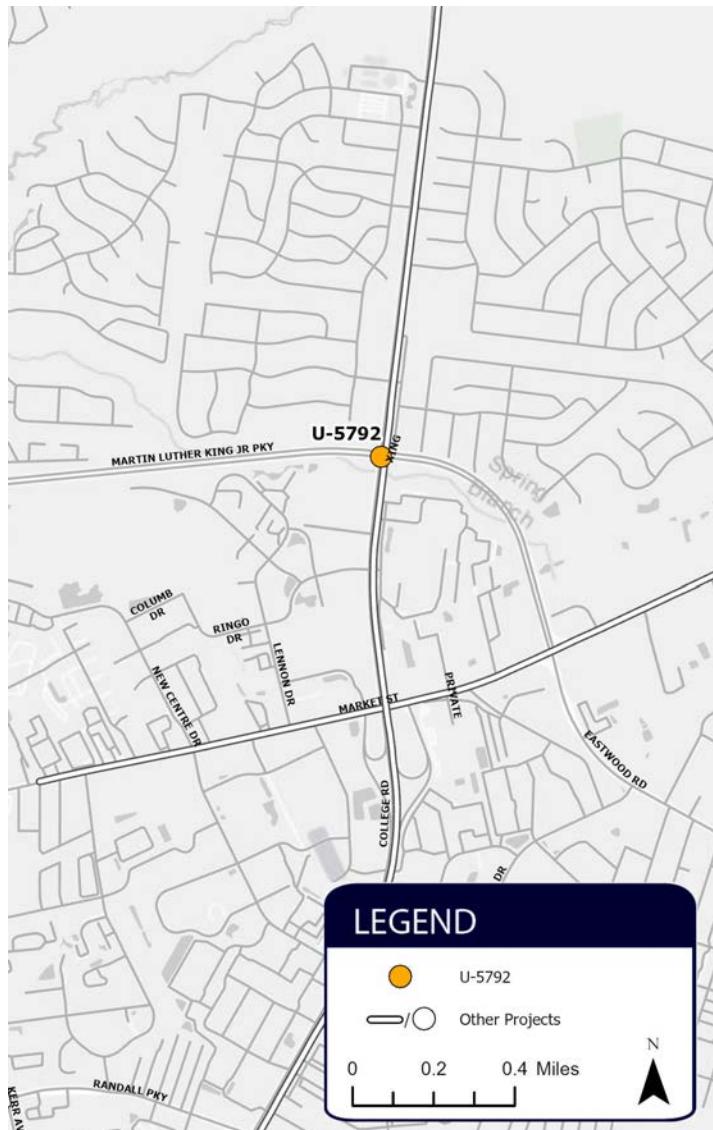
US74/MLK Jr Pkwy & US117/NC132/College Road Intersection

Project ID: U-5792

The purpose of this project is to improve capacity and safety at the intersection of College Road and MLK Jr Pkwy.

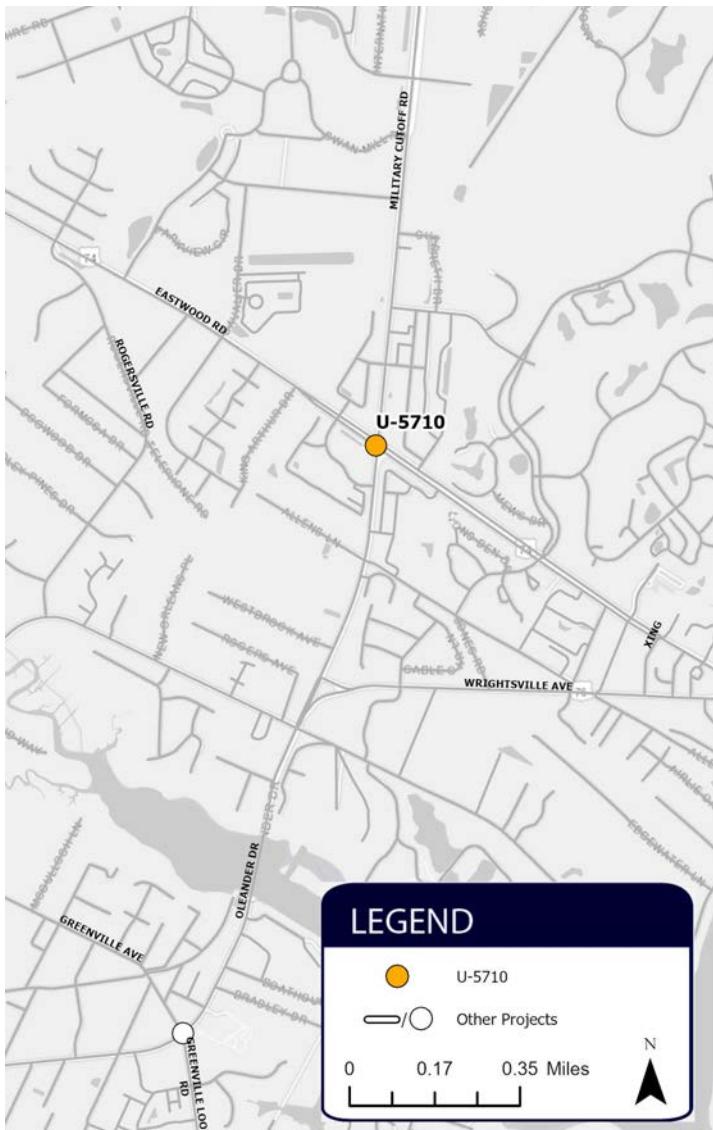
Project Facts

Route Number(s)	US74, US177/NC132			
Jurisdiction(s)	New Hanover County			
Facility Classification	Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	6	6	6	5
Existing Capacity	102,000/60,000			
Daily Traffic Volume (Vehicles per Day)	20,835/49,000			
Crash Rate	133			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
	NB	SB	EB	WB							
Intersection Improvement	4	4	6	4	Y	Y	12'	N/A			
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
Convert at-grade intersection to interchange				2025		\$25.1					



US74/Eastwood Road & Military Cutoff Road

Project ID: U-5710

The purpose of this project is to improve capacity and safety at the intersection of Eastwood Road and Military Cutoff Road.

Project Facts

Route Number(s)	US74, US17			
Jurisdiction(s)	City of Wilmington			
Facility Classification	Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	5	4	5	5
Existing Capacity	44,323/44,44,323			
Daily Traffic Volume (Vehicles per Day)	21,294/33,138			
Crash Rate	158			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
Intersection Improvement	4	3	3	3	Y	Y	12'	10' Painted at Offset Intersections						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
Convert at-grade intersection to grade-separated quadrant interchange				2025		\$29.6								

US17 BUS/Market Street Access Management Improvements

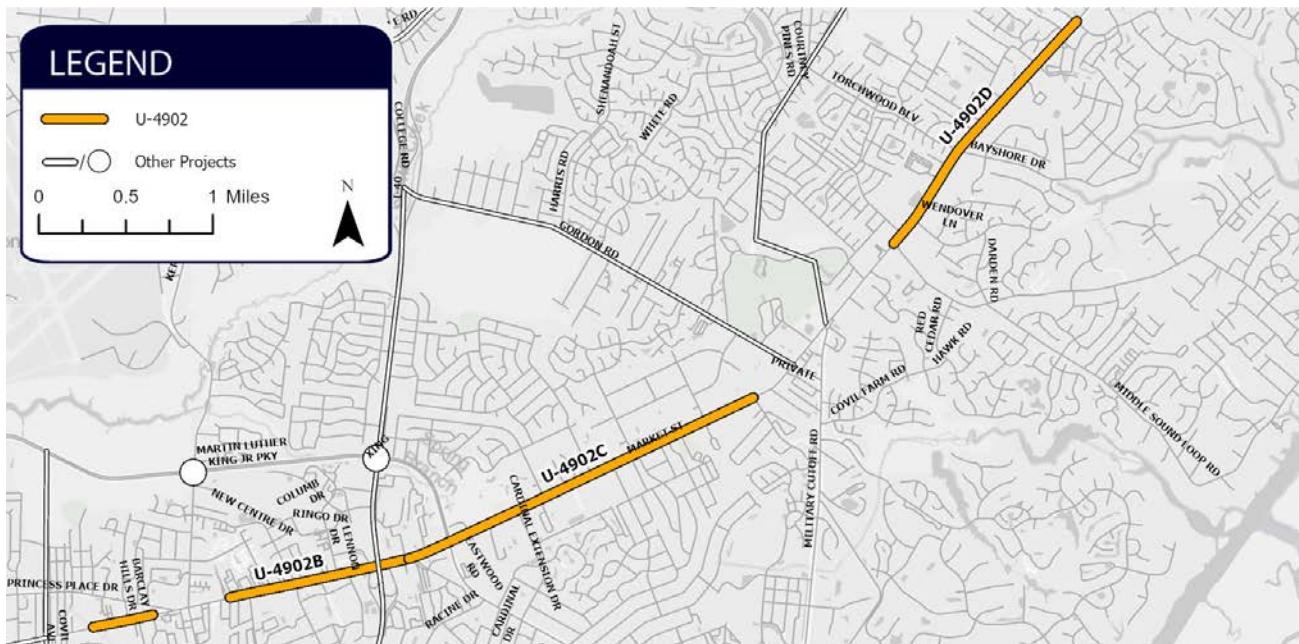
(Includes US74/MLK Jr Pkwy & Market Street Interchange & RW-188)

Project ID: U-4902

The purpose of this project is to improve safety and operations on Market Street between Colonial Drive and Porters Neck Road.

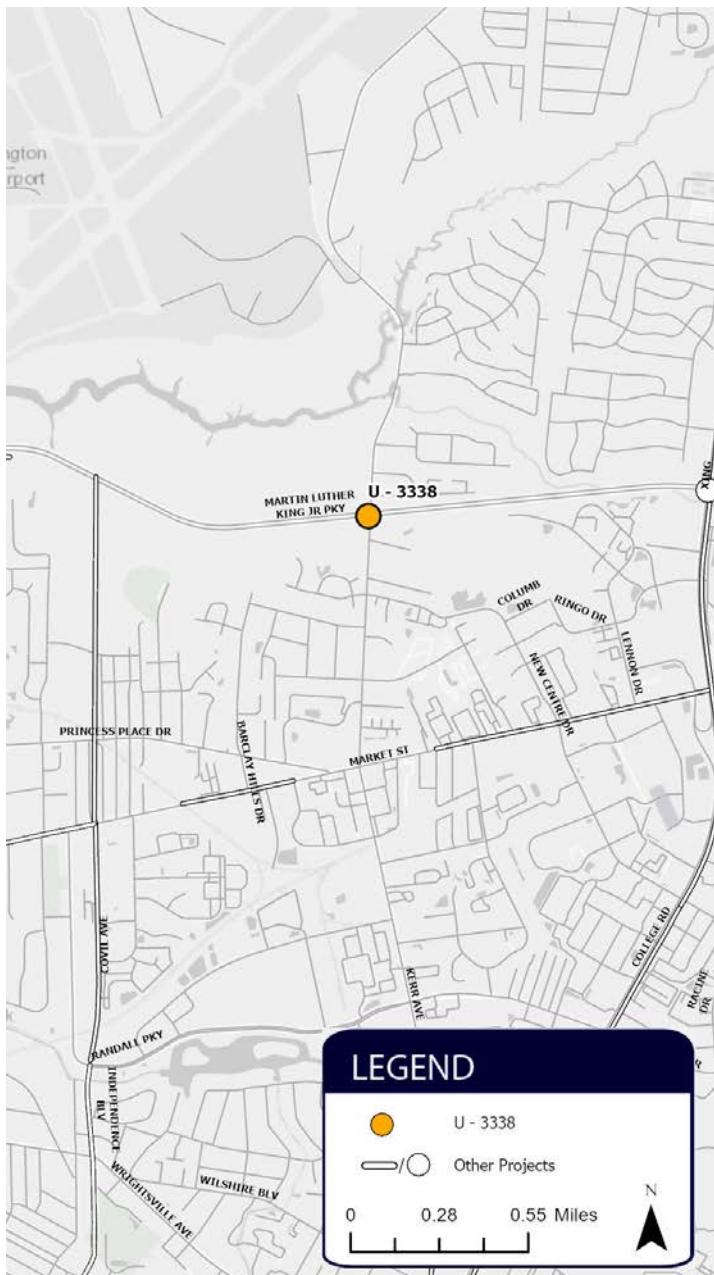
Project Facts

From	Colonial Drive
To	Porters Neck Road
Route Number(s)	US17 BUS
Length (miles)	5.3
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	49,428
Daily Traffic Volume (Vehicles per Day)	29,647
Crash Rate	1,231



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost
Access Management Improvements	4	Y	12'	23'-30'	10' MUP	2025	\$59.3



US74/MLK Jr Pkwy & Kerr Avenue Interchange

Project ID: U-3338

The purpose of this project is to improve capacity and modal interrelationships on Kerr Avenue between Randall Pkwy and MLK Jr Pkwy.

Project Facts

From	Randall Pkwy
To	US74/MLK Jr Pkwy
Route Number(s)	US74, SR1175
Length (miles)	1.5
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	2
Existing Capacity	19,603
Daily Traffic Volume (Vehicles per Day)	9,257
Crash Rate	153

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	Y	12'	Variable 17.5-29.5'	5' Sidewalk 4' Bike Lane	2025	\$20.5

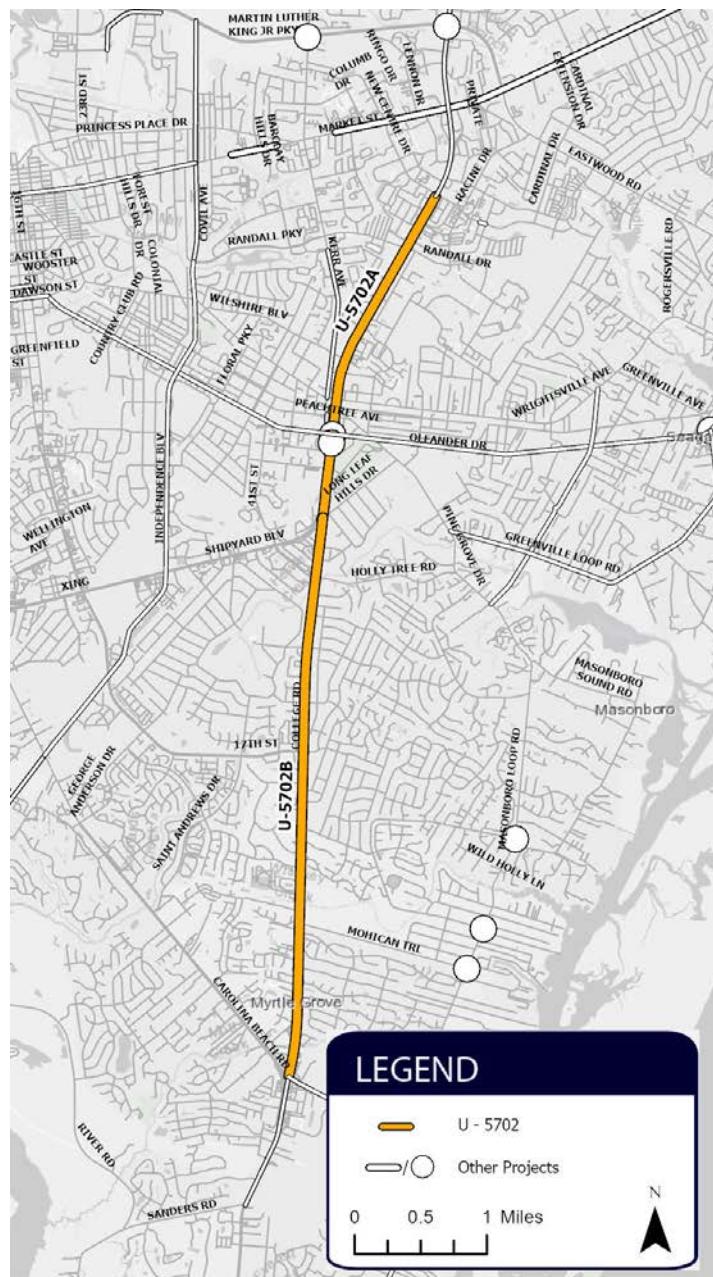
US117/NC132/ College Road Access Management

Project ID: U-5702

The purpose of this project is to improve safety and operations on College Road between New Centre Drive and Carolina Beach Road.

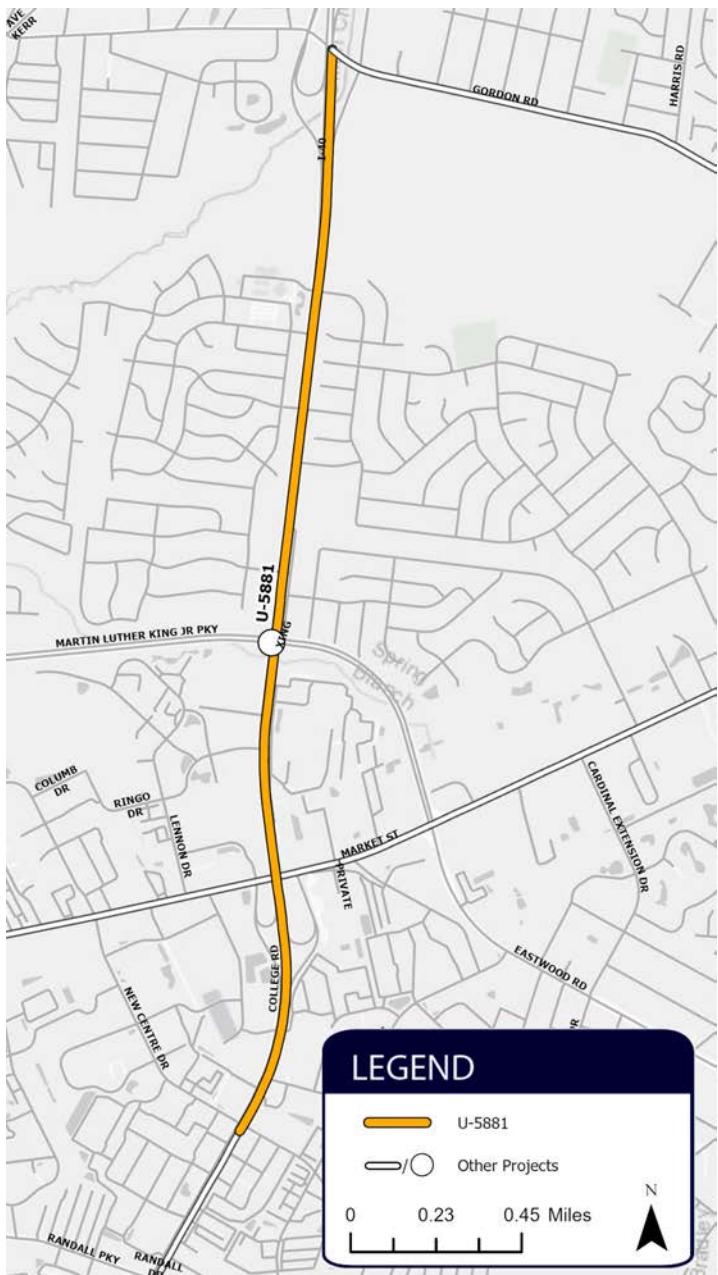
Project Facts

From	US421/ Carolina Beach Road
To	New Centre Drive
Route Number(s)	US117/NC132
Length (miles)	6.8
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4-6
Existing Capacity	49,248
Daily Traffic Volume (Vehicles per Day)	33,901
Crash Rate	1,573



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Access Management Improvements	6	Y	11'	Varies >8' Grass <8' Conc.	5' Sidewalk 4' Bike Lane 10' MUP (Varies)	2025	\$101.0



US117/NC132/ College Road Upgrade Roadway

Project ID: U-5881

The purpose of this project is to improve safety and operations on College Road Between Gordon Road and New Centre Drive.

Project Facts

From	New Centre Drive
To	Gordon Road
Route Number(s)	US117/ NC132
Length (miles)	2.9
Jurisdiction(s)	City of Wilmington, New Hanover County
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4-6
Existing Capacity	73,871
Daily Traffic Volume (Vehicles per Day)	45,078
Crash Rate	654

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Access Management Improvements	6	Y	11'	Varies >8' Grass <8' Conc.	5' Sidewalk 4' Bike Lane 10' MUP (Varies)	2025	\$81.7

NC133/ River Road SE Modernize Roadway

Project ID: U-5914

The purpose of this project is to increase capacity and improve modal interrelationships on NC133/River Road SE between US17/74/76 and Old River Road.

Project Facts

From	US17/74/76/ Ocean Hwy E
To	Old River Road
Route Number(s)	NC133
Length (miles)	0.5
Jurisdiction(s)	Town of Belville
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	2
Existing Capacity	23,818
Daily Traffic Volume (Vehicles per Day)	14,234
Crash Rate	16



Proposed Project Cross-Section

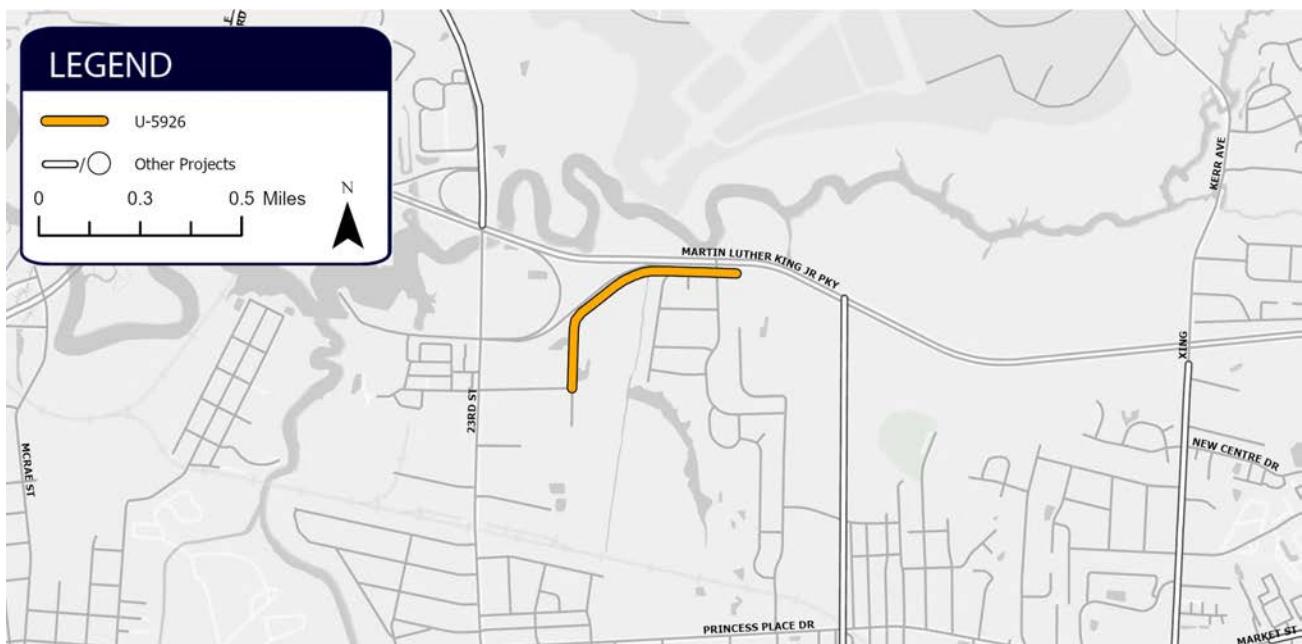
Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Planning Year Cost
Access Management Improvements	3	N	12'	N/A	5' Sidewalk 10' MUP	2025	\$1.8

Project Facts	
From	23rd Street
To	26th Street
Route Number(s)	N/A
Length (miles)	0.6
Jurisdiction(s)	City of Wilmington
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

New Route 23rd Street to 26th Street

Project ID: U-5926

The purpose of this project is to improve connectivity and safety by constructing a new route between 23rd Street and 26th Street.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Road on New Location	2	N	12'	N/A	5' Sidewalk	2025	\$5.3

Wilmington Signal Preemption Phase II

Project ID: U-6235

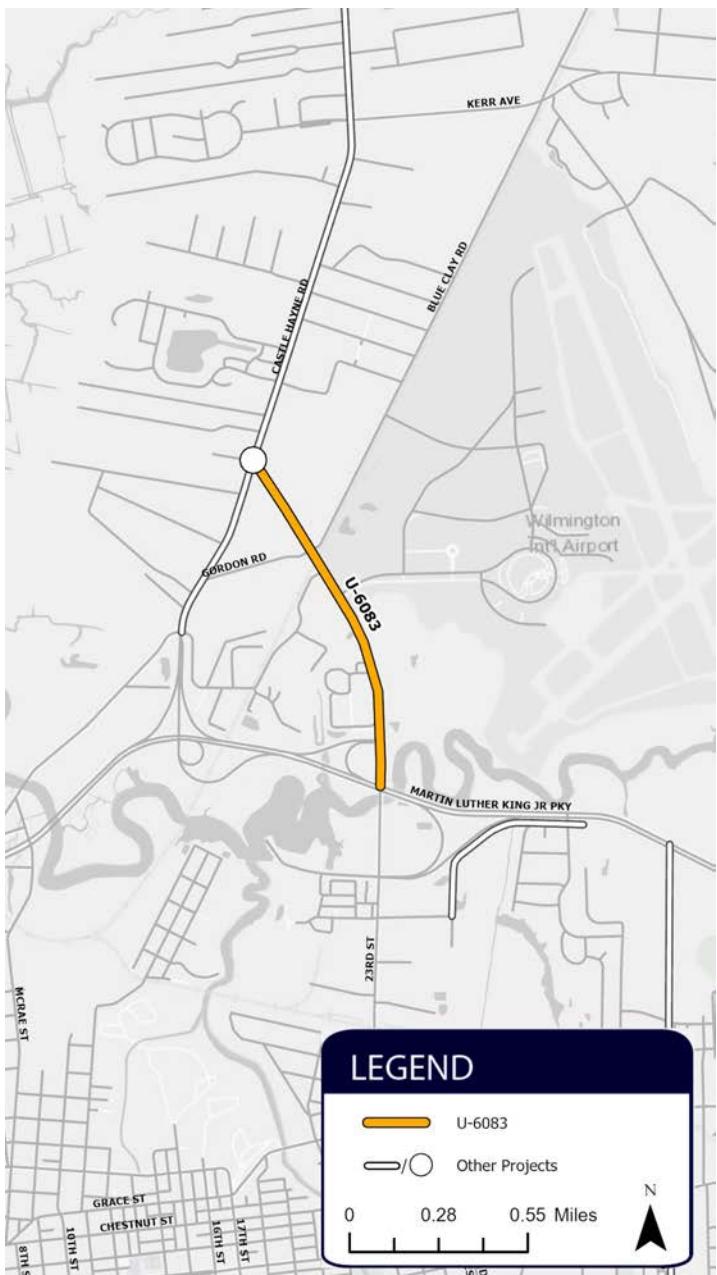
The purpose of this project is to improve safety and operations by decreasing emergency vehicle response times and reducing potential conflicts between emergency and non-emergency vehicles.

Project Facts

Route Number(s)	Multiple			
Jurisdiction(s)	City of Wilmington			
Facility Classification	Multiple			
	NB	SB	EB	WB
Number of Existing Travel Lanes	N/A	N/A	N/A	N/A
Existing Capacity	N/A			
Daily Traffic Volume (Vehicles per Day)	N/A			
Crash Rate	N/A			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Technology Improvement	NB	SB	EB	WB	N/A	N/A	N/A	N/A			
	N/A	N/A	N/A	N/A							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
Install traffic preemption equipment at an additional 50 locations throughout the City and GPS devices on fire apparatus				2025		\$1.3					



N 23rd Street Widening

Project ID: U-6083

The purpose of this project is to improve capacity and operations on N 23rd Street between MLK Jr Pkwy and NC133/Castle Hayne Road.

Project Facts

From	US74/ MLK Jr Pkwy
To	NC133/ Castle Hayne Road
Route Number(s)	SR1302
Length (miles)	1.1
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2-4 (Varies)
Existing Capacity	19,603
Daily Traffic Volume (Vehicles per Day)	13,178
Crash Rate	71

Proposed Project Cross-Section

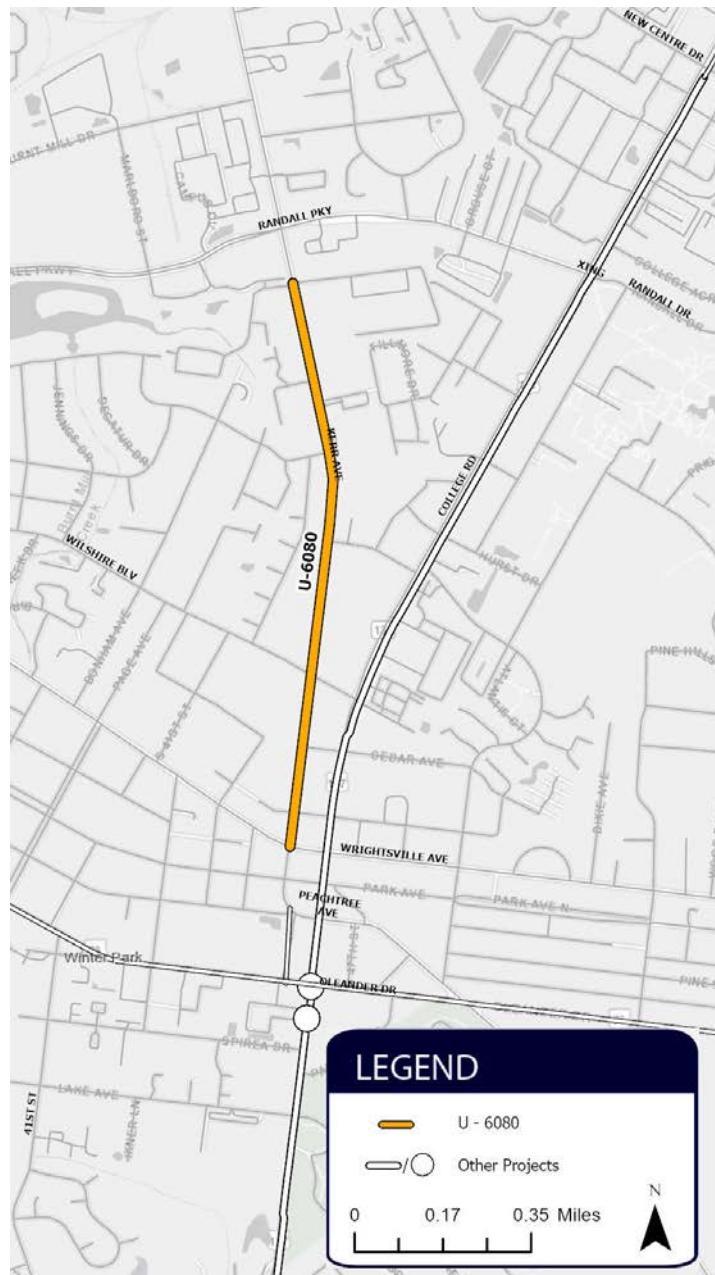
Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	N	12'	N/A	4' Bike Lane 5' Sidewalk	2030	\$23.0

Kerr Avenue Widening

Project ID: U-6080

The purpose of this project is to increase capacity and improve modal interrelationships on Kerr Avenue between Patrick Avenue and Wrightsville Avenue.

Project Facts	
From	Patrick Avenue
To	Wrightsville Avenue
Route Number(s)	SR1175
Length (miles)	1.1
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	2
Existing Capacity	19,603
Daily Traffic Volume (Vehicles per Day)	13,496
Crash Rate	151



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	Y	12'	23'	5' Sidewalk 5' Bike Lane	2030	\$25.9



NC133/Castle Hayne Road & N 23rd Street Roundabout

Project ID: U-5954

The purpose of this project is to improve safety and operations at the intersection of NC133/Castle Hayne Road and N 23rd Street by constructing a roundabout.

Project Facts				
Route Number(s)	NC133, SR1302			
Jurisdiction(s)	New Hanover County			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	3	2	0	2
Existing Capacity	18,000/18,000			
Daily Traffic Volume (Vehicles per Day)	10,848/8,720			
Crash Rate	31			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Intersection Improvement	NB	SB	EB	WB	Y	N	12'	10' Painted			
	N/A	N/A	N/A	N/A							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
1-lane roundabout with slip lanes				2030		\$2.3					

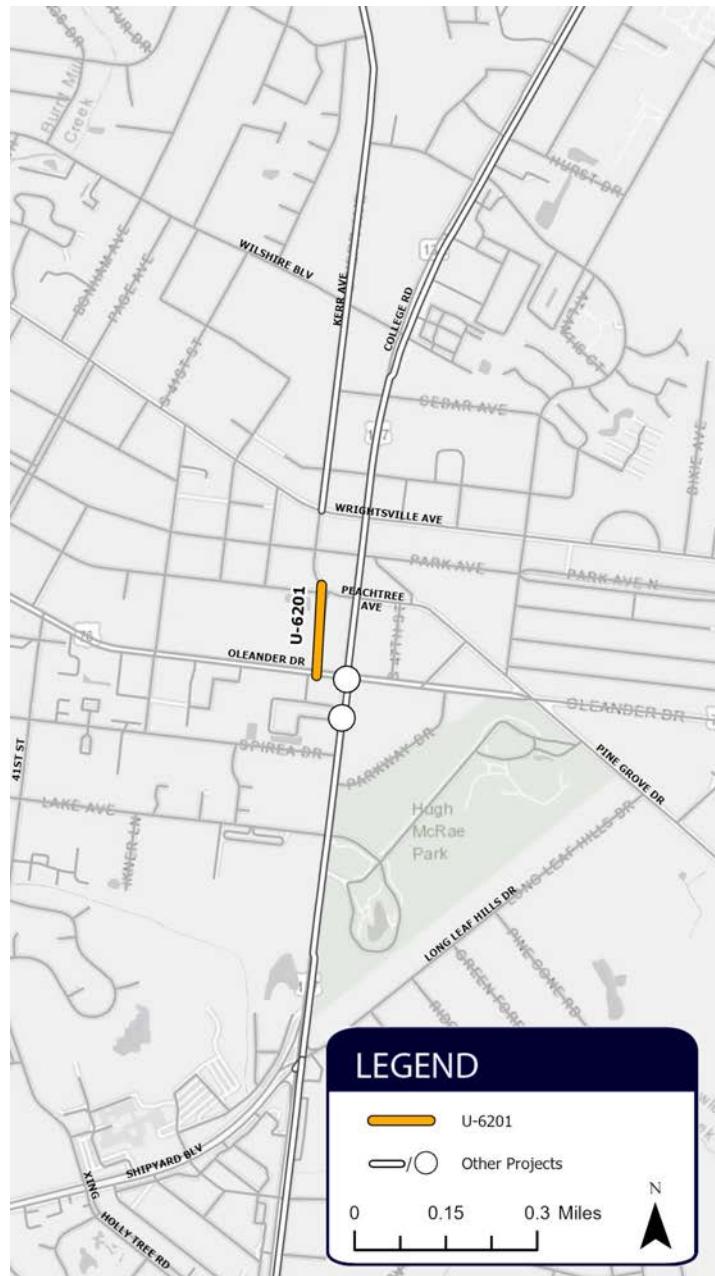
Kerr Avenue Extension

Project ID: U-6201

The purpose of this project is to improve connectivity and operations by extending Kerr Avenue from Wrightsville Avenue to Oleander Drive.

Project Facts

From	Wrightsville Avenue
To	US17/76/ Oleander Drive
Route Number(s)	N/A
Length (miles)	0.3
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	4	Y	12'	23'	5' Sidewalk 5' Bike Lane	2030	\$5.4

Wilmington Citywide Signal System

Project ID: U-6199

The purpose of this project is to improve the performance, reliability, connectivity, and expandability of the citywide signal system.

Project Facts				
Route Number(s)	Multiple			
Jurisdiction(s)	City of Wilmington			
Facility Classification	Multiple			
	NB	SB	EB	WB
Number of Existing Travel Lanes	N/A	N/A	N/A	N/A
Existing Capacity	N/A			
Daily Traffic Volume (Vehicles per Day)	N/A			
Crash Rate	N/A			

Proposed Project Cross-Section									
Improvement Type	Total Lanes			Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks		
Technology Improvement	NB	SB	EB	WB	N/A	N/A	N/A		
	N/A	N/A	N/A	N/A					
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)			
Signal system upgrade. These improvements are citywide. Project not mapped.				2030		\$16.0			

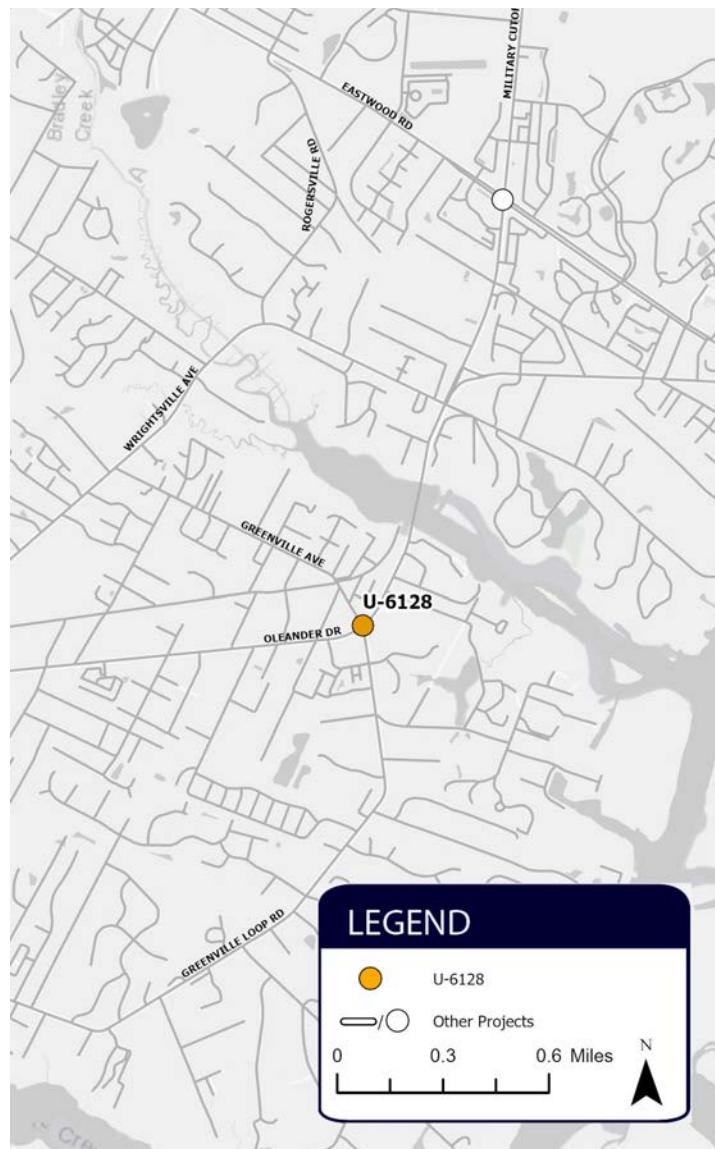
US17/76/Oleander Drive & Greenville Loop Road/Greenville Avenue Intersection

Project ID: U-6128

The purpose of this project is to improve safety and modal interrelationships at the intersection of Oleander Drive & Greenville Loop/Greenville Avenue.

Project Facts

Route Number(s)	US17/76			
Jurisdiction(s)	City of Wilmington			
Facility Classification	Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	2	1	3	2
Existing Capacity	44,323/12,565			
Daily Traffic Volume (Vehicles per Day)	23,674/9,666			
Crash Rate	91			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
Intersection Improvement	3	1	3	4	Y	N	12'	10' Painted with Ped Heads						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
Includes dual lefts from US76/Oleander Drive WB				2035		\$9.5								

Project Facts	
From	US17 BUS/Market Street
To	I-40
Route Number(s)	SR2048
Length (miles)	2.5
Jurisdiction(s)	New Hanover County
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	2
Existing Capacity	19,603
Daily Traffic Volume (Vehicles per Day)	15,277
Crash Rate	212

Gordon Road Widening

Project ID: U-6202

The purpose of this project is to increase capacity and improve connectivity on Gordon Road between I-40 and Market Street.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost
Road Widening	4	Y	12'	17-23'	10' MUP	2035	\$85.1

City of Wilmington Signal Ethernet Improvements

Project ID: RW-216

The purpose of this project is to upgrade the City's existing traffic signal system to Ethernet allowing improved performance, reliability, connectivity, and expandability.

Project Facts				
Route Number(s)	Multiple			
Jurisdiction(s)	City of Wilmington, New Hanover County			
Facility Classification	Multiple			
	NB	SB	EB	WB
Number of Existing Travel Lanes	N/A	N/A	N/A	N/A
Existing Capacity	N/A			
Daily Traffic Volume (Vehicles per Day)	N/A			
Crash Rate	N/A			

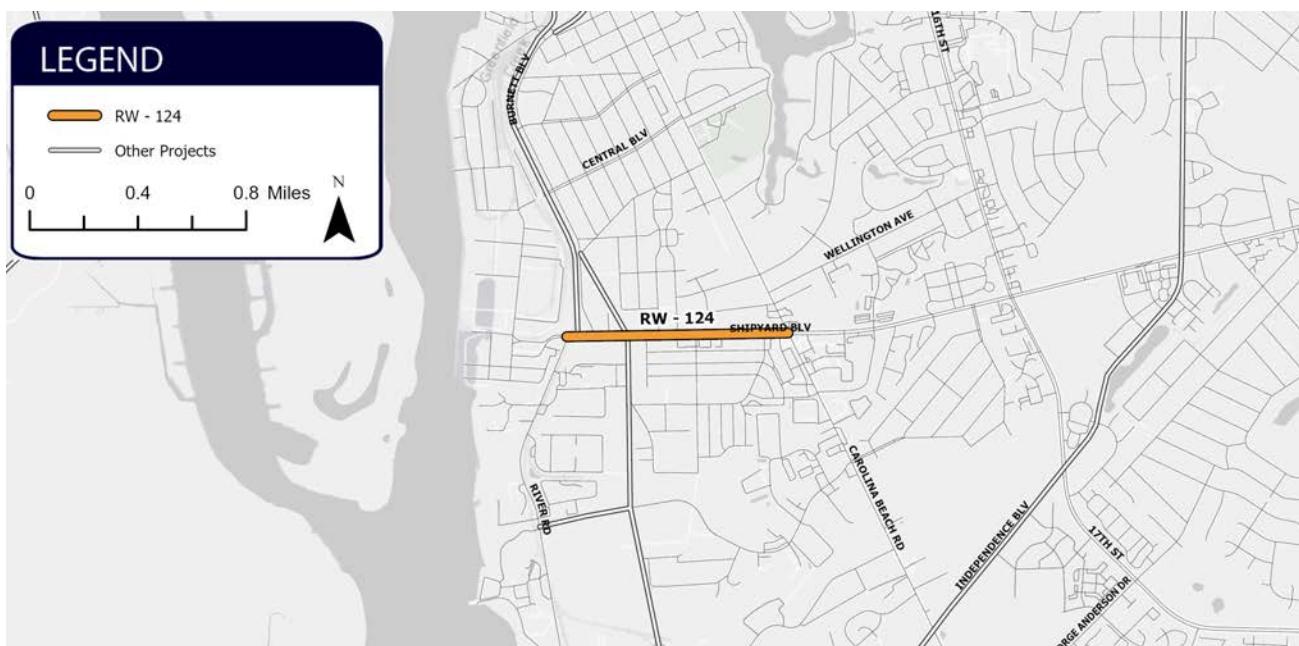
Proposed Project Cross-Section											
Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Technology Improvement	NB	SB	EB	WB	N/A	N/A	N/A	N/A			
	N/A	N/A	N/A	N/A							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
Upgrade existing signals with digital interface. These improvements are City wide. Project not mapped.				2025		\$0.3					

Project Facts	
From	US421/Carolina Beach Road
To	River Road
Route Number(s)	US117
Length (miles)	0.81
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	29,300
Daily Traffic Volume (Vehicles per Day)	6,325
Crash Rate	1,123

US117/ Shipyard Blvd Speed Sensors & Warning System

Project ID: RW-124

The purpose of this project is to allow for safer freight operations around the Port of Wilmington.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost
Electronics/Sensor System	N/A	N/A	N/A	N/A	N/A	2025	\$20,000

US17 BUS/ Market Street Road Diet (I of II)

Project ID: RW-219

The purpose of this project is to enhance safety and mobility for all modes of transportation and bring US17 Business from 3rd Street to 16th Street up to current design standards.

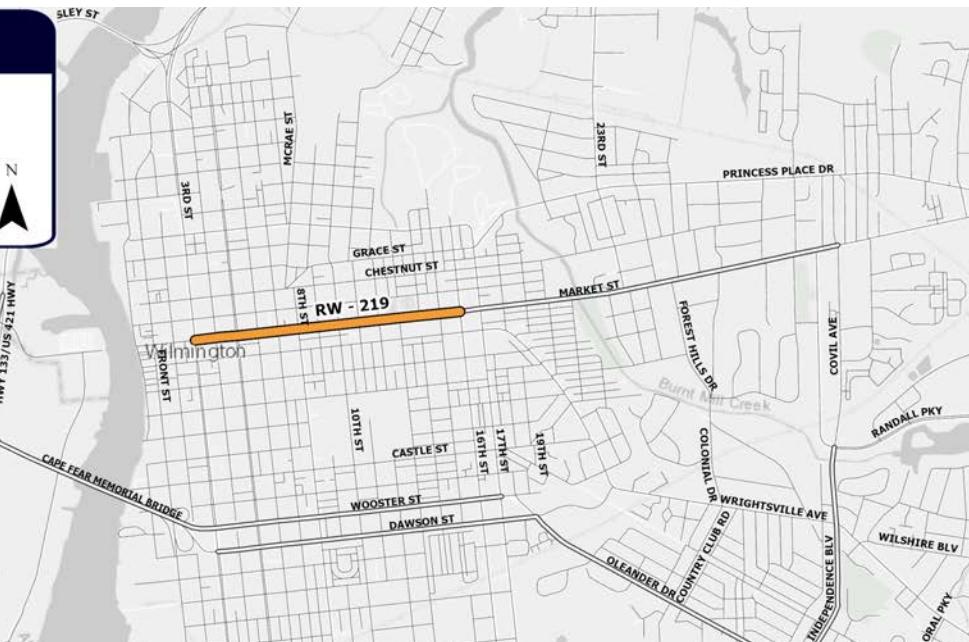
Project Facts

From	3rd Street
To	16th Street
Route Number(s)	US17 Business
Length (miles)	1.00
Jurisdiction(s)	City of Wilmington
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	4
Existing Capacity	22,800
Daily Traffic Volume (Vehicles per Day)	23,000
Crash Rate	1,839

LEGEND

- RW - 219
- Other Projects

0 0.4 0.8 Miles



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Road Diet, Improvements include 7' wide on-street parking	2 (w/ turn lanes as needed)	Y	10'	Variable 9-32'	Ex. 4' Sidewalk to Remain 4' Bike Lane (10' Crosswalks)	2025	\$2.6

Project Facts	
From	New Centre Drive terminus
To	Clear Run Drive
Route Number(s)	N/A
Length (miles)	0.05
Jurisdiction(s)	City of Wilmington
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

New Centre Drive Extension to Clear Run Drive

Project ID: RW-10

The purpose of this project is to improve system connectivity with the extension of New Center Drive from its existing terminus to Clear Run Drive.



Proposed Project Cross-Section

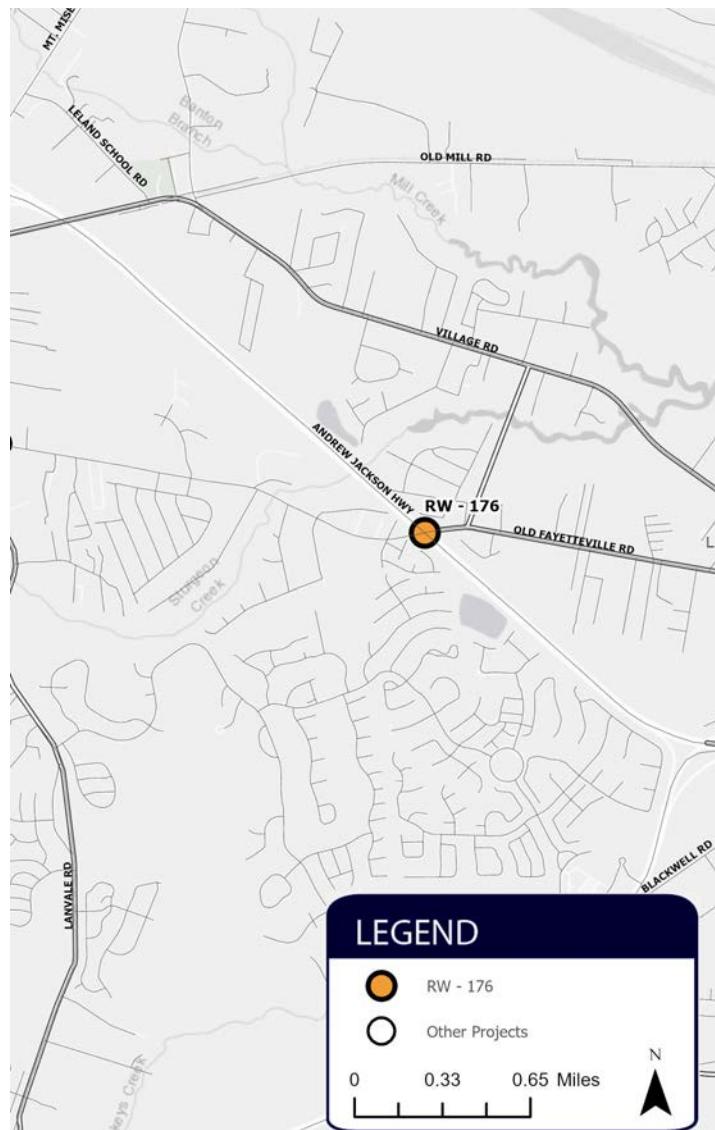
Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Road on New Location	2	N	11'	N/A	5' Sidewalk 5' Bike Lane	2025	\$1.3

US74/76/Andrew Jackson Hwy & Old Fayetteville Road Interchange

Project ID: RW-176

The purpose of this project is to improve system connectivity.

Project Facts				
Route Number(s)	US74/76, SR1437			
Jurisdiction(s)	Town of Leland			
Facility Classification	Freeway/Expressway, Major Collector			
	NB	SB	EB	WB
Number of Existing Travel Lanes	2	2	1	1
Existing Capacity	32,400/16,000			
Daily Traffic Volume (Vehicles per Day)	25,528/3,434			
Crash Rate	43			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
New Interchange	2	2	1	1	N	Y	12'	N/A						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
Convert grade separation to interchange				2030		\$43.4								

Project Facts

From	Dawson Street
To	Military Cutoff Road
Route Number(s)	US17/76
Length (miles)	5.99
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	31,000-73,800
Daily Traffic Volume (Vehicles per Day)	22,000-37,000
Crash Rate	2,664

US17/76/Oleander Drive Access Management Improvements

Project ID: RW-17

The purpose of this project is to improve operations and safety on US17/76/Oleander Drive from Dawson Street to Military Cutoff.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Access Management Improvements	4	Y	11'	23'	5' Sidewalk 5' Bike Lane	2030	\$20.9

US17 BUS/ Market Street Road Diet (II of II)

Project ID: RW-220

The purpose of this project is to enhance safety and mobility for all modes of transportation and bring US17 Business from 16th Street to Covil Avenue up to current design standards.

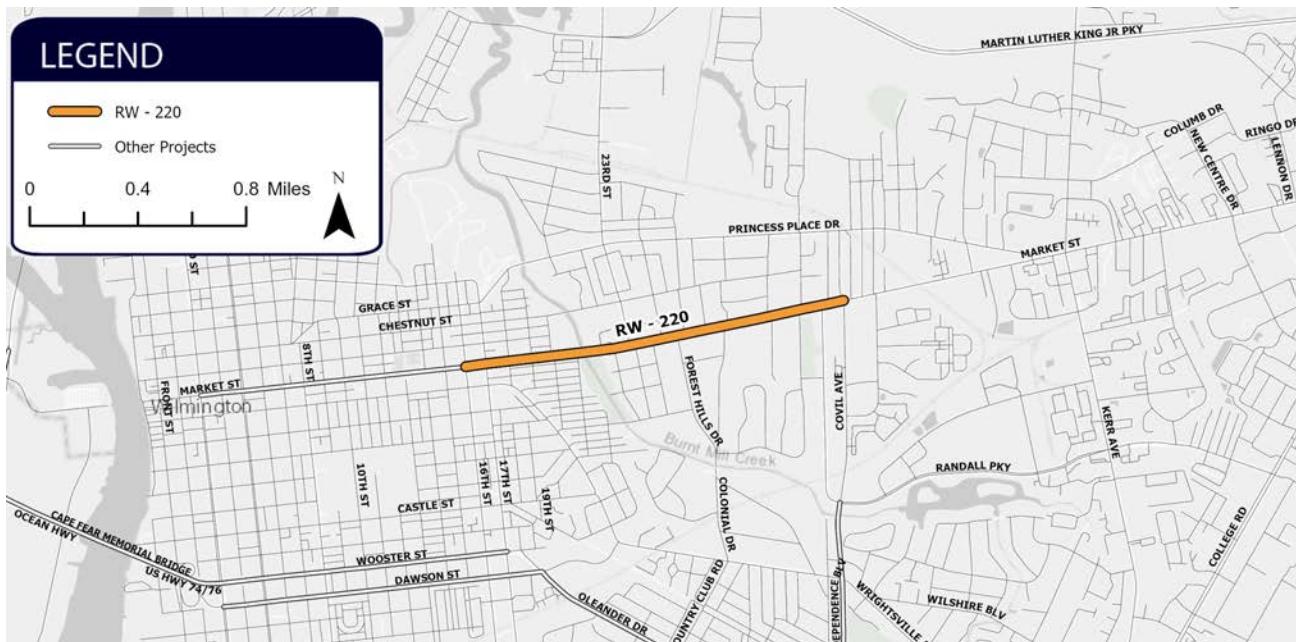
Project Facts

From	16th Street
To	Covil Avenue
Route Number(s)	US17 Business
Length (miles)	1.40
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	41,300
Daily Traffic Volume (Vehicles per Day)	42,000
Crash Rate	2,262

LEGEND

- RW - 220
- Other Projects

0 0.4 0.8 Miles



Proposed Project Cross-Section

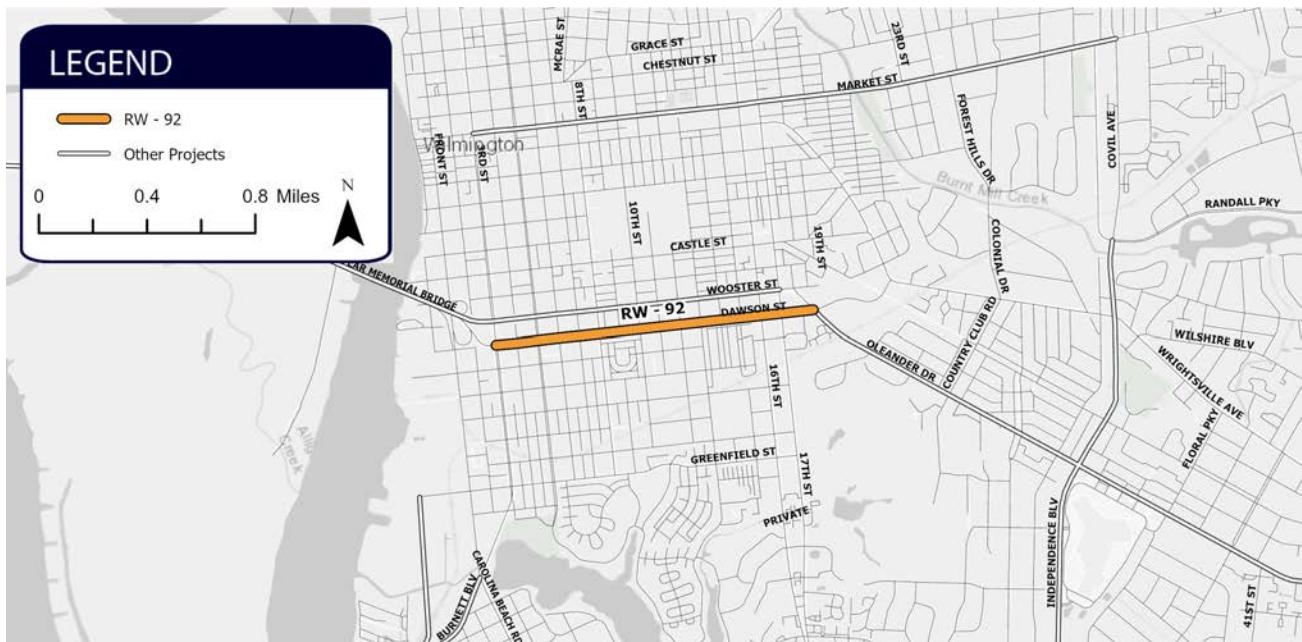
Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Road Diet	2 (w/ turn lanes as needed)	Y	10'	Variable 2-32'	Ex. 4' Sidewalk to Remain 4' Bike Lane (10' Crosswalks)	2030	\$4.2

Project Facts	
From	US17 BUS/3rd Street
To	US17/76/Oleander Drive
Route Number(s)	US17/76
Length (miles)	1.12
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	34,700
Daily Traffic Volume (Vehicles per Day)	25,412
Crash Rate	1,991

US17/76/Dawson Street Streetscape Improvements

Project ID: RW-92

The purpose of this project is to improve safety, operations, and accessibility on Dawson Street between 3rd Street and Oleander Drive.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Streetscape Improvements	4	N	12'	N/A	5' Sidewalk 5' Bike Lane	2030	\$6.4

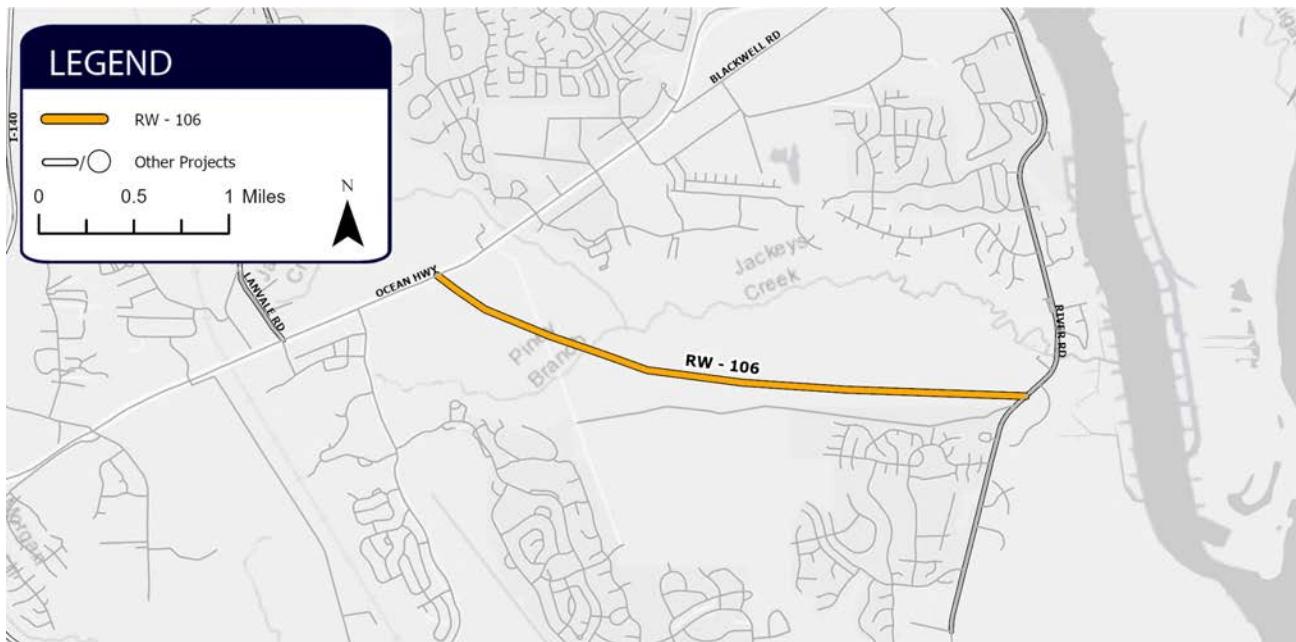
US17/Ocean Hwy E to NC133/ River Road SE Connector Road

Project ID: RW-106

The purpose of this project is to improve operations and connectivity between US17 and NC133.

Project Facts

From	US17
To	NC133
Route Number(s)	N/A
Length (miles)	3.29
Jurisdiction(s)	Town of Leland, Brunswick County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Road on New Location	2	N	11'	N/A	10' MUP	2030	\$48.1

Project Facts	
From	US17 BUS/3rd Street
To	US17/76/Oleander Drive
Route Number(s)	US17/76
Length (miles)	1.00
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	21,100
Daily Traffic Volume (Vehicles per Day)	18,874
Crash Rate	2,421

US17/76/Wooster Street Streetscape Improvements

Project ID: RW-93

The purpose of this project is to improve safety, operations, and accessibility on Wooster Street between Oleander Drive and 3rd Street.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Streetscape Improvements	4	N	12'	N/A	5' Sidewalk 5' Bike Lane	2030	\$6.3

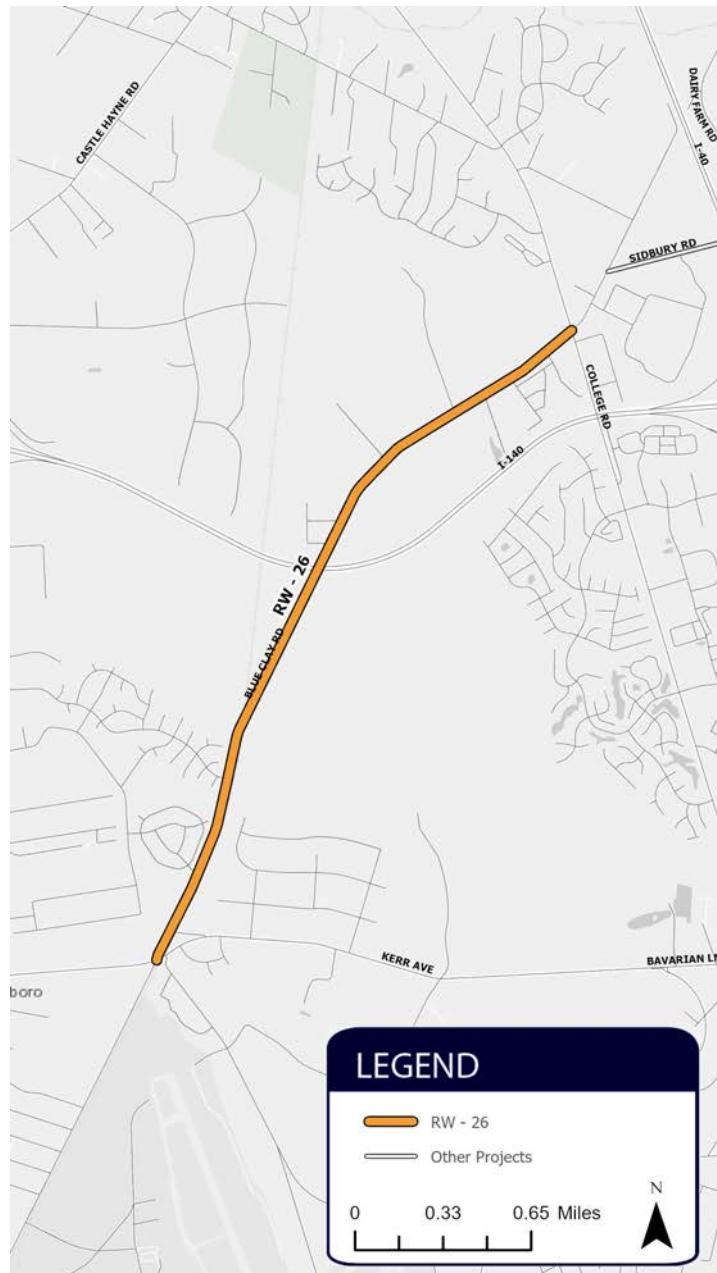
Blue Clay Road Modernization

Project ID: RW-26

The purpose of this project is to improve safety on Blue Clay Road between North Kerr Avenue and US117/NC132/North College Road and bring the roadway up to current design standards.

Project Facts

From	N. Kerr Avenue
To	US117/NC132/ N College Road
Route Number(s)	SR1318
Length (miles)	2.90
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	15,600
Daily Traffic Volume (Vehicles per Day)	5,450
Crash Rate	1,578



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Modernization	2	N	12'	N/A	5' Bike Lane	2030	\$1.4



Hoover Road Modernization

Project ID: RW-6

The purpose of this project is to improve safety on Hoover Road between Stacey Greg Road and US17 and bring the roadway up to current design standards.

Project Facts

From	US17
To	Stacey Greg Road
Route Number(s)	SR1569
Length (miles)	0.98
Jurisdiction(s)	Pender County
Facility Classification	Minor Collector
Number of Existing Travel Lanes	2
Existing Capacity	23,100
Daily Traffic Volume (Vehicles per Day)	3,985
Crash Rate	301

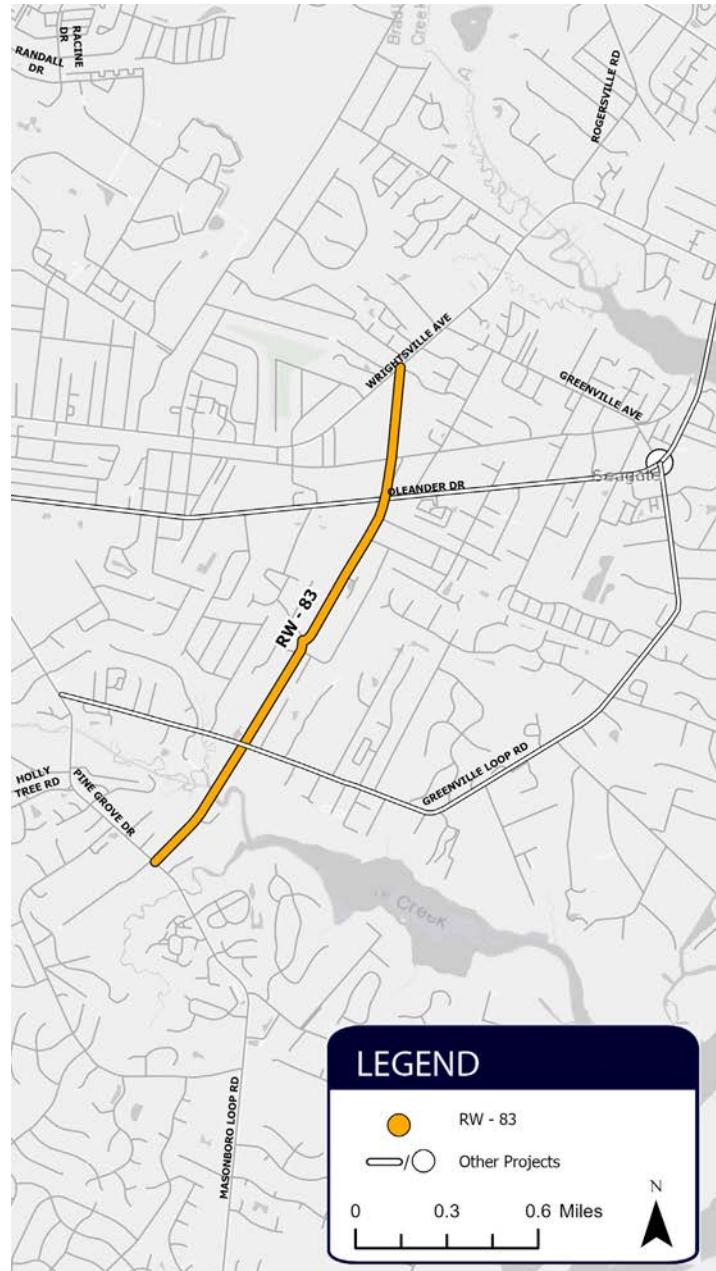
Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Modernization	2	N	12'	N/A	10' MUP	2030	\$4.6

Dogwood Lane Extension

Project ID: RW-83

The purpose of this project is to improve congestion and connectivity from Wrightsville Avenue to Pine Grove Drive.



Project Facts

From	Wrightsville Avenue
To	Pine Grove Drive
Route Number(s)	N/A
Length (miles)	1.82
Jurisdiction(s)	City of Wilmington
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location, Includes one (1) bridge	2	N	11'	N/A	5' Sidewalk 5' Bike Lane	2035	\$63.2

Project Facts	
From	US421
To	US74/76 & US17 Split
Route Number(s)	US17/74/76
Length (miles)	2.07
Jurisdiction(s)	Town of Leland, Brunswick County
Facility Classification	Freeway
Number of Existing Travel Lanes	6
Existing Capacity	120,000
Daily Traffic Volume (Vehicles per Day)	59,089-106,501
Crash Rate	220

US17/74/76/ Causeway Improvements (Phase 2)

Project ID: RW-20

The purpose of this project is to improve congestion on the Causeway between US421 and where US74/76 and US17 split.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Road Widening, Includes three (3) bridges	8	Y	12'	48'	Separated 10' MUP	2035	\$92.1

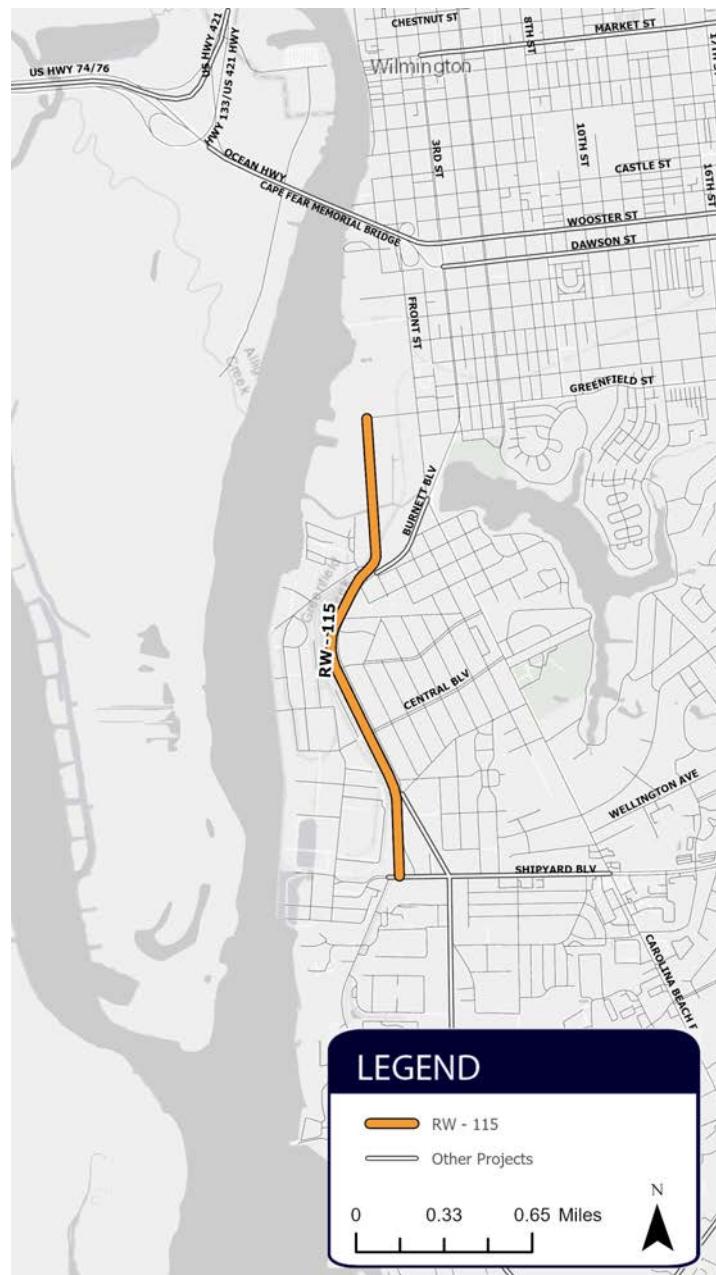
Internal Port Access Road

Project ID: RW-115

The purpose of this project is to improve safety, mobility, and connectivity by introducing an internal port access road between Greenfield Street and Shipyard Boulevard.

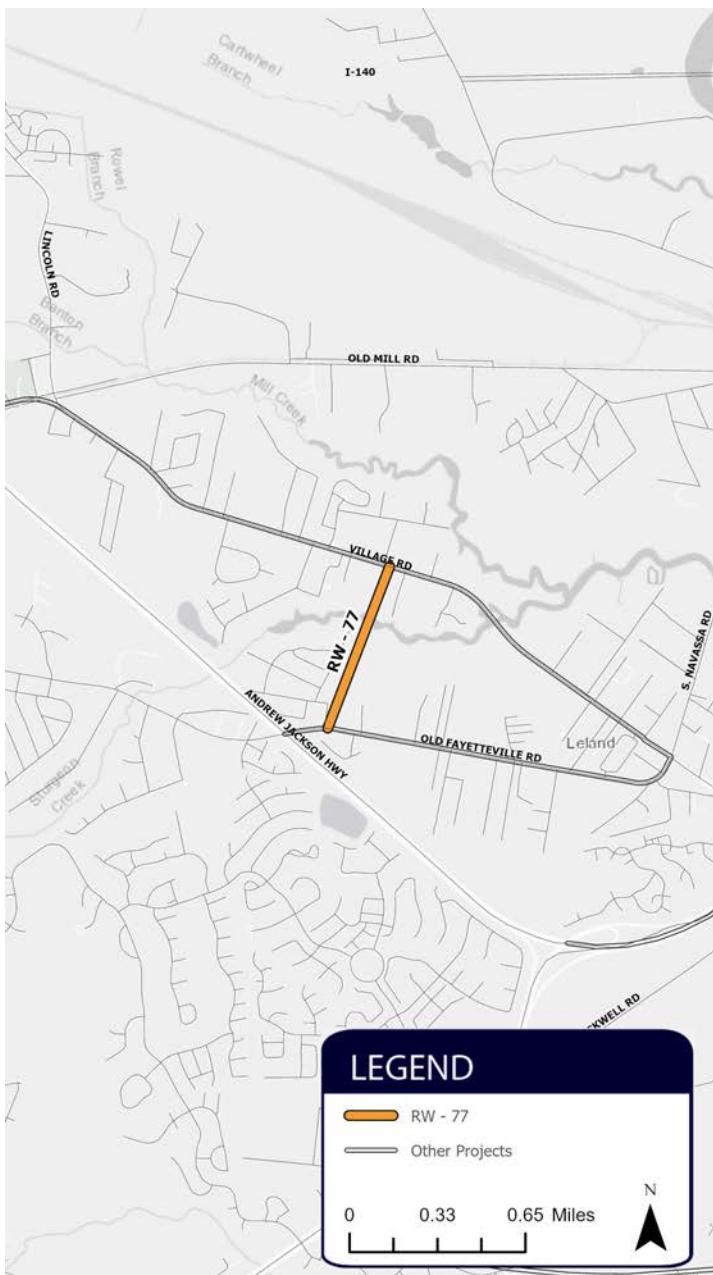
Project Facts

From	Greenfield Street
To	US117/ Shipyard Blvd
Route Number(s)	N/A
Length (miles)	0.90
Jurisdiction(s)	City of Wilmington
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	12'	N/A	N/A	2035	\$34.0



Basin Street Extension

Project ID: RW-77

The purpose of this project is to improve mobility and connectivity by extending Basin Street from Old Fayetteville Road to Village Road.

Project Facts

From	SR1437/Old Fayetteville Road
To	SR1472/Village Road
Route Number(s)	N/A
Length (miles)	0.64
Jurisdiction(s)	Town of Leland
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	11'	N/A	5' Sidewalk 5' Bike Lane	2035	\$39.4

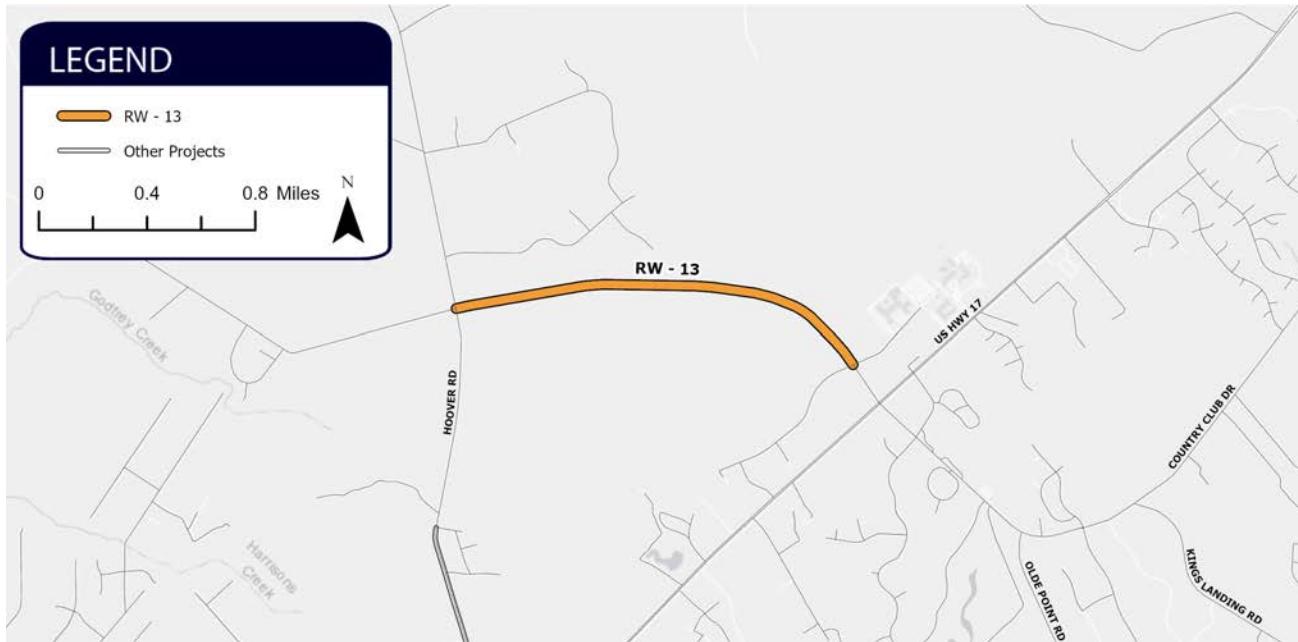
Godfrey Creek Road Extension to US17/NC210

Project ID: RW-13

The purpose of this project is to improve mobility and connectivity by extending Godfrey Creek Road from Hoover Road to Saint Johns Church Road.

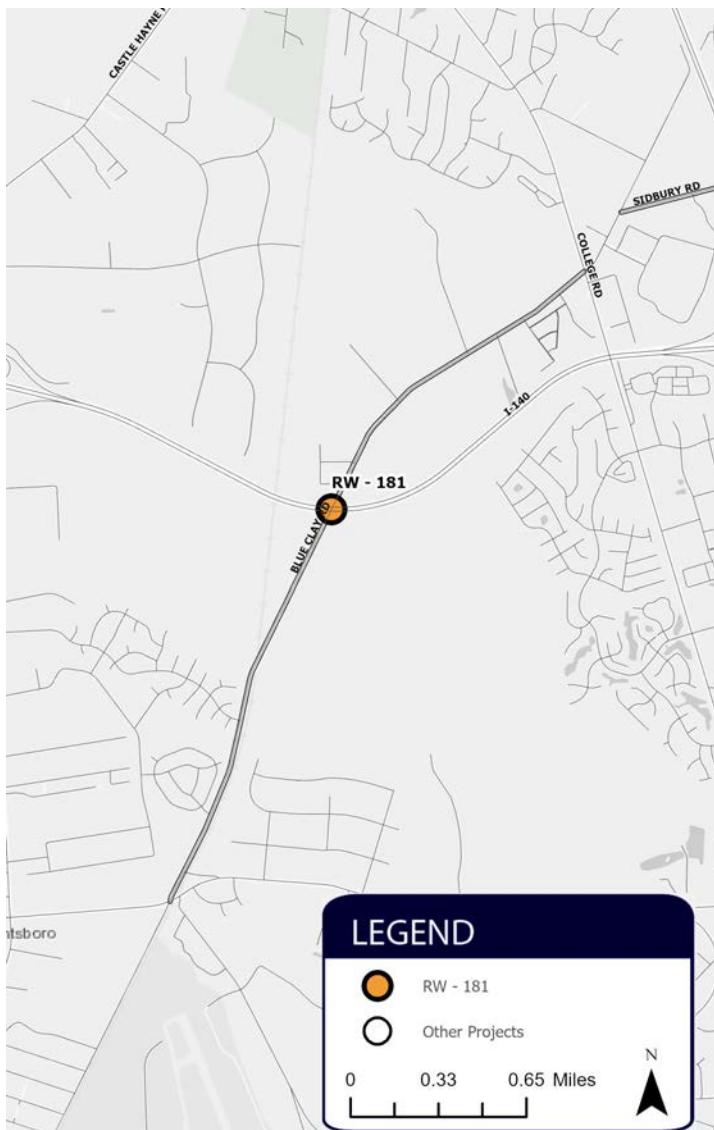
Project Facts

From	Hoover Road
To	Saint Johns Church Road
Route Number(s)	N/A
Length (miles)	1.59
Jurisdiction(s)	Pender County
Facility Classification	Minor Collector
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Road on New Location	2	N	11'	N/A	N/A	2035	\$25.8



I-140 & Blue Clay Road Interchange

Project ID: RW-181

The purpose of this project is to improve mobility and connectivity by introducing a new interchange at the intersection of Blue Clay Road and I-140.

Project Facts

Route Number(s)	I-140, SR1318			
Jurisdiction(s)	New Hanover County			
Facility Classification	Interstate, Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	2	2
Existing Capacity	64,000-12,500			
Daily Traffic Volume (Vehicles per Day)	20,648-5,587			
Crash Rate	222			

Proposed Project Cross-Section

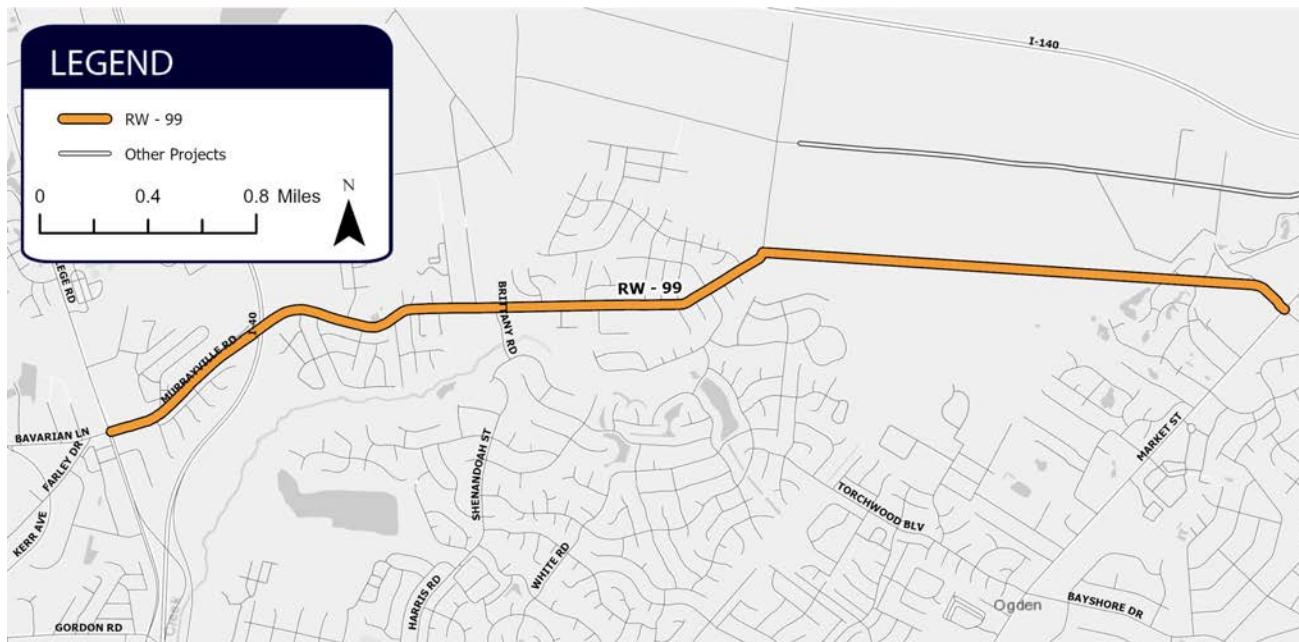
Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
New Interchange	NB	SB	EB	WB	N	Y	12'	N/A			
	1	1	2	2							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
Convert grade separation to interchange				2035		\$24.9					

Murrayville Road Modernization & Extension

Project ID: RW-99

The purpose of this project is to improve safety, mobility and connectivity on Murrayville Road between US117/NC132/North College Road and US17.

Project Facts	
From	US117/NC132/N College Road
To	US17
Route Number(s)	SR1322
Length (miles)	4.55
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Collector
Number of Existing Travel Lanes	2
Existing Capacity	15,400
Daily Traffic Volume (Vehicles per Day)	8,745
Crash Rate	1,326



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Modernization and New Road on New Location	2	N	11'	N/A	10' MUP	2035	\$60.2

Project Facts	
From	SR1100/River Road
To	US421/Carolina Beach Road
Route Number(s)	N/A
Length (miles)	1.20
Jurisdiction(s)	City of Wilmington
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	12,560
Daily Traffic Volume (Vehicles per Day)	10,324
Crash Rate	87

Independence Blvd Road Widening

Project ID: RW-222

The purpose of this project is to increase capacity and improve traffic flow on Independence Blvd between US421/Carolina Beach Road and River Road.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Road Widening	4	Y	12'	14'	10' MUP	2035	\$23.6

US17 Access Management Improvements

Project ID: RW-42

The purpose of this project is to improve operations and safety on US17 between Carol Lynn Drive NE and the WMPO Boundary in Brunswick County.

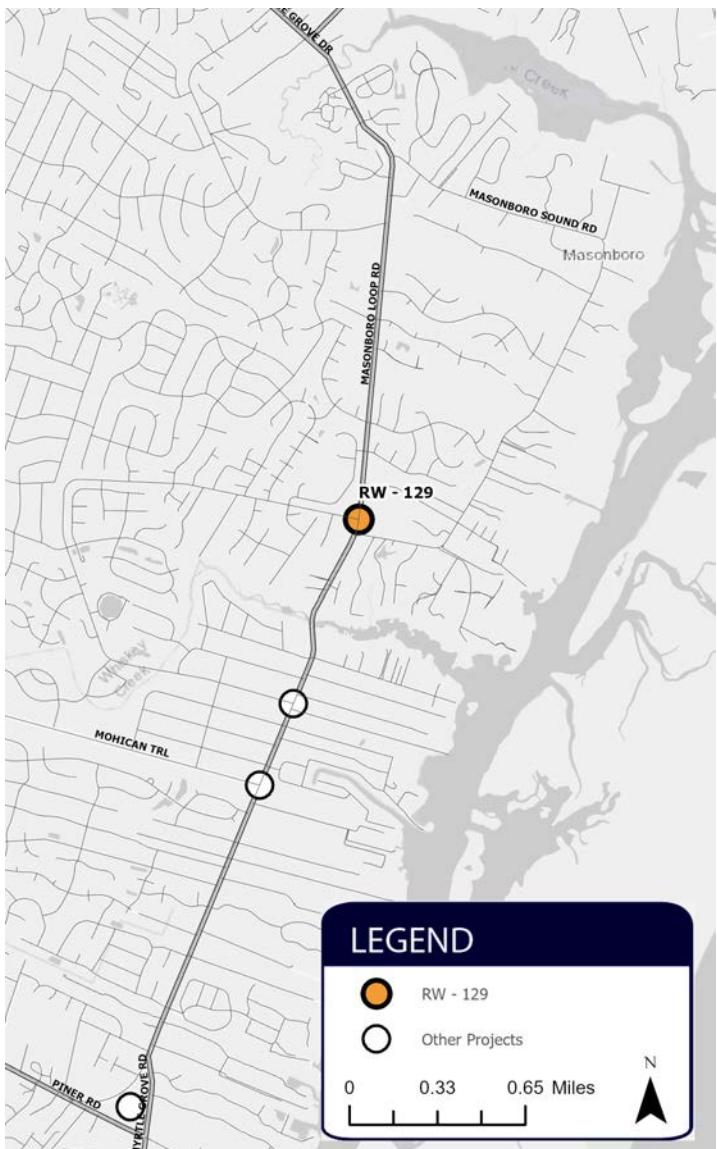
Project Facts

From	Carol Lynn Drive NE
To	WMPO Boundary
Route Number(s)	US17
Length (miles)	3.50
Jurisdiction(s)	Brunswick County
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	58,000
Daily Traffic Volume (Vehicles per Day)	24,356
Crash Rate	287



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Access Management Improvements	4	Y	12'	46'	10' MUP	2035	\$6.7



Navaho Trail & Masonboro Loop Road Roundabout (Northern Intersection)

Project ID: RW-129

The purpose of this project is to improve congestion and safety at the intersection of Navaho Trail and Masonboro Loop Road.

Project Facts				
Route Number(s)	SR1516			
Jurisdiction(s)	City of Wilmington			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	1	0
Existing Capacity	12,500/18,000			
Daily Traffic Volume (Vehicles per Day)	N/A/19,777			
Crash Rate	56			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Intersection Improvement	NB	SB	EB	WB	N	N	12'	10' Painted			
	N/A	N/A	N/A	N/A							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
1-lane roundabout with slip lanes				2035		\$1.8					

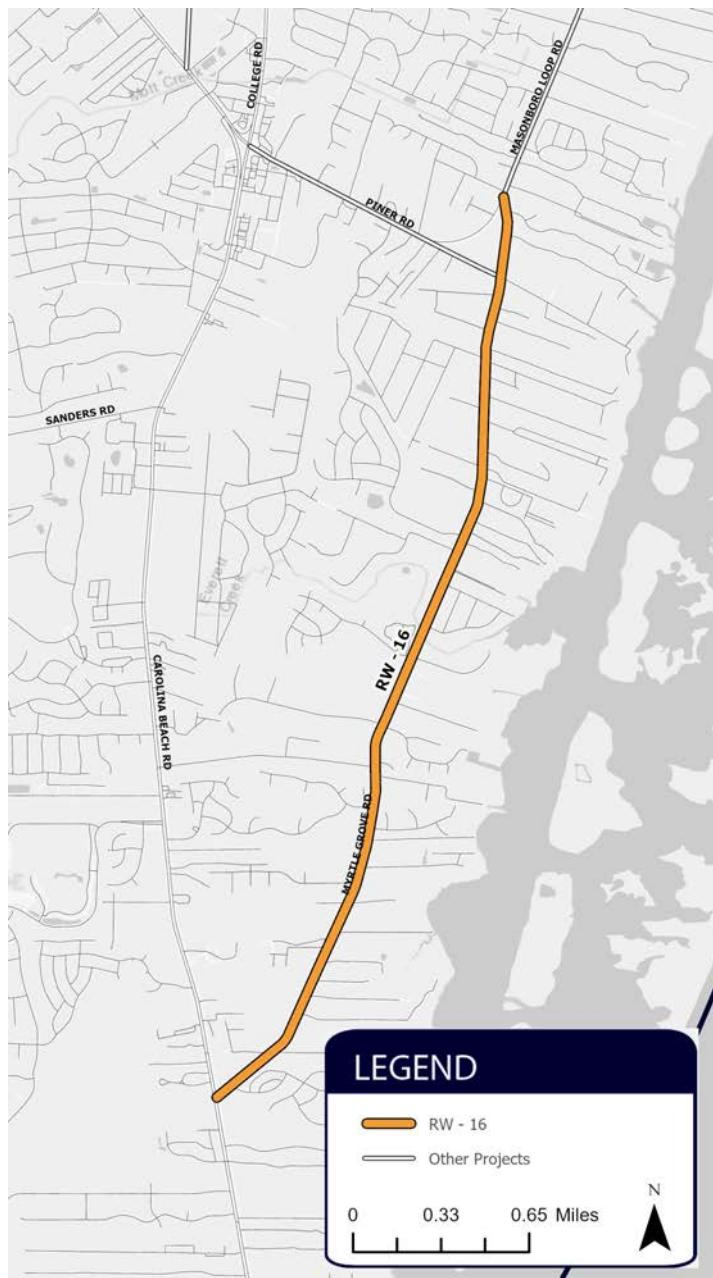
Myrtle Grove Road Widening

Project ID: RW-16

The purpose of this project is to improve congestion on Myrtle Grove Road between Masonboro Loop Road and Carolina Beach Road.

Project Facts

From	Masonboro Loop Road
To	US421/Carolina Beach Road
Route Number(s)	SR1492
Length (miles)	3.50
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	16,200
Daily Traffic Volume (Vehicles per Day)	9,354
Crash Rate	2,079



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	Y	12'/14'	17.5'	10' MUP	2035	\$79.7

Project Facts	
From	S. College Road
To	Myrtle Grove Road
Route Number(s)	SR1521
Length (miles)	1.04
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	10,400
Daily Traffic Volume (Vehicles per Day)	20,412
Crash Rate	622

Piner Road Widening & Intersection Realignment

Project ID: RW-25

The purpose of this project is to improve mobility and intersection design standards on Piner Road between South College Road and Myrtle Grove Road.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Road Widening & Intersection Realignments	4	Y	12'	17'	10' MUP	2035	\$21.2

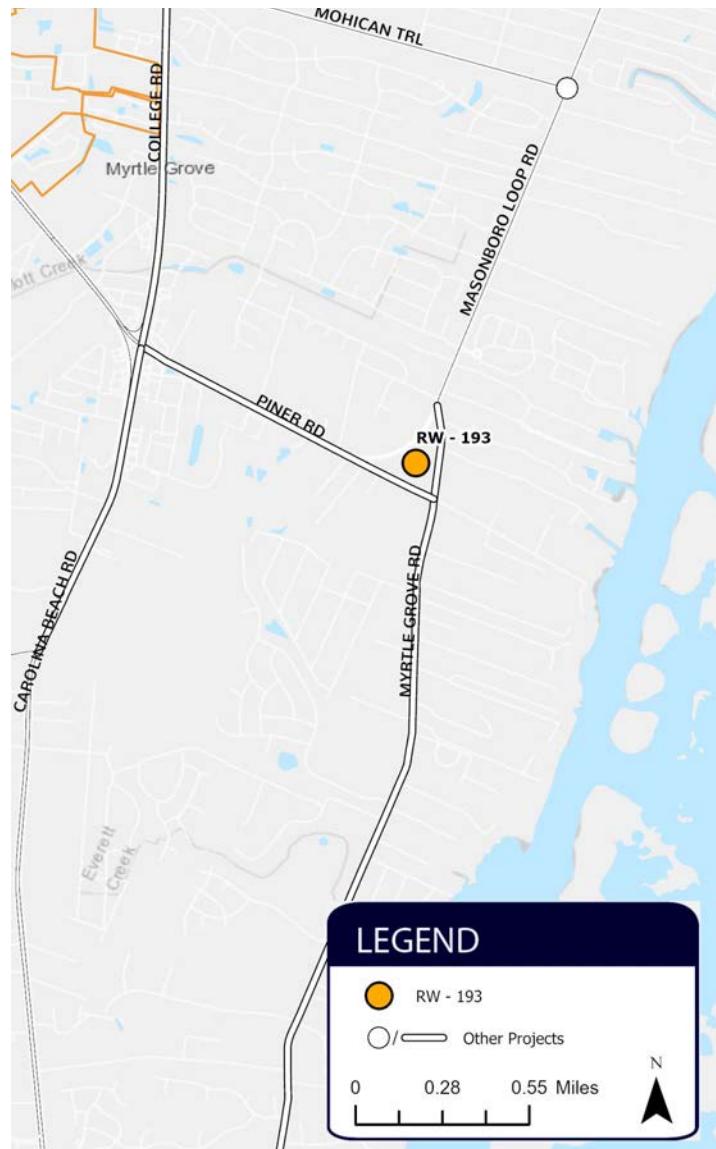
Myrtle Grove Road/ Piner Road/Masonboro Loop Road Roundabouts

Project ID: RW-193

The purpose of this project is to improve safety and mobility at the intersections of Myrtle Grove Road, Piner Road, and Masonboro Loop Road.

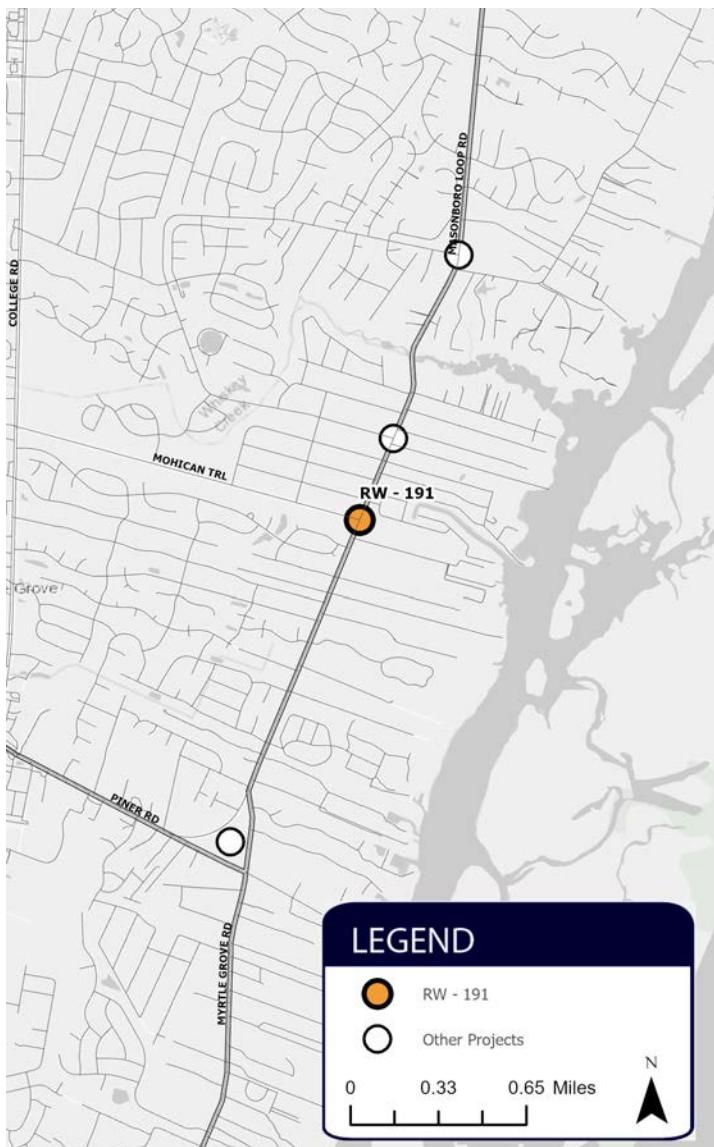
Project Facts

Route Number(s)	SR1492, SR1521			
Jurisdiction(s)	New Hanover County			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	1	1
Existing Capacity	18,035/19,603/18,035			
Daily Traffic Volume (Vehicles per Day)	9,354/20,987/11,987			
Crash Rate	935			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
	NB	SB	EB	WB							
Intersection Improvements	N/A	N/A	N/A	N/A	N	N	10'	10' Painted			
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
(3) 1-lane roundabouts, each with slip lanes				2035		\$10.1					



Mohican Trail & Masonboro Loop Road Roundabout

Project ID: RW-191

The purpose of this project is to improve safety and mobility at the intersection of Mohican Trail and Masonboro Loop Road.

Project Facts				
Route Number(s)	SR1565, SR1492			
Jurisdiction(s)	New Hanover County			
Facility Classification	Minor Arterial, Major Collector			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	1	0
Existing Capacity	12,565/18,035			
Daily Traffic Volume (Vehicles per Day)	7,986/21,098			
Crash Rate	156			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Intersection Improvement	NB	SB	EB	WB	Y	N	12'	10' Painted			
	N/A	N/A	N/A	N/A							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
1-lane roundabout with slip lanes				2035		\$10.7					

Navaho Trail & Masonboro Loop Road Roundabout (Southern Intersection)

Project ID: RW-192

The purpose of this project is to improve safety and mobility at the intersection of Navaho Trail and Masonboro Loop Road.

Project Facts

Route Number(s)	SR1516, SR1492			
Jurisdiction(s)	New Hanover County			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	1	0
Existing Capacity	12,565/18,035			
Daily Traffic Volume (Vehicles per Day)	2,260/9,293			
Crash Rate	242			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
	NB	SB	EB	WB							
Intersection Improvement	N/A	N/A	N/A	N/A	N	N	10'	10' Painted			
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
1-lane roundabout with slip lanes				2035		\$9.7					

Project Facts	
From	SR1472/ Village Road NE
To	US74/76
Route Number(s)	SR1437
Length (miles)	1.50
Jurisdiction(s)	Town of Leland
Facility Classification	Major Collector
Number of Existing Travel Lanes	2
Existing Capacity	23,100
Daily Traffic Volume (Vehicles per Day)	4,500
Crash Rate	644

Old Fayetteville Road Modernization

Project ID: RW-78

The purpose of this project is to improve safety and bring Old Fayetteville Road up to current design standards between Village Road NE and US74/76.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Modernization	2	N	11'	N/A	10' MUP	2035	\$3.5

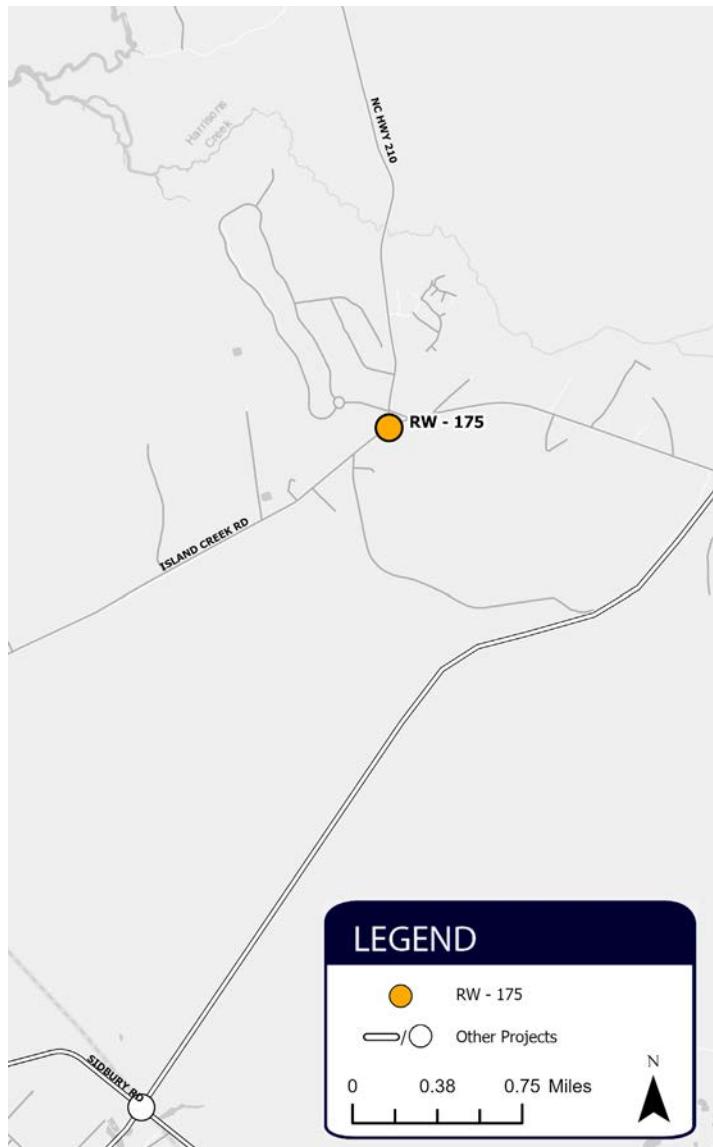
NC210 & Island Creek Road Intersection

Project ID: RW-175

The purpose of this project is to improve safety and mobility at the intersection of NC210 and Island Creek Road by creating a single intersection.

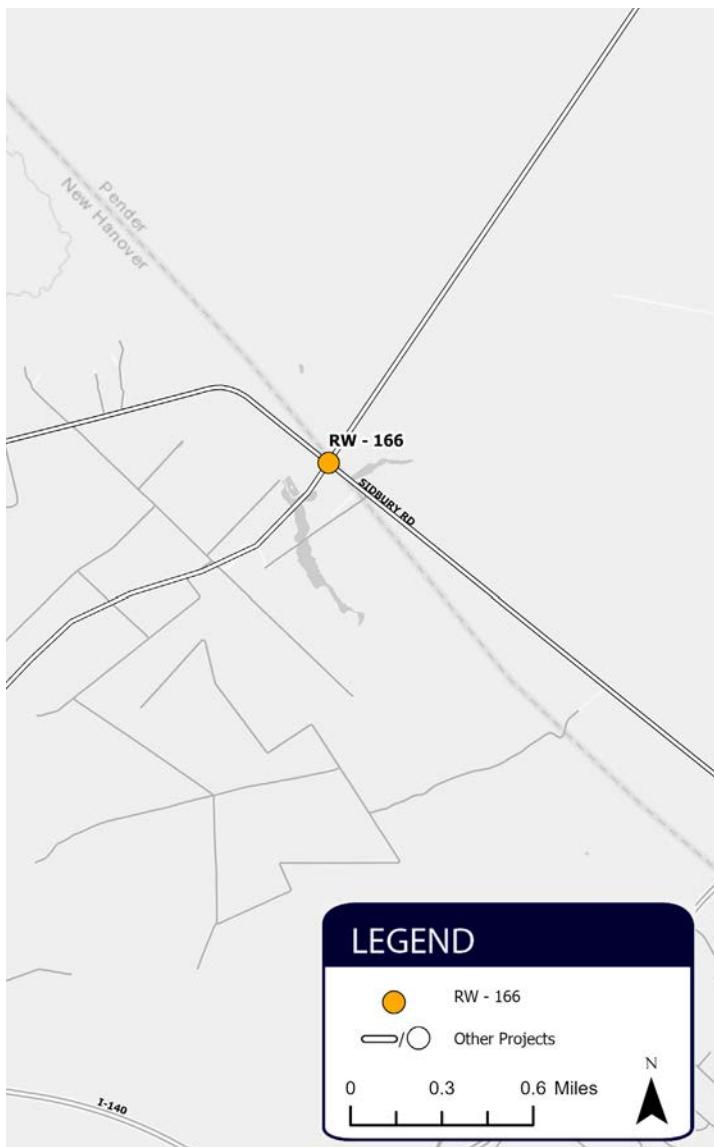
Project Facts

Route Number(s)	NC210, SR1002			
Jurisdiction(s)	Pender County			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	0	1	1	1
Existing Capacity	24,931/24,931			
Daily Traffic Volume (Vehicles per Day)	5,750/7,606			
Crash Rate	126			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
Intersection Improvement	0	1	1	1	Y	N	12'	10' Painted						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
				2035		\$1.6								



Future NC417/ Hampstead Bypass & Sidbury Road Interchange

Project ID: RW-166

The purpose of this project is to improve mobility and connectivity by connecting Sidbury Road and the (future) Hampstead Bypass.

Project Facts				
Route Number(s)		Future NC417, SR1572		
Jurisdiction(s)		New Hanover County, Pender County		
Facility Classification		Freeway/Expressway, Minor Collector		
NB	SB	EB	WB	
0	0	1	1	
Existing Capacity		N/A		
Daily Traffic Volume (Vehicles per Day)		N/A		
Crash Rate		N/A		

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
New Interchange	2	2	1	1	N	Y	12'	N/A						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
Convert future grade separation to interchange				2035		\$22.3								

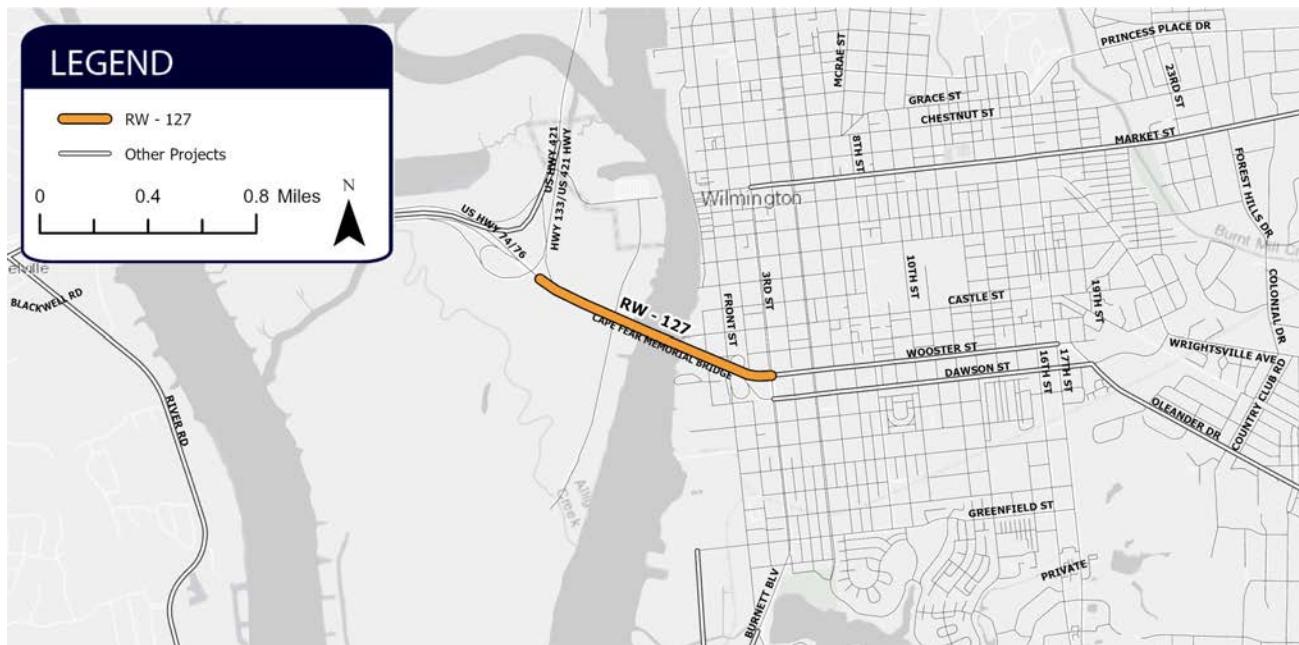
US76/421/17/ 17 BUS/Cape Fear Memorial Bridge Replacement

Project ID: RW-127

The purpose of this project is to improve congestion, mobility, connectivity, and required replacement of the Cape Fear Memorial Bridge.

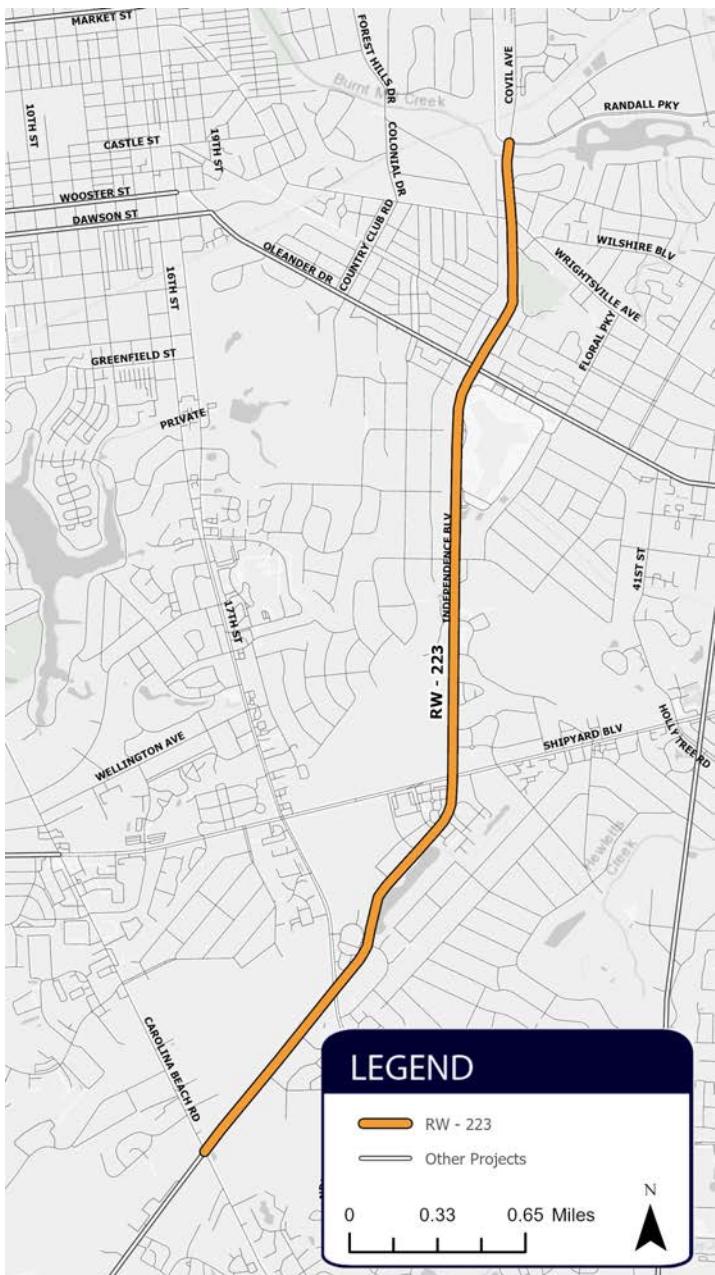
Project Facts

From	3rd Street
To	US421
Route Number(s)	US76
Length (miles)	0.72
Jurisdiction(s)	City of Wilmington, Brunswick County, New Hanover County
Facility Classification	Freeway
Number of Existing Travel Lanes	4
Existing Capacity	60,000
Daily Traffic Volume (Vehicles per Day)	64,521
Crash Rate	217



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Bridge Replacement/Road Widening	6	N	12'	N/A	Separated 10' MUP	2040	\$377.5



Independence Blvd Access Management

Project ID: RW-223

The purpose of this project is to improve safety and congestion on Independence Boulevard between Carolina Beach Road and Randall Parkway.

Project Facts

From	US421/ Carolina Beach Road
To	Randall Parkway
Route Number(s)	SR1209 (partial)
Length (miles)	4.17
Jurisdiction(s)	City of Wilmington
Facility Classification	Principal/ Minor Arterial
Number of Existing Travel Lanes	4
Existing Capacity	18,000-43,500
Daily Traffic Volume (Vehicles per Day)	23,415
Crash Rate	1,138

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Upgrade to Urban Freeway	4	Y	12'	23'	10' MUP 5' Sidewalk	2040	\$89.1

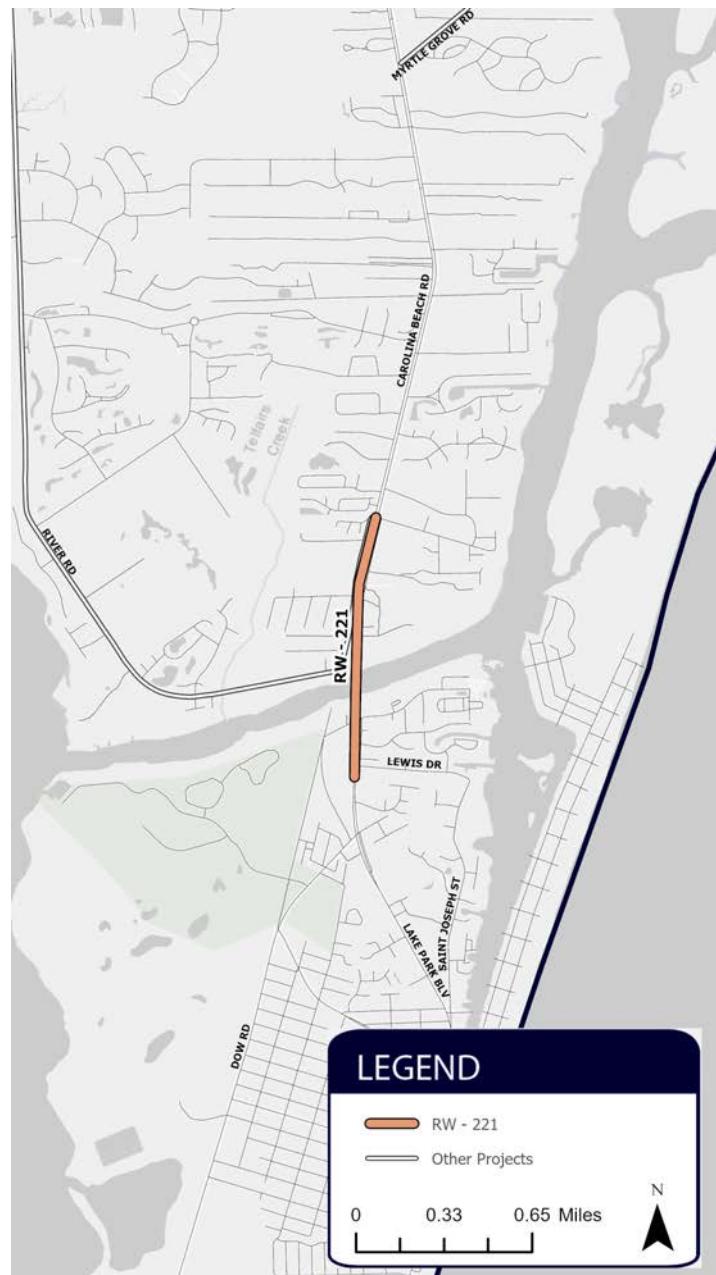
US421/Snow's Cut Bridge Replacement

Project ID: RW-221

The purpose of this project is to improve safety, congestion, connectivity, and required replacement of Snow's Cut Bridge.

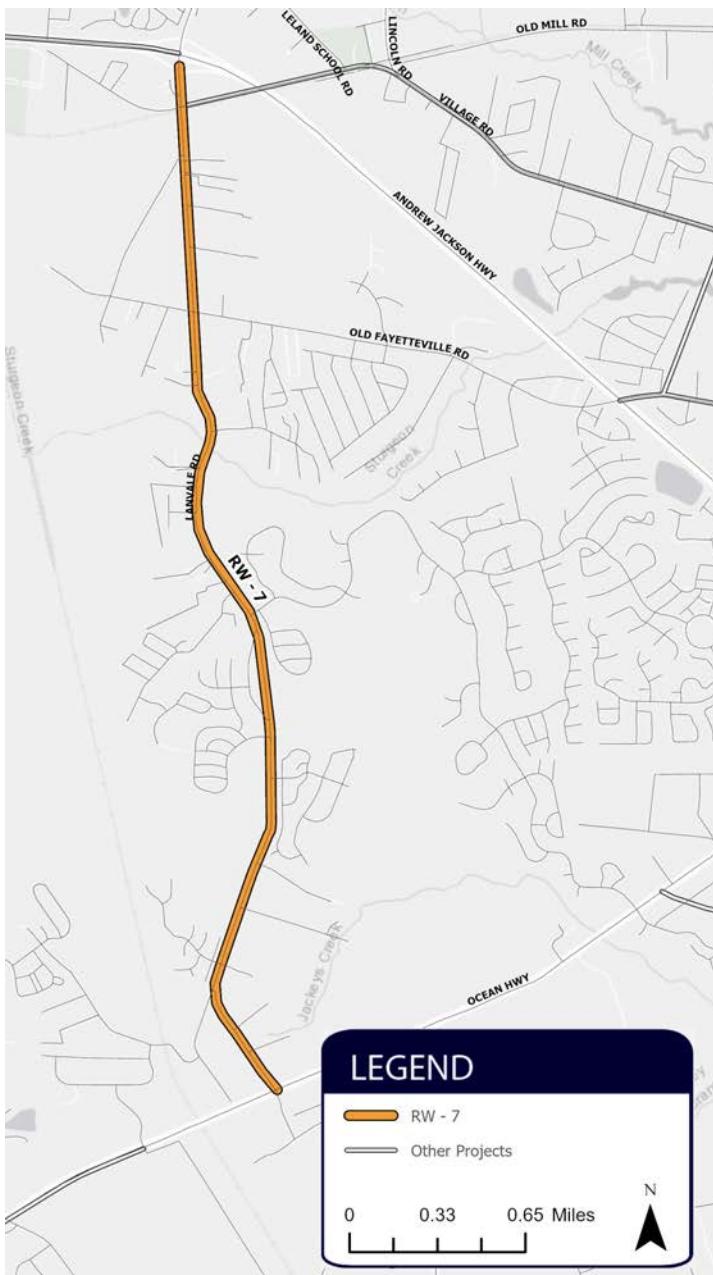
Project Facts

From	SR1100/River Road
To	Access Road
Route Number(s)	US421
Length (miles)	0.40
Jurisdiction(s)	New Hanover County, Town of Carolina Beach
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	40,400
Daily Traffic Volume (Vehicles per Day)	31,021
Crash Rate	213



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Bridge Replacement	4	Y	12'	N/A	10' MUP	2040	\$149.1



Lanvale Road NE Widening

Project ID: RW-7

The purpose of this project is to improve congestion on Lanvale Road NE between US17 and US76.

Project Facts

From	US17
To	US74/76
Route Number(s)	SR1438
Length (miles)	3.79
Jurisdiction(s)	Town of Leland, Brunswick County
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	2
Existing Capacity	23,100
Daily Traffic Volume (Vehicles per Day)	20,430
Crash Rate	685

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	Y	12'	23'	10' MUP	2040	\$64.6

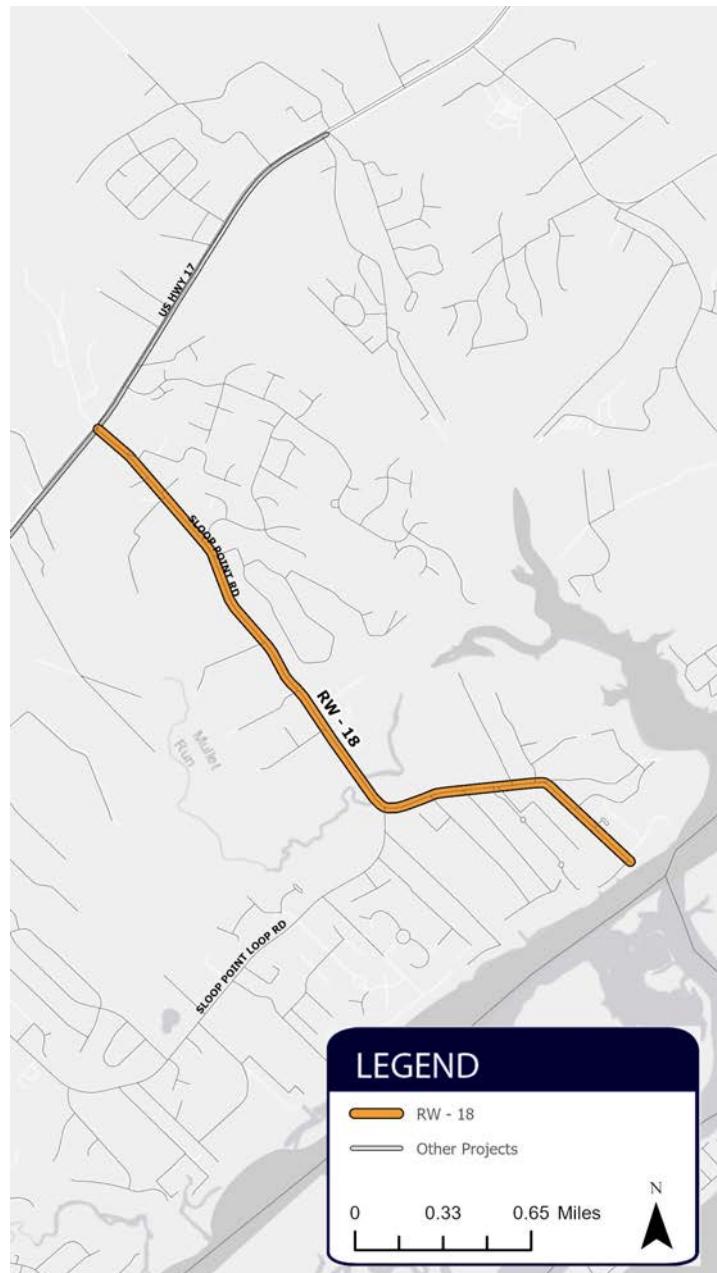
Sloop Point Road Modernization

Project ID: RW-18

The purpose of this project is to improve safety on Sloop Point Road from US17 to the terminus of Sloop Point Road and bring the roadway up to current design standards.

Project Facts

From	US17
To	Sloop Point Road terminus
Route Number(s)	SR1561
Length (miles)	2.78
Jurisdiction(s)	Pender County
Facility Classification	Minor Collector
Number of Existing Travel Lanes	2
Existing Capacity	Not Available
Daily Traffic Volume (Vehicles per Day)	8,652
Crash Rate	370



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Modernization	2	N	12'	N/A	10' MUP	2040	\$8.9



US421/74/NC133 & US17/76 Merge Lane Addition

Project ID: RW-226

The purpose of this project is to improve congestion and connectivity at the intersection of US421 and US17/74/76.

Project Facts

Route Number(s)	US421, US17/74/76			
Jurisdiction(s)	Brunswick County			
Facility Classification	Freeway/Expressway, Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	0	0	0	1
Existing Capacity	66,000			
Daily Traffic Volume (Vehicles per Day)	57,412			
Crash Rate	17			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Interchange Improvements	NB	SB	EB	WB	N	N	12'	N/A			
	0	0	0	2							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
Widen to provide additional WB lane from existing ramp to east of Brunswick River; Includes the widening of Alligator Creek Bridge				2040		\$20.7					

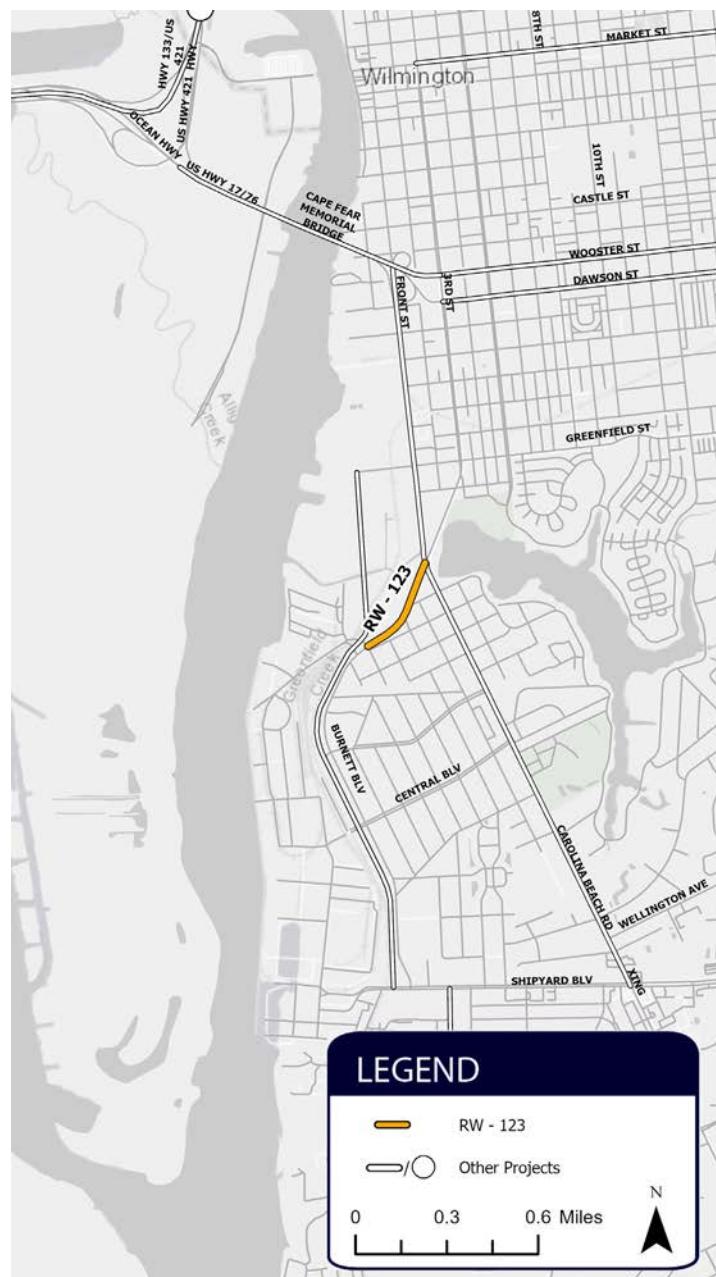
Burnett Blvd Widening

Project ID: RW-123

The purpose of this project is to improve congestion on Burnett Boulevard between Carolina Beach Road and Myers Street.

Project Facts

From	US421/Carolina Beach Road
To	Myers Street
Route Number(s)	SR1140
Length (miles)	0.40
Jurisdiction(s)	City of Wilmington
Facility Classification	Major Collector
Number of Existing Travel Lanes	2
Existing Capacity	10,000
Daily Traffic Volume (Vehicles per Day)	9,210
Crash Rate	65



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	3	N	11'	N/A	N/A	2045	\$8.8

Project Facts	
From	Pine Grove Drive
To	US17/76/Oleander Drive
Route Number(s)	N/A
Length (miles)	2.84
Jurisdiction(s)	City of Wilmington
Facility Classification	Major Collector
Number of Existing Travel Lanes	2
Existing Capacity	14,400
Daily Traffic Volume (Vehicles per Day)	17,987
Crash Rate	1,034

Greenville Loop Road Widening

Project ID: RW-102

The purpose of this project is to improve congestion on Greenville Loop Road between Pine Grove Drive and Oleander Drive.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Road Widening	4	Y	12'	23'	10' MUP	2045	\$81.4

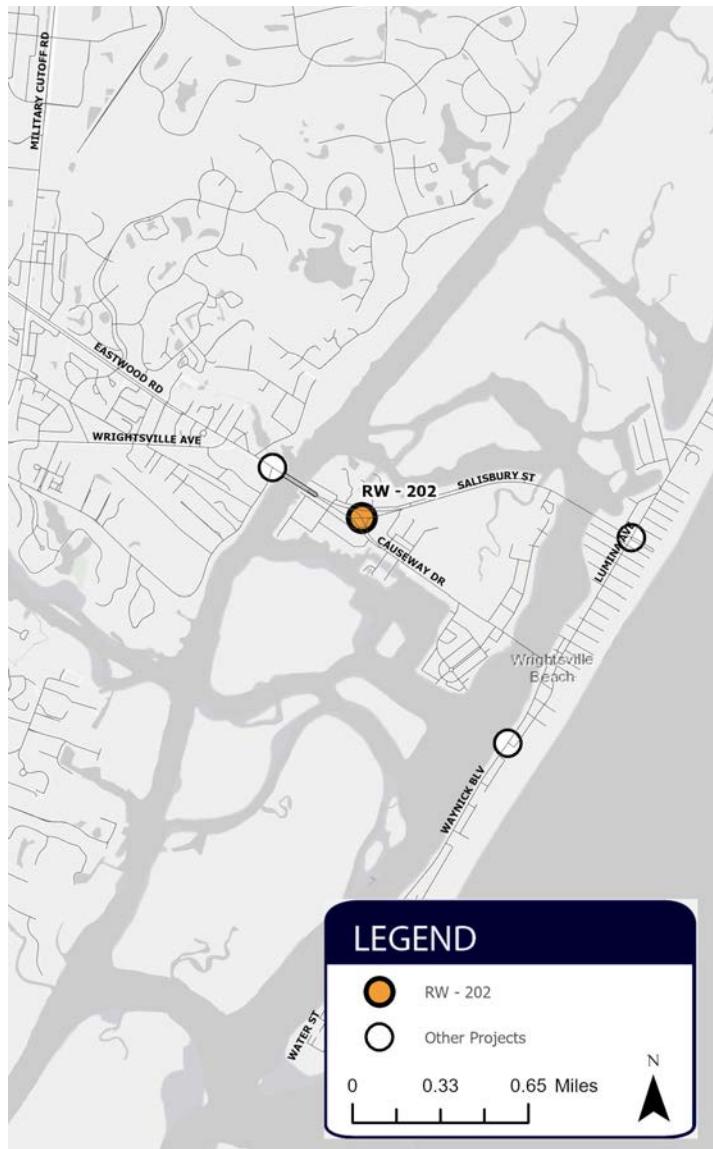
US74/Salisbury Street & US76/Causeway Drive Roundabout

Project ID: RW-202

The purpose of this project is to improve safety and congestion at the intersection of Salisbury Street and Causeway Drive.

Project Facts

Route Number(s)	US74, US76			
Jurisdiction(s)	Town of Wrightsville Beach			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	0	0	1	1
Existing Capacity	18,000/39,000			
Daily Traffic Volume (Vehicles per Day)	8,123/15,344			
Crash Rate	860			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
	NB	SB	EB	WB							
Intersection Improvement	N/A	N/A	N/A	N/A	Y	N	12'	10' Painted			
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
1-lane roundabout with slip lanes				2045		\$53.3					



NC133/River Road SE Widening

Project ID: RW-51

The purpose of this project is to improve congestion on River Road between US17/74/76 and Rabon Way.

Project Facts

From	US17/74/76
To	Rabon Way SE
Route Number(s)	NC133
Length (miles)	4.16
Jurisdiction(s)	Brunswick County, Town of Leland, Town of Belville
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	2
Existing Capacity	23,100
Daily Traffic Volume (Vehicles per Day)	17,632

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
Road Widening	4	Y	11'	23'	10' MUP	2045	\$165.0

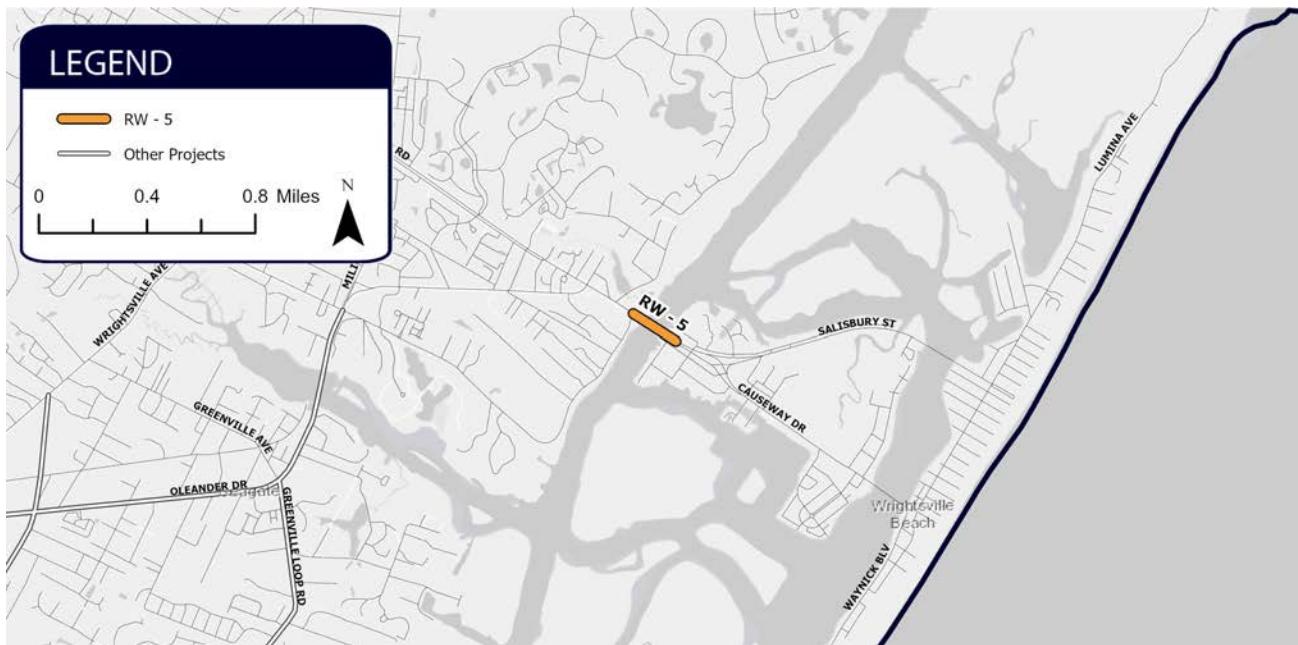
US74/76/ Heide Trask Bridge Replacement

Project ID: RW-5

The purpose of this project is to improve safety, mobility, connectivity, and required replacement of the Heide Trask Bridge.

Project Facts

From	Airlie Road
To	Causeway Drive
Route Number(s)	US74 / US76
Length (miles)	0.16
Jurisdiction(s)	City of Wilmington, Town of Wrightsville Beach
Facility Classification	Principal Arterial
Number of Existing Travel Lanes	4
Existing Capacity	29,300
Daily Traffic Volume (Vehicles per Day)	26,541
Crash Rate	377



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
High Rise Bridge Replacement/Road Improvement	4	Y	12'	N/A	10' MUP 5' Bike Lane	2045	\$234.5



Center Drive Extension (Segment 1)

Project ID: RW-29

The purpose of this project is to improve mobility and connectivity of Center Drive between Washington Acres Road and Whitebridge Road.

Project Facts

From	SR1582/ Washington Acres Road
To	Whitebridge Road
Route Number(s)	N/A
Length (miles)	0.78
Jurisdiction(s)	Pender County
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	12'	N/A	5' Sidewalk 5' Bike Lane	2045	\$15.1

Center Drive Extension (Segment 2)

Project ID: RW-30

The purpose of this project is to improve mobility and connectivity of Center Drive between Whitebridge Road and Lark Lane.

Project Facts

From	Whitebridge Road
To	Lark Lane
Route Number(s)	N/A
Length (miles)	1.72
Jurisdiction(s)	Pender County
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	12'	N/A	5' Sidewalk 5' Bike Lane	2045	\$31.6



Center Drive Extension (Segment 3)

Project ID: RW-31

The purpose of this project is to improve mobility and connectivity of Center Drive between Lark Lane and Scotts Hill Loop Road.

Project Facts	
From	Lark Lane
To	Scotts Hill Loop Road
Route Number(s)	N/A
Length (miles)	0.63
Jurisdiction(s)	Pender County
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

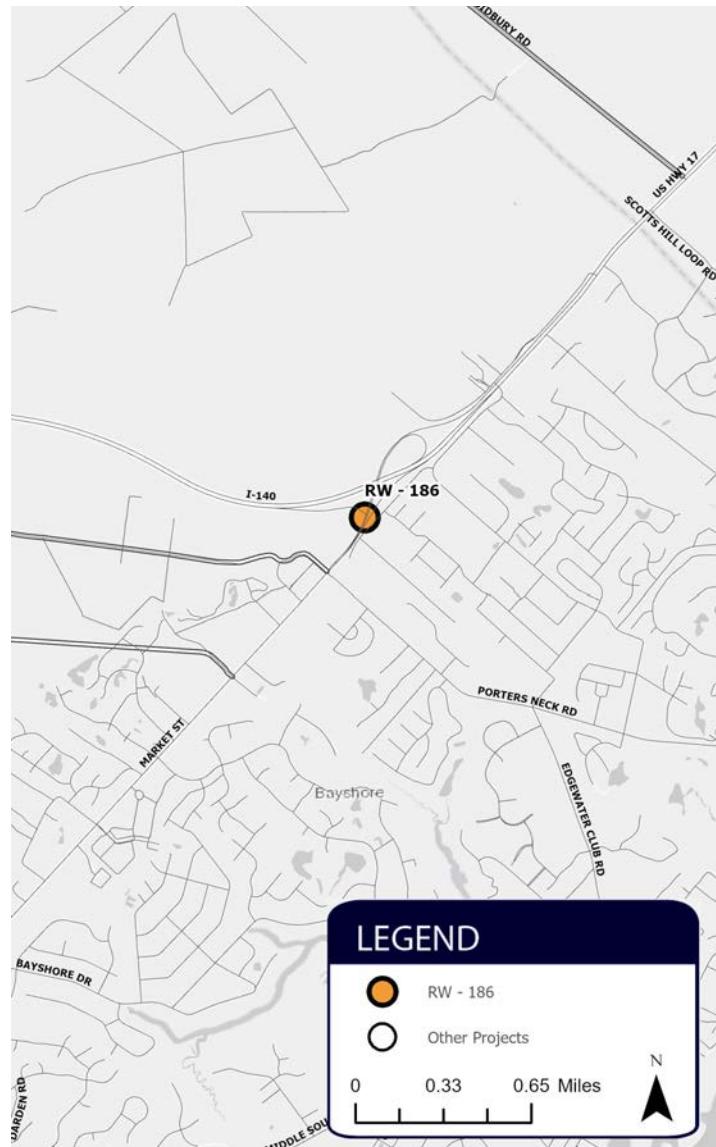
Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	12'	N/A	5' Sidewalk 5' Bike Lane	2045	\$12.0

US17/17 BUS & NC140 Interchange Improvements

Project ID: RW-186

The purpose of this project is to improve congestion and connectivity at the intersection of US17/17 BUS and NC140.

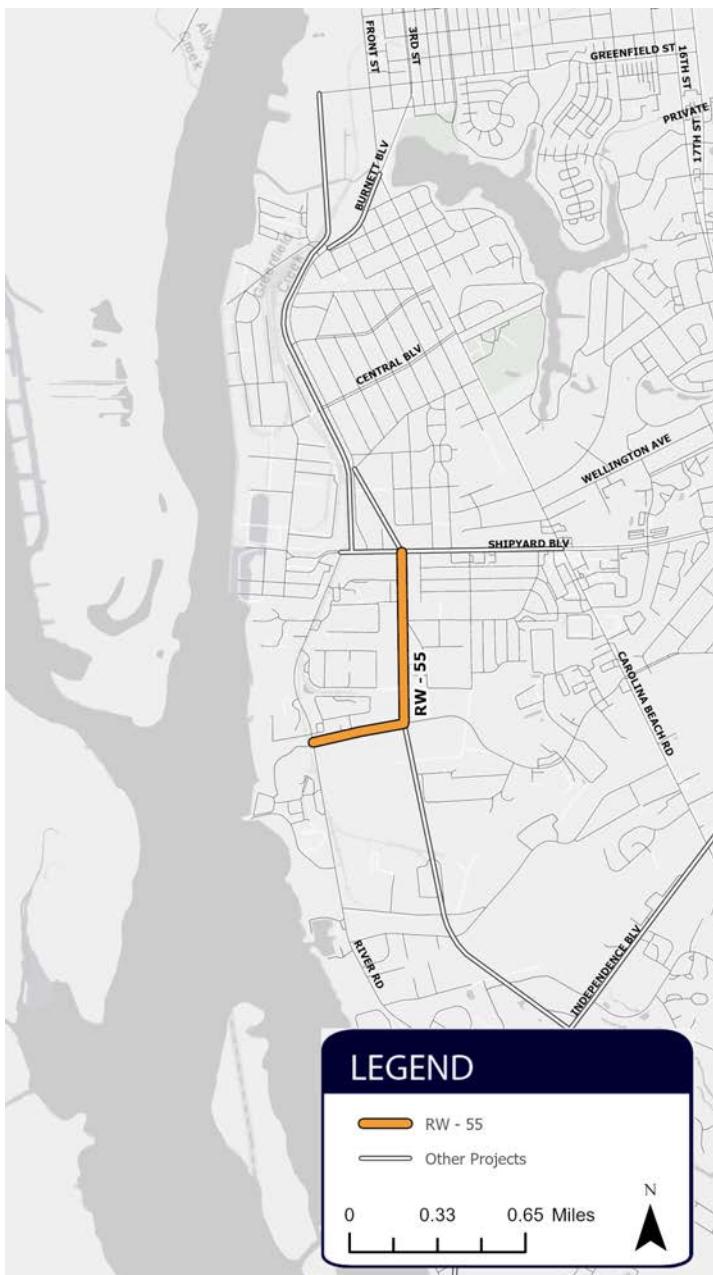


Project Facts

Route Number(s)	US17/17 BUS, NC140			
Jurisdiction(s)	New Hanover County			
Facility Classification	Freeway/Expressway, Principal Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	0	0
Existing Capacity	49,000/68,000			
Daily Traffic Volume (Vehicles per Day)	46,539/25,465			
Crash Rate	52			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks			
Interchange Improvements	NB	SB	EB	WB	N	N	12'	10' Painted (where applicable)			
	2	2	0	0							
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)					
				2045		\$21.3					



River Road Realignment

Project ID: RW-55

The purpose of this project is to improve connectivity and mobility on River Road between Burnett Boulevard and River Road.

Project Facts

From	Raleigh Street
To	US117/ Shipyard Blvd
Route Number(s)	SR1100
Length (miles)	0.88
Jurisdiction(s)	City of Wilmington
Facility Classification	Minor Arterial
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	12'	N/A	N/A	2045	\$20.3

Sidbury Road Modernization

Project ID: RW-23

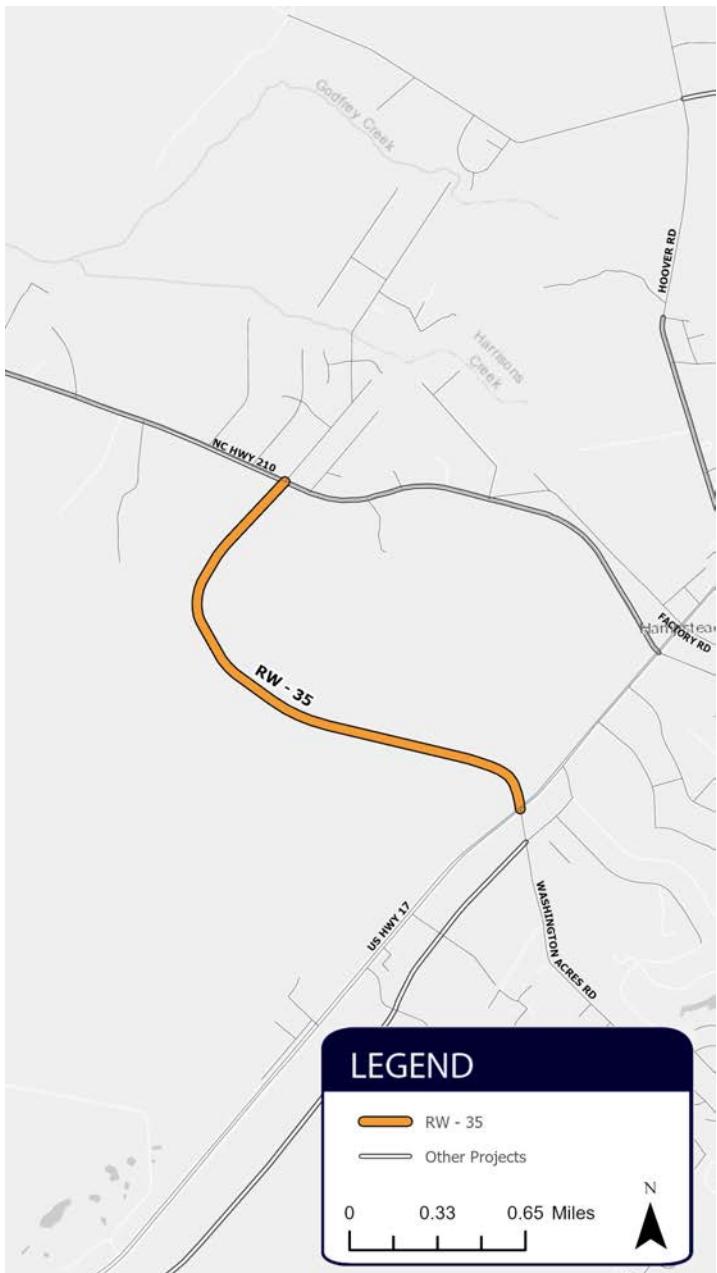
The purpose of this project is to improve safety on Sidbury Road between Blue Clay Road and US17 and bring the roadway up to current design standards.

Project Facts	
From	Blue Clay Road
To	US17
Route Number(s)	SR1572
Length (miles)	7.23
Jurisdiction(s)	New Hanover County
Facility Classification	Minor Collector
Number of Existing Travel Lanes	2
Existing Capacity	23,100
Daily Traffic Volume (Vehicles per Day)	2,745
Crash Rate	4,007



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
Modernization	2	N	12'	N/A	10' MUP	2045	\$19.2



Harrison Creek Road Extension (Segment 3)

Project ID: RW-35

The purpose of this project is to improve mobility and connectivity on Harrison Creek Road between Holiday Drive and the realigned intersection of US17 and Washington Acres Road.

Project Facts	
From	An extension of Holiday Drive
To	US17 & Washington Acres Road (realigned)
Route Number(s)	N/A
Length (miles)	2.27
Jurisdiction(s)	Pender County
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Proposed Project Cross-Section

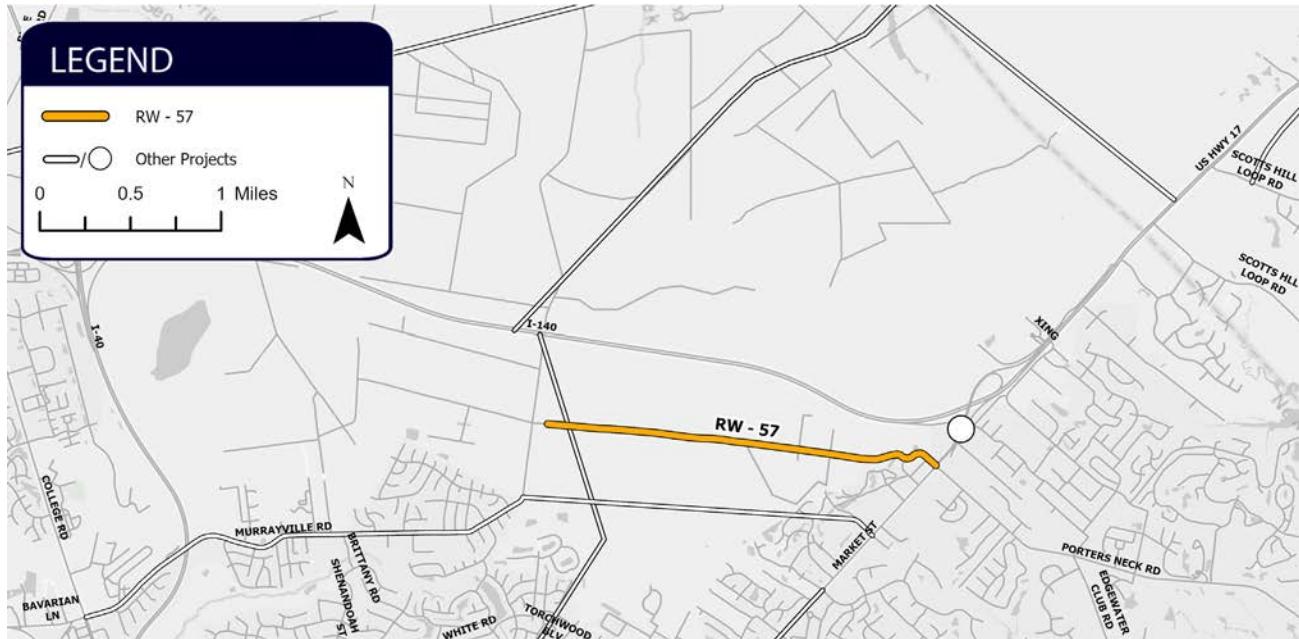
Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Cost Estimate (in millions)
New Road on New Location	2	N	12'	N/A	5' Sidewalk 5' Bike Lane	2045	\$45.4

Project Facts	
From	Military Cutoff Road Extension
To	US17 BUS/Market Street
Route Number(s)	N/A
Length (miles)	2.50
Jurisdiction(s)	New Hanover County
Facility Classification	Local
Number of Existing Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Plantation Road Extension

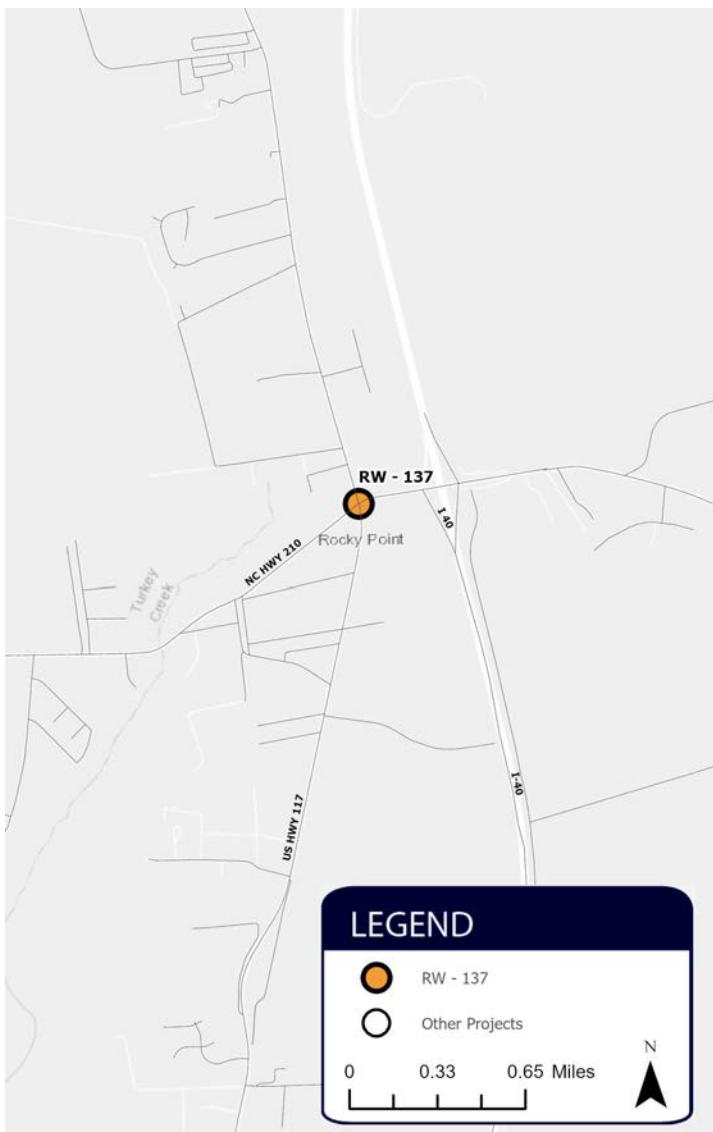
Project ID: RW-57

The purpose of this project is to improve connectivity by extending Plantation Road to Porters Neck Road, providing additional access to US17 BUS/Market Street.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Road on New Location	2	N	11'	N/A	10' MUP	2045	\$103.5



US117 & NC210 Intersection Improvements

Project ID: RW-137

The purpose of this project is to improve safety and operations at the intersection of US117 and NC210.

Project Facts				
Route Number(s)	US117, NC210			
Jurisdiction(s)	Pender County			
Facility Classification	Minor Arterial			
	NB	SB	EB	WB
Number of Existing Travel Lanes	3	3	2	2
Existing Capacity	25,000/25,000			
Daily Traffic Volume (Vehicles per Day)	7,630/13,794			
Crash Rate	2,056			

Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
Intersection Improvement	3	3	2	2	Y	N	12'	10' Painted						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
Intersection realignment & streetscape, includes 5' sidewalk				2045		\$2.3								

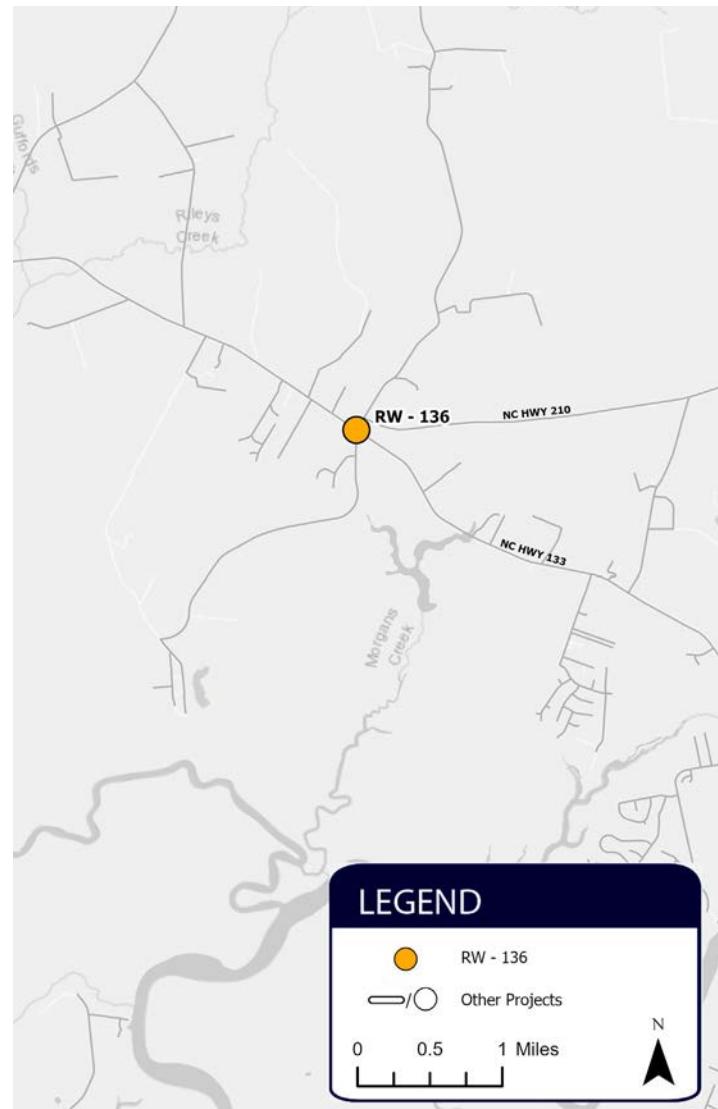
NC210 & NC133 Intersection Improvements

Project ID: RW-136

The purpose of this project is to improve safety and mobility at the intersection of NC210, NC133, and Clarks Landing Loop Road.

Project Facts

Route Number(s)	NC210, NC133			
Jurisdiction(s)	Pender County			
Facility Classification	Minor Arterial, Minor Collector, Local			
	NB	SB	EB	WB
Number of Existing Travel Lanes	1	1	2	2
Existing Capacity	24,931/17,670			
Daily Traffic Volume (Vehicles per Day)	795/1,680			
Crash Rate	484			



Proposed Project Cross-Section

Improvement Type	Total Lanes				Realignment (Y/N)	Grade Separated (Y/N)	Lane Width	Crosswalks						
	NB	SB	EB	WB										
Intersection Improvements	1	1	2	2	Y	N	12'	10' Painted						
Additional Notes				Planning Horizon Year		Planning Year Cost (millions)								
Realign existing intersection				2045		\$2.9								

Project Facts	
From	US17 & I-140
To	US421
Route Number(s)	I-140
Length (miles)	Approx. 9.5
Jurisdiction(s)	New Hanover County, Brunswick County
Facility Classification	Toll Facility/Future Interstate
No. of Ex. Travel Lanes	N/A
Existing Capacity	N/A
Daily Traffic Volume (Vehicles per Day)	N/A
Crash Rate	N/A

Cape Fear Crossing

Project ID: U-4738

The Cape Fear Crossing is needed to improve traffic flow and enhance freight movements beginning in the vicinity of US 17 and I-140 in Brunswick County, across the Cape Fear River to US 421 near the Port of Wilmington in southern New Hanover County. Finally, the Cape Fear Crossing would help expedite an evacuation of residents and visitors in the event of a hurricane or other emergency.



Proposed Project Cross-Section

Improvement Type	Total Lanes	Median (Y/N)	Lane Width	Median Width	Bicycle/ Pedestrian Facility Type	Project Horizon Year	Planning Year Cost (in millions)
New Route on New Location	4	Y	12'	TBD	Separated Bike/ Ped Facilities	2045	\$1,200 (Total) \$158.6 (Funded)

Roadway Complete Project List

Project ID	Project Name	From	To
RW-1	Bradley Creek Bridge on Oleander Dr	N/A	N/A
RW-2	Manly Ave Connectivity	Manly Ave	MLK
RW-3	NC133 Connectivity to I-40	NC133	I-40
RW-4	Connect Greenville Loop Rd to Masonboro Sound Rd	B Rd	Joshua Ln
RW-5	Heide Trask Bridge Replacement	Airlie Rd	Causeway Dr
RW-6	Hoover Rd Road Widening	US17	Stacey Greg Rd
RW-7	Widen Lanvale Rd	US17	US76
RW-8	Holly Shelter/Sidbury Connection	Sidbury Rd	Holly Shelter Rd
RW-9	Widen Echo Farms Blvd	Belfairs Dr	Independence Blvd
RW-10	Connect New Centre Dr and Clear Run Dr	New Centre Dr	Clear Run Dr
RW-11	Make College Rd a Boulevard	Market St	Oleander Dr
RW-12	College Rd Overpass	Peachtree Ave	Spirea Dr
RW-13	Connect Godfrey Creek Rd to Hwy 210	Godfrey Creek Rd	Saint Johns Church Rd
RW-14	Azalea Dr/Gardenia Ln Connection	Azalea Dr	Gardenia Ln
RW-15	Connect Tiburon Dr to S 41st Street	Tiburon Dr	41st St
RW-16	Widen Myrtle Grove Road	Masonboro Loop Rd	Carolina Beach Rd
RW-17	Add Medians on Oleander	Dawson St	Military Cutoff Rd
RW-18	Widen Sloop Point Rd	US17	Sloop Point Rd
RW-19	Goodman Road Overpass of I-140	Goodman Rd	Goodman Rd
RW-20	Hwy 17/Causeway Improvements Phase II	Hwy 421	Hwy 74/76
RW-21	Hwy 74/76 Frontage Road	Lanvale/Mt Misery Rd	WMPO Boundary
RW-22	Hwy 87/US 17 S Overpass Interchange	NC 87	Zion Church Rd
RW-23	Sidbury Road Improvements	Blue Clay Rd	US 17
RW-24	Holly Shelter Road Improvements	I 40	NC 210
RW-25	Piner Road Improvements and Intersection Realignment	S. College Rd	Myrtle Grove Rd
RW-26	Blue Clay Rd Improvements	N Kerr Ave	US 117
RW-27	Market Street Frontage Rd	Middle Sound Loop	Bayshore Dr
RW-28	Blake Farm North Connection	Intersection of proposed Western Parallel Collector and Unnamed Blake Farm Street	A point 800' east of US 17 at proposed intersection with Center Dr extension

Project ID	Project Name	From	To
RW-29	Center Dr Extension Segment 1	Washington Acres Rd	About 600' east of US 17 along whitebridge Rd
RW-30	Center Dr Extension Segment 2	About 600' east of US 17 along Whitebridge Road	A point 800' east of us 17 near Lark Lane
RW-31	Center Dr Extension Segment 3	Roughly 800' east of US 17 near Lark Lane	Roughly 1,000' east of US 17 along Scotts Hill Loop Road
RW-32	Christian Chapel Road Extension	Current end of Christian Chapel Road	roughly 2,000' west of US 17
RW-33	Harrison Creek Road Extension Segment 1	Current terminus of Harrison Creek Rd	Current terminus of Griffith Dr
RW-34	Harrison Creek Road Extension Segment 2	Intersection of Harrison Creek Rd Extension Segment 1 and Griffith Dr	Extension of Holliday Drive
RW-35	Harrison Creek Road Extension Segment 3	An extension of Holliday Dr	Realigned intersection of US 17 and Washington Acres Rd (per U-5732 Hampstead Median Project)
RW-36	US 17 Superstreet from Sloop Point Loop Rd to NC210	Sloop Point Loop Road	NC 210
RW-37	Western Parallel Collector Segment 1	Intersection of NC 210	A point roughly half mile west of US 17
RW-38	Western Parallel Collector Segment 2	a point roughly half mile west of US 17	Roughly 1,800' north of the current end of Christian Chapel Rd
RW-39	Hampstead Bypass	Porters Neck Road	Sloop Point Road
RW-40	Holiday Drive Extension	NC 210	Hoover Road
RW-41	I-74 Upgrade	US17/74/76	WMPO Boundary
RW-42	US17 Access Management	US 74/76	WMPO Boundary
RW-43	NC133/Castle Hayne Road Widening	US74/Martin Luther King Jr Parkway	Holly Shelter Road
RW-44	Gordon Road Widening	NC 132 Interchange	Wood Sorrell Road
RW-45	Gordon Road Widening	NC 132 Interchange	US 17BUS/Market Street
RW-46	US117/NC132/College Road Widening	US117/Shipyard Boulevard	Wilshire Boulevard

Project ID	Project Name	From	To
RW-47	US17BUS/Market Street Access Management from Colonial Dr to New Centre Dr	Colonial Drive	New Centre Drive
RW-48	US17BUS/Market Street Access Management from US74/MLK Pkwy to Military Cutoff Rd	US74/Martin Luther King Jr Parkway	Military Cutoff Road
RW-49	US17BUS/Market Street Access Management from Military Cutoff Rd to Porters Neck Rd	Military Cutoff Road	Porters Neck Road
RW-50	US117/NC132/College Road Upgrade	New Centre Drive	Gordon Road
RW-51	NC 133/River Road Widening	US17/74/76	Rabon Way SE
RW-52	Scientific Park Drive Extension	23rd Street	McClammy Street
RW-53	US421/Carolina Beach Road Widening	Piner Road	Sanders Road
RW-54	Sanders Road Extension	US421/Carolina Beach Road	Grissom Road
RW-55	River Road Relocation	US421/Burnett Boulevard	River Road
RW-56	N 23rd Street Widening	NC133/Castle Hayne Road	US74/Martin Luther King Jr Parkway
RW-57	Plantation Road Extension	Military Cutoff Road Extension	US17BUS/Market Street
RW-58	Natures Lane Extension	Mount Misery Road	Cedar Hill Road
RW-59	Magnolia Drive Extension	Mount Misery Road	Old Mill Road
RW-60	US17 Safety Improvements	Sloop Point Road	WMPO Boundary
RW-61	River Road Widening	Independence Boulevard	US421/Carolina Beach Road
RW-62	River Road Widening	Independence Boulevard	US421/Carolina Beach Road
RW-63	US117/NC132/College Road Upgrade	US17BUS/Market Street	Randall Parkway
RW-64	NC133/Castle Hayne Road Widening	Division Drive	I-140/Wilmington Bypass
RW-65	US421/Front Street Widening	US76/421/Cape Fear Memorial Bridge	US421/Burnett Boulevard
RW-66	US421/Carolina Beach Road Upgrade from US421/Burnett Blvd to US117/Shipyard Blvd	US421/Burnett Boulevard	US117/Shipyard Boulevard
RW-67	US421/Carolina Beach Road Upgrade from US117/Shipyard Blvd to George Anderson Dr	US117/Shipyard Boulevard	George Anderson Drive
RW-68	US17BUS/Market Street Road Diet	17th Street	Covil Avenue
RW-69	Kerr Avenue Extension	Wrightsville Avenue	US76/Oleander Drive
RW-70	US117/NC132/College Road Upgrade	Randall Parkway	US76/Oleander Drive
RW-71	Kerr Avenue Widening	Patrick Avenue	Wrightsville Avenue

Project ID	Project Name	From	To
RW-72	NC133 River Road Upgrade	US17/74/76	Old River Road
RW-73	Village Road Widening	Old Fayetteville Road	Lanvale Road
RW-74	Military Cutoff Road Extension	US17BUS/Market Street	US17/Wilmington Bypass
RW-75	Independence Boulevard Extension	Randall Parkway	US74/Martin Luther King Jr. Parkway
RW-76	Blueberry Road Upgrade	US421	NC210
RW-77	Basin Street Extension	Old Fayetteville Road	Village Road
RW-78	Old Fayetteville Road Widening	Village Road	US74/76/Andrew Jackson Highway
RW-79	US17 Superstreet from Washington Acres Rd to Sloop Point Rd	Washington Acres Road	Sloop Point Road
RW-80	US117/NC132/College Road Widening	Gordon Road	US421/Carolina Beach Road
RW-81	Hurst Drive Extension	Kerr Avenue	Riegel Road
RW-82	Saint Nicholas Road Extension	Cardinal Drive	Station Road
RW-83	Dogwood Lane Extension	Wrightsville Avenue	Pine Grove Drive
RW-84	Head Road Extension	Greenville Loop Road	Masonboro Sound Road
RW-85	Wilshire Boulevard Extension	US117/132/College Road	MacMillan Avenue
RW-86	Randall Drive Extension	Reynolds Drive	Hooker Road
RW-87	US17BUS/Market Street Improvements	New Centre Drive	Gordon Road
RW-88	Wrightsville Avenue Improvements from US117/NC132/College Rd to Hawthorne Dr	US117/NC132/College Road	Hawthorne Drive
RW-89	Wrightsville Avenue Improvements from Hawthorne Dr to US76/Oleander Dr	Hawthorne Drive	US76/Oleander Drive
RW-90	Wrightsville Avenue Road Diet	Castle Street	Independence Boulevard
RW-91	Wrightsville Avenue Improvements from Independence Blvd to US117/NC132/College Rd	Independence Boulevard	US117/NC132/College Road
RW-92	Dawson Street Streetscape	US17BUS/South 3rd Street	US76/Oleander Drive
RW-93	Wooster Street Streetscape	US17BUS/South 3rd Street	US76/Oleander Drive
RW-94	Castle Hayne Road Streetscape	Northeast Cape Fear River	US117/NC132/College Road
RW-95	MacMillan Avenue Improvements	Cedar Avenue	Pine Grove Drive

Project ID	Project Name	From	To
RW-96	Wilshire Boulevard Improvements	Wrightsville Avenue	MacMillan Avenue
RW-97	NC210 Improvements	Navillus Boulevard	US17
RW-98	Wrightsville Avenue Improvements from Pavillion Place to Heide Trask Drawbridge	Pavillion Place	Heide-Trask Drawbridge
RW-99	Murrayville Road Widening	US117/NC132/College Road	Plantation Road
RW-100	US117/NC132/College Road	US117/NC132/College Road Southbound Off-ramp	US74/MLK Parkway right-turn lane
RW-101	Sanders Road Widening	River Road	US421/Carolina Beach Road
RW-102	Greenville Loop Road Widening	Pine Grove Drive	US76/Oleander Drive
RW-103	Center Drive Extension	Washington Acres Road	Factory Road
RW-104	Rice Gate Way Extension	Rice Gate Way	Mallory Creek Road
RW-105	Wayne Street Extension	Wayne Street NE	Royal Street NE
RW-106	US17 to NC133 Connection	US17	NC133
RW-107	Cedar Hill Road Extension	Cedar Hill Rd NE	Village Road NE
RW-108	I-74 Upgrade	I-140	WMPO Boundary
RW-109	US17 Streetscape	US74/76	I-140
RW-110	Village Road Streetscape	Town Hall Drive	US74/76
RW-111	North College Road Widening	Murrayville Road	NC133/Castle Hayne Road
RW-112	Country Club Drive Widening	US17	Sloop Point Loop Road
RW-113	Causeway Additional Widening	US17/74/421 Confluence	NC133/River Road
RW-114	Love Grove Additional Access	Nixon Street	King Street
RW-115	Internal Port Access Road	Greenfield Street	Shipyard Boulevard
RW-116	Oleander Dr/Military Cutoff Rd Access Management	Pine Grove Drive	Drysdale Drive
RW-117	River Road Realignment from Independence Blvd to Raleigh St	Independence Boulevard	Raleigh Street
RW-118	Dedicated Truck Interstate Access	US17/74/76	Woodbine Street
RW-119	River Road Realignment from Burnett Blvd to Raleigh St	Burnett Boulevard	River Road
RW-120	Shipyard Boulevard Access Management	US421/Carolina Beach Road	Rutledge Drive
RW-121	Carolina Beach Road & Shipyard Boulevard Left Turn	US421/Carolina Beach Road	US117/Shipyard Boulevard

Project ID	Project Name	From	To
RW-122	Shipyard Boulevard Widening	US421/Carolina Beach Road	US117/Shipyard Boulevard
RW-123	Burnett Boulevard Widening	US421/Carolina Beach Road	Myers Street
RW-124	Shipyard Boulevard Speed Sensors and Warning	US421/Carolina Beach Road	River Road
RW-125	Kerr Avenue Widening	Randall Parkway	US74/Martin Luther King Jr. Parkway
RW-126	I-140 Wilmington Bypass	US421	US74/76 Andrew Jackson Highway
RW-127	Cape Fear Memorial Bridge Replacement	3rd Street	US421
RW-128	Intersection Improvements at Washington Acres Rd and US17	N/A	N/A
RW-129	Intersection Improvements at Navaho Trl and Masonboro Loop Rd	N/A	N/A
RW-130	Intersection Improvements at US17 and Wendover Ln	N/A	N/A
RW-131	Traffic Calming in Carolina Place	N/A	N/A
RW-132	Intersection Improvements at N 10th St and Princess St	N/A	N/A
RW-133	Intersection Improvements at US17 and Scotts Hill Loop Rd	N/A	N/A
RW-134	Intersection Improvements at US17 and Scotts Hill Medical Drive	N/A	N/A
RW-135	Intersection Improvements at US421/Carolina Beach Rd and Southgate Rd	N/A	N/A
RW-136	NC210 and NC133 Intersection Improvements	N/A	N/A
RW-137	US117 and NC210 Intersection Improvements	N/A	N/A
RW-138	Roundabout/Speed Tables Needed at Yaupon Dr and Wisteria Dr	N/A	N/A
RW-139	Intersection Improvements at S 21st St and Metts Ave	N/A	N/A
RW-140	Intersection Improvements at US421/Carolina Beach Rd and The Kings Hwy	N/A	N/A
RW-141	Intersection Improvements at Piner Rd/Grissom Rd/Myrtle Grove Rd	N/A	N/A
RW-142	Intersection Improvements at Wrightsville Ave and US117/College Rd	N/A	N/A
RW-143	Intersection Improvements at US76/Oleander Dr and Dawson St	N/A	N/A

Project ID	Project Name	From	To
RW-144	Intersection Improvements at Independence Blvd and Wrightsville Ave	N/A	N/A
RW-145	Intersection Improvements at US74/Eastwood Rd and Town Center Dr	N/A	N/A
RW-146	Intersection Improvements at 17th St and George Anderson Dr	N/A	N/A
RW-147	Intersection Improvements at 41st St and Lake Ave	N/A	N/A
RW-148	Intersection Improvements at US74/Eastwood Rd and Rogersville Rd	N/A	N/A
RW-149	Intersection Improvements at US17/Market Street and Creekwood Rd	N/A	N/A
RW-150	Middle Sound Loop Rd and Red Cedar Rd Roundabout	N/A	N/A
RW-151	Intersection Improvements at Wrightsville Ave and Military Cutoff Rd	N/A	N/A
RW-152	Road Realignment/Intersection Improvements at Wrightsville Ave and Dawson St	N/A	N/A
RW-153	Intersection Improvements at Wrightsville Ave and Castle St	N/A	N/A
RW-154	Intersection Improvements at US74/Eastwood Rd and Racine Dr	N/A	N/A
RW-155	Intersection Improvements at NC133/Castle Hayne Rd and Oakley Rd	N/A	N/A
RW-156	George Anderson Dr and Chippenham Dr Roundabout	N/A	N/A
RW-157	Breezewood Dr/Fairview Dr/George Anderson Dr Roundabout	N/A	N/A
RW-158	Intersection Improvements at Bailey Buck Rd/Greenville Sound Rd/Greenville Loop Rd	N/A	N/A
RW-159	Intersection Improvements at Pine Grove Dr and Beasley Rd	N/A	N/A
RW-160	Lanvale Rd and Old Fayetteville Rd Intersection Improvements	N/A	N/A
RW-161	Caswell St/Wilshire Blvd/Wrightsville Ave Roundabout	N/A	N/A
RW-162	Replace the Heide Trask Drawbridge	Airlie Road	Causeway Drive
RW-163	Village, Old Mill, and Lincoln Roads Roundabout	N/A	N/A
RW-164	Navassa, Old Mill, and Cedar Hill Roads Roundabout	N/A	N/A
RW-165	US74/76/I-140 Interchange Improvement	N/A	N/A

Project ID	Project Name	From	To
RW-166	Sidbury Road/Hampstead Bypass Interchange	N/A	N/A
RW-167	US17/Champion/Pinnacle Intersection Improvements	N/A	N/A
RW-168	US17, Edens Intersection Improvements	N/A	N/A
RW-169	US17, Gillicup median closure	N/A	N/A
RW-170	US17, Groves Point Intersection Improvements	N/A	N/A
RW-171	US17, Morris Intersection Improvements	N/A	N/A
RW-172	US17, Quarter Horse, Topsail Greens Intersection	N/A	N/A
RW-173	US17, Union Bethel Intersection Improvements	N/A	N/A
RW-174	US17 & Factory Road/Peanut Road Intersection	N/A	N/A
RW-175	NC210 & Island Creek Road Intersection	N/A	N/A
RW-176	Old Fayetteville Road Interchange	N/A	N/A
RW-177	Kerr Avenue/MLK Jr Pkwy Intersection	N/A	N/A
RW-178	Market Street/MLK Jr Pkwy Flyovers	N/A	N/A
RW-179	Carolina Beach Road & College Road Flyovers	N/A	N/A
RW-180	Isabel Holmes Bridge Flyovers	N/A	N/A
RW-181	Blue Clay Road Interchange	N/A	N/A
RW-182	US117/NC132/College & MLK Pkwy Intersection	N/A	N/A
RW-183	US74/Eastwood Road & Market Street Intersection	N/A	N/A
RW-184	US117/NC132/College & US76/Oleander Intersection	N/A	N/A
RW-185	US74/Eastwood Road & Military Cutoff Road	N/A	N/A
RW-186	US17BUS & US17 Intersection	N/A	N/A
RW-187	Country Club/Doral Drive and Sloop Point Loop Road	N/A	N/A
RW-188	New Centre Drive & Market Street Intersection	N/A	N/A
RW-189	Saint Andrews Drive & Carolina Beach Road	N/A	N/A
RW-190	Greenville Avenue & Oleander Drive Intersection	N/A	N/A
RW-191	Mohican Trail & Masonboro Loop Rd Roundabout	N/A	N/A
RW-192	Navaho Trail & Masonboro Loop Rd Roundabout	N/A	N/A
RW-193	Myrtle Grove/Piner/Masonboro Loop Rd Roundabout	N/A	N/A

Project ID	Project Name	From	To
RW-194	Beasley Rd & Masonboro Loop Rd Roundabout	N/A	N/A
RW-195	Front Street & Carolina Beach Road Intersection	N/A	N/A
RW-196	NC133/Castle Hayne Road & 23rd Street Roundabout	N/A	N/A
RW-197	US17BUS/Market Street & 17th Street Intersection	N/A	N/A
RW-198	Navassa Road & Old Mill Road Roundabout	N/A	N/A
RW-199	Pine Grove Drive & Greenville Loop Road Roundabout	N/A	N/A
RW-200	Pine Grove Drive & Holly Tree Road Roundabout	N/A	N/A
RW-201	Piner Road & Grissom Road Intersection	N/A	N/A
RW-202	Salisbury Street & Causeway Drive Roundabout	N/A	N/A
RW-203	US74/Salisbury Street & Lumina Avenue Roundabout	N/A	N/A
RW-204	USS North Carolina Battleship Access Management	N/A	N/A
RW-205	Wrightsville Avenue & MacMillan Avenue Roundabout	N/A	N/A
RW-206	Wrightsville Avenue & Wallace Avenue Roundabout	N/A	N/A
RW-207	Oleander Drive & Pine Grove Intersection	N/A	N/A
RW-208	Pine Grove Drive & MacMillan Avenue Intersection	N/A	N/A
RW-209	CBR & Shipyard Blvd Intersection (WB)	N/A	N/A
RW-210	Cape Fear Crossing	US17 & I-140	US421
RW-211	Market Street Access Management Improvements	Station Road	College Road
RW-212	Burnett Blvd Realignment	Southern Blvd	River Road
RW-213	Waynick/Lumina/Causeway	N/A	N/A
RW-214	Airlie Dr/Eastwood Rd Intersection Improvements	N/A	N/A
RW-215	Kerr Ave Extension II	US76/Oleander Drive	US421/Carolina Beach Road
RW-216	CoW Signal Ethernet improvements	N/A	N/A
RW-217	SR1492/Masonboro Loop Road Widening	Grissom Road	Pine Grove Drive
RW-218	Shipyard Blvd Extension	S College Road	Oleander Drive
RW-219	US17BUS/Market Street Road Diet (I of II)	3rd Street	16th Street

Project ID	Project Name	From	To
RW-220	US17BUS/Market Street Road Diet (II of II)	16th Street	Covil Avenue
RW-221	US421/Snow's Cut Bridge Replacement	River Road	Access Road
RW-222	Independence Blvd Road Widening	River Road	US421/Carolina Beach Road
RW-223	Independence Blvd Access Management	US421/Carolina Beach Road	Randall Pkwy
RW-224	Pine Grove Road Widening	US17/76/Oleander Drive	Masonboro Loop Road
RW-225	Murrayville Rd and I-40 Interchange	N/A	N/A
RW-226	US74/421 and US17/76 Merge Lane Addition	N/A	N/A
RW-227	US74/Salisbury Street & Lumina Avenue Streetscape	N/A	N/A

Sources:

- Cape Fear Transportation 2040 MTP (2015)
- WMPO Congestion Management Process (2018)
- Work Cape Fear: Expanding Commuter Options in the Cape Fear Region (2015)
- Wilmington MPO Travel Demand Model (2019)
- 2018 NCDOT Annual Report
- FHWA 2018 Urban Congestion Trends
<https://ops.fhwa.dot.gov/publications/fhwahop19026/index.htm>
- FHWA Level 1 Truck Platooning Research Program, Automated Vehicles Symposium, July 2019
https://www.its.dot.gov/presentations/avs2019/McHale_Truck_PlatooningAVS2019.pdf
- US DOT ITS Research Fact Sheets – Benefits of Intelligent Transportation Systems
https://www.its.dot.gov/factsheets/benefits_factsheet.htm
- NCDOT: Reduced Conflict Intersections
- American Planning Assoc.: "Autonomous Vehicles: Planning for Impacts on Cities & Regions"
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- Networkworld: "Why Smart Cities Are Crucial for Autonomous Cars"
- APA Zoning Practice: "Getting Ready for Driverless Cars"
<https://www.planning.org/publications/document/9138083/>
- Society of Automotive Engineers (SAE) Automation Levels
<https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety>
- USDOT: ITS Joint Program Office
<https://www.its.dot.gov/>
- NCDOT Prioritization Resources
<https://connect.ncdot.gov/projects/planning/Pages/PrioritizationResources.aspx>
- NCDOT State Transportation Improvement Program
 - North Carolina 2018-2027 STIP (2017)
 - North Carolina 2020-2029 STIP (2019)
- NC Moves 2050 Funding Fact Sheet

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APPENDIX L:

Transportation Systems Management and Operations Element

Introduction

Transportation Systems Management and Operations (TSMO) is an integrated set of strategies which can be utilized to optimize the performance of the existing transportation system. TSMO focuses on improving the safety, security, and reliability of the system by enhancing the existing infrastructure to increase roadway capacity, reducing congestion, and integrating transportation and land use planning. TSMO includes a variety of strategies to improve operations and increase capacity, allowing for fewer travel delays. Cape Fear Moving Forward 2045 recommends the implementation of the following TSMO strategies in the Wilmington region:

- Access Management
- Additional Turn Lanes
- Bus Pullouts
- Emergency Vehicle Preemption and Transit Signal Priority
- Improved Signage and Lighting
- Intersection Modifications and Geometric Design Improvements
- Motorist Assistance Program
- Pavement Markings
- Social Media and Smart Apps
- Streetscape Improvements
- Traffic Signal Timing Optimization
- Vehicle Detectors Repair/Replacement
- Traveler Information Systems and Dynamic Message Signs

Recommended Strategies

Access Management

Access management is a set of techniques that can be used by state and local governments to control access to highways, arterials, collector streets, and other roadways. When appropriately implemented, access management can reduce the number of vehicle conflict points, leading to fewer crashes and increased mobility. Access management techniques affect mobility and access by addressing roadway hierarchy, intersection and traffic signal spacing, driveway spacing, medians (and median openings), turn lanes, street connections, and interconnectivity. Good access management can also improve the safety and efficiency of the transportation network. Access management techniques include:

Access Spacing: Access spacing refers to the distance between traffic signals. When this distance is increased, access spacing can improve traffic flow, reducing congestion and improving air quality, particularly along major corridors.

Driveway Spacing: Limiting the number of driveways and increasing the distance between driveways can simplify the merging of traffic and reduce conflict points, eliminating some of the challenges faced by drivers.

Safe Turning Lanes: Dedicated turn lanes, indirect left-turns, U-turns, and roundabouts improve traffic flow and safety. Roundabouts greatly reduce the number of conflict points associated with a traditional intersection and lessen crash severity.

Median Treatments: Center turn lanes, or two-way left-turn lanes (TWLTL), and medians are both highly effective ways to control access and reduce crashes.

Right-of-Way Management: Right-of-way management includes the preservation of right-of-way for future road widening projects; the provision of safe sight distances; the location of access to adjacent land uses; and others.

Access management can be accomplished through municipal codes, development guidelines and regulations, policies, and other directives issued and enforced by NCDOT and the WMPO's member jurisdictions. Ordinances and land development regulations, including limitations on the number of driveways permitted, can be utilized to limit access to roadways. Corridor planning and impact assessments can also be used by the state as well as local jurisdictions to achieve access management. The Technical Review Committee (TRC) process, which reviews site plans for new development, serves to ensure compliance with these regulations.

Development patterns within the Wilmington Urban Area presents significant challenges to access management, most of which occur along major commercial corridors. The Federal Highway Administration (FHWA) defines Corridor Access Management (CAM) as a strategy which seeks to balance the mobility and safety of a roadway with access needs of adjacent land uses. When implemented correctly, access management at the corridor level can improve safety and business. In commercial areas, cross-access should be provided between adjacent parcels (interconnectivity between adjacent parking lots). This cross-access eliminates the need to utilize a major transportation corridor to access an adjacent property. By preserving traffic flow while allowing safe access to neighborhoods and businesses, CAM can benefit every property along a corridor.

In access management, reducing the number of conflict points is critical to increasing roadway capacity, reducing crashes, and decreasing travel time. One strategy to reduce the number of conflict points along corridors is to install median treatments to channelize turning movements, restricting these movements to specific locations. Reducing conflict points also benefits pedestrians and bicyclists. According to the FHWA, driveways are the primary cause of crashes involving pedestrians on sidewalks. Strategies to reduce conflict points and exposure (crossing distance) for pedestrians and bicyclists include reducing the number of driveways, reducing the number of conflict points at driveways (restricting left turns into and out of driveways), providing greater distances between driveways, and providing a safe refuge at pedestrian crossings with raised medians.

The WMPO aims to utilize effective access management to improve safety and connectivity throughout the Wilmington Urban Area. Access management or corridor plans should be completed for all major roadway corridors within the region. It is encouraged that these plans also include a land use component. As properties develop and/or redevelop, local member jurisdictions should follow the access management plans and require those properties to construct connections to adjacent parcels. This strategy will help to balance access with the functional integrity of the transportation system, improving mobility and safety for all users.

Additional Turn Lanes

Turn lanes can be installed to improve safety and efficiency by separating turning vehicles, which are either slowing or stopped, from through traffic. This channelization of turning vehicles can improve traffic flow and reduce crashes, minimizing travel delays. The appropriate length of turn lane storage often depends on existing and anticipated turning volumes during the peak hour. Access management also plays an important role in determining the appropriate locations and lengths for right- and left-turn lanes.

Cape Fear Moving Forward 2045 recommends the study of and, where appropriate, the installation of right- and left-turn lanes to improve mobility and safety at signalized and unsignalized intersections along roadway corridors. The plan recommends the allocation of funding from the WMPO, the WMPO's member jurisdictions, and NCDOT in order to construct additional turn lanes. As development occurs, the WMPO will work with its member jurisdictions to develop applicable access management strategies and determine appropriate turn lane locations and storage lengths through the planning and development review process.

Pedestrians and bicyclists should be considered when implementing additional turn lanes. Turn lanes should not negatively impact the pedestrian realm or disrupt existing or planned bicycle facilities. When feasible, it is recommended that raised medians be utilized to minimize the crossing distance for pedestrians. Careful consideration should be given to corner radii during the design and implementation of new turn lanes. The enlargement of corner radii increases the speed of turning vehicles, which can endanger pedestrians traveling along the roadway.

Bus Pullouts

Bus pullouts offer a designated space for buses to stop out of the flow of traffic. They prioritize through traffic and decrease travel delays by removing stopped buses from through lanes. A new bus pullout was recently constructed on Shipyard Boulevard near the Port of Wilmington utilizing Surface Transportation Block Grant Program-Direct Attributable (STBGP-DA) funds.

Emergency Vehicle Preemption and Transit Signal Priority

Signal preemption is designed to give emergency vehicles the right of way at and through a signalized intersection. Preemption disrupts the normal signal cycle to give approaching emergency vehicles a green indication to proceed through the intersection quicker and under improved safety conditions. Emergency vehicle preemption should be used where normal traffic conditions at signalized intersections impede emergency vehicle travel, especially where these vehicles must travel long distances along a corridor. Preemption should also be used where the potential exists for conflicts between emergency and non-emergency vehicles. Benefits of emergency vehicle preemption include decreased emergency vehicle response times and improved safety for emergency vehicles as well as other roadway users. Preemption also improves clarity of right of way—drivers are prompted by traffic control measures to yield to emergency vehicles rather than having to yield on their own.

Transit Signal Priority (TSP) utilizes a signal preemption system in order to give transit priority at intersections. TSP reduces travel delay for transit vehicles, which can improve the efficiency of public transportation systems and lead to increased ridership. TSP is a critical element of Bus Rapid Transit (BRT).

Cape Fear Moving Forward 2045 recommends the implementation of emergency vehicle preemption along major corridors within the WMPO planning boundary and TSP, where appropriate. Implementation should be coordinated among the WMPO's member jurisdictions, including operational policies as well as technology and equipment compatibility. Additionally, vehicles requesting preemption may use light, sound, radio transmission, pavement loops, or push buttons to be detected when approaching an intersection. Clear sight lines must be provided between detectors and approaching emergency or transit vehicles.

Improved Lighting and Signage

Effective signage and lighting can increase the efficiency and safety of the transportation system for vehicles, pedestrians, and bicyclists. Signage directs users along highways and other roadways and provides wayfinding assistance, directing residents and visitors to cities and towns as well as important destinations. Improved signage can be used to better inform drivers of route options and can better distribute or channelize traffic to improve patterns. Lighting improves visibility, increases sight distance, and makes obstacles more apparent and avoidable. In addition to improving traffic safety, proper lighting also increases personal safety for pedestrians, bicyclists, and transit users.

The current signage program for the Wilmington Urban Area should be reviewed to determine any gaps and possible areas for improvement. Signage and streetlight details associated with roadway, bicycle, and pedestrian construction projects should be reviewed on a regular basis to determine potential enhancements and ensure compatibility within the region. Life cycle costs of lighting systems should be evaluated as well as any negative impacts (spill light and glare). In addition to improving safety and traffic flow, signage and lighting can enhance aesthetics and act as unifying elements in streetscape design and along corridors.

Intersection Modifications and Geometric Design Improvements

At intersections, vehicles, bicyclists, pedestrians, and transit must cross paths, which creates the potential for a variety of conflict types. Twenty-seven percent of all traffic fatalities that occurred in the United States

in 2018 occurred at intersections, according to the FHWA. Intersection modifications and geometric design improvements can increase safety as well as efficiency of the transportation system by reducing the frequency and severity of intersection crashes.

Signalized intersections provide traffic control and opportunities for operational improvements. Beyond alternatively assigning right of way to the various conflicting movements, signalization may be modified to optimize change intervals, employ multiphase signal operation, or to restrict or eliminate certain turning maneuvers (no right turn on red, for example).

Other intersection modifications include clearing sight triangles where necessary to improve sight distance and improving visibility of intersections on approach. Signage, pavement markings, and detection to activate signals or warning systems should be utilized to improve visibility of pedestrians and bicycles at intersections, especially along routes serving schools and other generators of pedestrian and bicycle traffic.

Geometric intersection improvements change the use of an intersection by altering the physical layout of the intersection through changes to the location/sizes of curbs, travel lanes, medians, and other geometric aspects. The WMPO is supportive of NCDOT's use of alternative intersection designs such as diverging diamond interchanges (DDIs) and continuous flow intersections (CFIs), and these designs should be considered as potential mitigation strategies in the Congestion Management Process (CMP). There is currently a DDI in Leland and the WMPO Board has supported NCDOT plans for a CFI at the intersection of US421 and NC132. The WMPO Board has also supported various quadrant designs, including one at the intersection of College Road and Oleander Drive. Examples of traditional geometric intersection improvements include providing left- and right-turn lanes; offset left- and right-turn lanes; restricting or eliminating turning maneuvers; median U-turns; reduced conflict intersections (formerly known as superstreets); and roundabouts.

Diverging Diamond Interchange

DDIs diverge traffic from the right side of the road to the left side of the road and back again. This crossover design eliminates the need for left-turning vehicles to cross opposing traffic. These designs improve the operations of turning movements associated with cars entering and exiting freeways. DDIs reduce the number of vehicle contact points as well as the severity of crashes, improving safety and mobility.

Continuous Flow Intersection

A CFI removes the potential conflict between left-turning vehicles and opposing through traffic, similar to a DDI. However, CFIs are intended for use on at-grade, four-legged intersections. The left turn crossovers prior to the main intersection allow the left and through movements to operate simultaneously. CFIs also reduce the number of potential conflict points compared to traditional intersection design.



Photo Credit:
Charlotte Regional
Transportation
Planning Organization
(CRTPO)

Above from top: DDI in Leland; CFI approach in the CRTPO region

Quadrant Roadway Intersection

A Quadrant Roadway (QR) intersection design can reduce delay at a heavily congested intersection by removing the left-turn movements from the four legs of the intersection. In these designs, all four left-turn movements are rerouted to connector roads which intersect the main arterial roads elsewhere. By prohibiting left turns from all approaches, a simple two-phase signal can be operated at the main intersection.

Providing Left-Turn Lanes

Left-turn lanes should be provided at intersections with a high frequency of left turns and/or crashes between vehicles turning left and following vehicles and between vehicles turning left and opposing through vehicles. Longer left-turn lanes should be considered where existing left-turn lanes are not long enough to store all vehicles turning left resulting in a high frequency of rear-end crashes between vehicles waiting to turn left and following vehicles.

Offset Left-Turn Lanes

A potential issue with left-turn lanes at intersections is that vehicles in opposing left-turn lanes may block drivers' views of oncoming traffic, which can lead to a high frequency of crashes between left-turning vehicles and opposing through vehicles as well as rear-end crashes between through vehicles on the opposing approach. To reduce these types of crashes, the left-turn lanes may be offset so that vehicles in the opposing turn lane(s) no longer obstruct the views of drivers.

Providing Right-Turn Lanes

Right-turn lanes should be provided at intersections with a high frequency of right turns and/or crashes between vehicles turning right and following vehicles and between vehicles turning right and through vehicles coming from the left on the cross street. Longer right-turn lanes should be considered where existing right-turn lanes are not long enough to store all vehicles turning right resulting in a high frequency of rear-end crashes between vehicles waiting to turn right and following vehicles.

Offset Right-Turn Lanes

A potential issue with right-turn lanes at intersections is that vehicles in the right-turn lane may block the views of drivers on the minor road. This can lead to a high frequency of crashes between minor road vehicles turning left, turning right, or proceeding straight and through vehicles on the major road. To reduce these types of crashes, the right-turn lane may be offset so that vehicles in the turn lane no longer obstruct the views of minor road drivers.

Restricting or Eliminating Turning Maneuvers

This strategy should be used at signalized intersections with a high frequency of crashes related to turning vehicles. For example, eliminating right turn on red can reduce crashes between right-turning vehicles and through vehicles coming from the left on the cross street or vehicles turning left from the opposing approach as well as crashes involving pedestrians.

Median U-Turns

This intersection design prohibits left turns from the main road as well as side streets. Drivers who want to turn left must first drive straight or turn right before making a U-turn at a median crossover. Note: A median U-turn varies from a superstreet by permitting traffic on the cross street to go straight through the intersection.

Reduced-Conflict Intersections/Superstreet

At a reduced-conflict intersection, also known as a superstreet, drivers on the side street must turn right in order to enter the flow of traffic and then make a U-turn via a dedicated lane to go in another direction.

Roundabouts

Roundabouts are circular intersections which channel traffic around a center island without traffic signals. Compared to the 32 conflict points associated with a traditional intersection, an equivalent roundabout has eight total conflict points, all of which are of the same-direction variety (sideswipes) and, therefore, less severe and less likely to cause injury. In addition to being safer than traditional intersections, roundabouts are also more efficient because they allow for continuous movement of traffic.

Photo Credit: City of Wilmington



Above: Reduced Conflict Intersection on US17 in Leland

Motorist Assistance Program

Motorist assistance programs can improve performance of the existing transportation system by reducing the time it takes to clear non-recurring congestion. These programs also increase safety by providing motorists a quick point of contact when a minor vehicle issue occurs. Signage should be installed along major roadway corridors to notify the public of a number for requesting non-emergency assistance. NCDOT's State Farm® Safety Patrol, which can be reached by dialing *HP, offers free roadside assistance to motorists along certain highway routes in Wilmington during peak travel times. Services provided include changing flat tires, providing gas, and jump starts. Cape Fear Moving Forward 2045 recommends the continuation of the State Farm® Safety Patrol to provide roadway assistance to stranded motorists. This strategy will reduce congestion and improve safety and mobility by assisting disabled vehicles and removing the vehicles from the roadway more efficiently.

Pavement Markings

Pavement markings provide continuous information to roadway users and greatly increase the safety of the transportation system. These markings, which can be installed in addition to or to supplement signs and traffic signals, communicate roadway alignment, conditions ahead, permitted lane usages, and information related to other driving-related tasks such as passing. Pavement markings are also used to delineate bike lanes, crosswalks, school zones, stop control, and edge lines of travel lanes. Pavement markings should be evaluated on an annual basis to determine the need for maintenance and replacement. As development occurs, project proposals should be reviewed to determine appropriate pavement markings to be installed. The installation of thermoplastic pavement markings is recommended over paint because of the material's durability and improved visibility. The installation of new pavement markings and regular monitoring and maintenance of existing markings will improve safety and reduce delay by directing motorists and allowing sufficient time to make decisions and react to road conditions ahead. Additionally, insufficient or improperly maintained lane markings can cause problems for autonomous vehicles. Alternative solutions include three dimensional mapping, radar and lidar, and sensors placed within pavement. Cape Fear Moving Forward 2045 recommends the installation and maintenance of infrastructure to support this technology.



Social Media and Smart Apps

Social media platforms and the use of smart apps are increasingly affecting transportation. Social networking sites such as Facebook and Twitter provide a platform for transportation providers and government agencies to post updates and communicate information to users and the public. Local pages and groups offer a place for community members to notify others of road closures, accidents, and other conditions which may affect travel choices. Travel apps such as Waze now offer real-time information about traffic conditions, road work and incidents, public transportation wait times, and available parking. By keeping users informed about routes, schedules, and delays, these technologies allow for better routing and trip planning by users across all modes of travel.

Many transportation providers utilize social media to communicate information regarding changes to routes and schedules as well as delays. Government

agencies utilize these platforms to provide information and updates prior to, during, and following extreme weather events like hurricanes. Evacuation routes can be shared as well as road conditions and safe routes back after a storm. Government agencies may also use these platforms to publicize campaigns and initiatives that aim to improve safety or encourage the use of alternative modes of transportation. Additionally, social media can be used to facilitate public input, which is a critical component to improving the transportation system. Social media platforms can be utilized to advertise public meetings and provide an additional distribution method for public surveys.



Above and right: The NCDOT Ferry Division maintains Facebook and Twitter accounts, which are updated regularly.



Transportation-related smart apps include a wide range of mobility apps, which help users understand their transportation options and assist in route planning. They can also be used to educate citizens about existing facilities such as trails. The FHWA groups mobility apps into the following eight categories:

- 1** Business-to-Consumer Sharing Apps: Apps that provide short-term access to vehicles owned by a business (Example: Zipcar) NOTE: Zipcar not yet available in Wilmington
- 2** Mobility Tracking Apps: Apps that track the direction and speed of a traveler, as well as elapsed travel time (Example: GPS Tracker Pro)
- 3** Peer-to-Peer Sharing Apps: Apps that allow private owners to rent their cars or bicycles to others, typically for a fee (Example: Turo, Spinlister)
- 4** Public Transit Apps: Apps that allow users to view public transit routes, schedules, and connections as well as real-time bus locations and near-term arrival estimates (Example: Wave Transit App)
- 5** Real-Time Information Apps: Apps that provide real-time information such as current traffic data and public transit wait times as well as bikeshare information and available parking (Example: Waze)
- 6** Ridesourcing Apps: Apps that provide a platform through which users can obtain a ride, often with an option for “ridesplitting” (Example: Uber, Lyft)
- 7** Taxi e-Hail Apps: Apps that allow on-demand, location-aware hailing of regulated taxicabs (Example: Flywheel) NOTE: Flywheel not yet available in Wilmington
- 8** Trip Aggregator Apps: Apps that provide travel times, trip distances, and trip costs, as well as connection information, in order to route users via multiple modes of transportation (Example: Moovit)

By enabling more transportation choices and smarter route planning, mobility apps can increase the use of alternative modes of transportation, reducing congestion and improving the overall efficiency of the transportation system. Business-to-consumer and peer-to-peer sharing apps are breaking the norm that car or bicycle ownership is essential for mobility by providing easy access to these services on an as-needed basis.

Many smart apps utilize gamification, which is the use of game theory and game mechanics to encourage or discourage certain user behaviors within an app. Within the context of mobility apps, gamification is one strategy that could be used to encourage positive transportation behavior. For example, a user might receive points, status upgrades, or other rewards for carpooling or using public transportation. In order to have a long-term effect on the transportation system, users must switch their behaviors repeatedly. An incentive for carpooling may be the reward of reduced travel time as a result of being able to ride in a high-occupancy vehicle (HOV) travel lane. An incentive for using public transportation may be a Transportation Demand Management (TDM) subsidy. Coupons, discounts, or gift cards may also be used to incentivize more frequent use of public transportation.

Other types of apps that affect transportation include vehicle connectivity apps, smart parking apps, and courier network services apps. Vehicle connectivity apps, such as OnStar® by General Motors, allow remote access to vehicles via an integrated electronic system and can provide emergency services as well as roadside assistance. Smart parking apps streamline the parking process by providing real-time information about parking cost, space availability, and payment methods. Courier network services apps, such as Roadie, DoorDash, and UberEATS, provide for-hire delivery services by connecting independent couriers (using their personal vehicles, bikes, or scooters) with cargo (packages or food). Additionally, several types of non-transportation apps provide strategies that could also be useful in transportation apps. These include health apps, which help users monitor their health, change their behavior, and better understand the impacts of their transportation choices on their health. Environment/energy consumption apps track the environmental impacts and energy consumption associated with users' behaviors, including travel. Some eco-driving/eco-routing apps provide real-time feedback on driver behavior in order to encourage environmentally responsible driving while others help drivers locate electric car charging stations. Insurance apps may offer pay-per-mile car insurance as well as other incentives and pricing based on travel time, distance, and safe driving.

Streetscape Improvements

According to the Moving Ahead for Progress in the 21st Century Act (MAP-21), TSMO includes the implementation of multimodal and intermodal systems, services, and projects to optimize the performance of the existing transportation system. Streetscape improvements such as sidewalks, bike lanes, median islands, bulb-outs (extended curbs), narrower travel lanes, roundabouts, plantings, and others can contribute to the creation of a "Complete Street."

"Complete Streets are streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are traveling as drivers, pedestrians, bicyclists, or public transportation riders."

-U.S. Department of Transportation



Source:

<https://www.transportation.gov/mission/health/complete-streets>

Implementation of complete street concepts increases safety for drivers, pedestrians, bicyclists, and transit users by reducing vehicle travel speed, decreasing the required crossing distance for pedestrians, and providing dedicated lanes for transit and/or bicycles. NCDOT's "Complete Streets" policy, which was updated in 2019, requires the consideration and incorporation of multimodal facilities in the design and construction of new transportation projects as well as improvements to existing transportation infrastructure. The WMPO Board adopted its "Complete Streets" policy in 2009, which required all transportation projects within the WMPO's planning boundary to be designed in a balanced, responsible, and equitable way in order to accommodate and encourage travel by bicyclists, public transportation vehicles and their passengers, and pedestrians of all ages and abilities. These improvements overlap with several of the TDM strategies presented in Appendix M, as well as congestion management techniques.

Other streetscape improvements can be used to unify corridors and other distinct areas. These improvements can include pavement treatments such as brick pavers and distinct concrete scoring patterns, decorative lighting, benches, bike racks, decorative traffic signals, signage, street trees, landscaping, public art, and other aesthetic improvements. These improvements can spur redevelopment and create a renewed interest from property owners, which could increase the tax base of the region.

Cape Fear Moving Forward 2045 evaluated projects based on regional significance, economic impact, and quality of life improvements and established criteria to rank the projects in order to determine which ones could be implemented given anticipated available funding over the life of the plan. The fiscally-constrained streetscape improvement projects are included in the Roadway Element (Appendix K).

Traffic Signal Timing Optimization

Traffic signals function in four different operating modes including pre-timed, semi-actuated, fully-actuated, and coordinated.

- **Pre-timed signals:** These signals have a fixed amount of time for each movement, regardless of actual vehicle demand.
- **Semi-actuated signals:** These signals have vehicle detection for only the minor movements. Major road through movements are non-actuated, meaning these movements do not provide detection information. The signal is programmed to stay in the non-actuated phase, maintaining a green indication for the highest flow movements until a vehicle is detected on the minor road. Green time is based on actual vehicle demand for minor movements only.
- **Fully-actuated signals:** These signals have vehicle detection for all movements. Green time is allocated to each movement based on actual vehicle demand.
- **Coordinated signal mode:** This operating mode allows adjacent signals to operate systematically. Pre-timed, semi-actuated and fully-actuated signals can be operated in coordination mode to improve mobility and traffic flow along a corridor. These coordinated systems improve traffic flow along corridors and help to efficiently and effectively move traffic throughout a region.

Signal timing optimization is the analysis and adjustment of signal settings to reduce travel delays at intersections. It is a very cost-effective way to improve traffic flow, increasing the efficiency of the overall transportation system.

Since the traffic signal system upgrade completed in 2010 by the City of Wilmington and NCDOT, all traffic signals maintained by the City of Wilmington have been adjusted to accommodate changes in traffic volumes and patterns from previous adjustments. This is, and will continue to be, an ongoing effort affected by many variables including access management changes, turn lane additions/subtractions, lane use changes, speed limit changes, major roadway construction projects, and changes in daily vehicle volumes from new (and defaulted) residential and commercial developments. These variables are capable of significantly changing vehicular demand on the roadway and at traffic signals, necessitating further adjustments. Some traffic signals in the unincorporated areas of New Hanover County and all signals in Pender and Brunswick counties are operated and maintained by NCDOT and were not part of this upgrade.

Cape Fear Moving Forward 2045 recommends that all new traffic signals within the Wilmington Urban Area be connected to and coordinated with the City of Wilmington's upgraded traffic signal system or with each other. These signals should be fully-actuated and coordinated with nearby signals to improve efficiency and traffic flow throughout the system. Each traffic signal should be studied periodically for seasonal variation and to determine the appropriate signal timing. Signal settings should be updated on a regular basis to accommodate changes in traffic volumes at intersections.

The intent of this strategy is to synchronize all traffic signals within the Wilmington Urban Area in order to improve mobility and safety while also reducing greenhouse gas emissions. The synchronization of signals will improve roadway capacity and reduce delay at intersections, while improving the level of service along corridors. Adaptive traffic signal control can be used to further enhance the benefits of signal timing optimization. Adaptive systems detect vehicular traffic and use algorithms to predict where the traffic is going. Signal timing is then adjusted autonomously to account for real-time traffic conditions. Adaptive traffic signal systems are most effective where daily traffic conditions randomly fluctuate; new development causes frequent changes in traffic conditions; and where unexpected changes in traffic occur due to crashes, weather, and other disruptive events such as TSP and emergency vehicle preemption.

Vehicle Detectors Repair/Replacement

Vehicle detectors are critical to the functioning of an efficient traffic signal system. Vehicle detection devices are installed at signalized intersections to indicate the presence of a vehicle. Pavement invasive devices include inductive loops that are placed in the pavement. Non-pavement invasive devices include video cameras that provide pixel sensitizing. These detection devices improve the efficiency of intersections by optimizing signal lengths based on traffic at the intersection and allowing more green time for priority movements. Video cameras can also assist with bicycle and pedestrian data collection. The use of these devices can have a significant impact on mobility and traffic flow along corridors and across transportation systems.

As roadways are constructed, widened, or resurfaced, member jurisdictions should coordinate with the WMPO and NCDOT for the funding and implementation of loop detectors at all signalized intersections. As new signals are installed, traffic cameras should be implemented where appropriate to efficiently move traffic throughout the region. This strategy will help ensure that intersections are functioning appropriately and will improve efficiency at signalized intersections. The installation of new loops during the construction, widening, or resurfacing of roadways will reduce costs and improve efficiency.

Traveler Information Systems and Dynamic Message Signs

Traveler information systems are an important element of Intelligent Transportation Systems (ITS), which aims to advance the safety and mobility of transportation systems. Traveler information systems provide real-time information to motorists, allowing them to make informed travel decisions. In North Carolina, NCDOT's Traffic Information Management System (TIMS) allows motorists to view updated information regarding traffic and weather conditions, including images from live traffic cameras. Dynamic message sign (DMS) systems convey information to travelers regarding incidents that occur frequently (i.e. bridge opening) or unusual driving conditions (i.e. accident information, hazardous conditions ahead, event notifications, etc.) and can be located either on fixed structures or on trailers to be easily relocated. DMS is an important traffic control device for managing traffic flow during peak periods or special events and alleviating congestion by alerting drivers to avoid certain areas.

An area wide ITS plan should be implemented for the region, including a DMS component. The City of Wilmington's Traffic Management Center (TMC) monitors traffic signals inside the city limits and in some portions of unincorporated New Hanover County, sharing traffic video camera images with NCDOT's TIMS. Cape Fear Moving Forward 2045 supports and recommends the continuation of this collaboration between the regional and statewide transportation networks.

Dynamic message signs should be installed at strategic locations and utilized to convey frequent and unusual driving conditions to motorists throughout the Wilmington Urban Area. Potential locations for the installation of stationary structures for these devices should be evaluated and coordinated with NCDOT. Member jurisdictions should work with NCDOT and the WMPO to utilize movable boards to provide information on construction or maintenance, speed reduction, wet pavement, lane closures, speed limits, event notifications, safety messages, amber alerts, etc. This strategy will improve safety and mobility within the region by alerting motorists and reducing congestion.



Integration with Land Use Planning

Utilizing TSMO strategies will allow for better integration of transportation and land use planning. For example, access management seeks to balance the mobility and safety of the transportation system with the access needs of adjacent land uses. Streetscape improvements and the implementation of "Complete Streets" can improve safety, mobility, and accessibility for all users, including pedestrians, bicyclists, and transit users. By encouraging alternative modes of transportation and increasing connectivity, complete streets can build more sustainable communities.

Transit oriented development (TOD) is another way in which integrating transportation and land use planning can lead to more livable, sustainable communities. TOD includes a mix of uses (residential, commercial,

office, and entertainment) centered around a transit station. In TOD, easy access to public transportation encourages development while density leads to increased transit ridership and revenue. TOD improves safety for pedestrians and bicyclists by decreasing dependence on automobiles and providing infrastructure for alternative transportation. TOD also reduces congestion, improving air quality and travel times. Cape Fear Moving Forward 2045 recommends that the WMPO's member jurisdictions encourage TOD where appropriate through their land use planning and zoning regulations.

TSMO strategies should be coordinated with local land use plans, small area plans, corridor plans, and future street plans as well as greenway and pedestrian plans. As development and redevelopment occur, impacts to all modes of transportation should be considered. Transportation and land use planning decisions should be coordinated in order to reduce congestion and encourage more pedestrian, bicycle, and transit-friendly development within the region. Land development codes should reinforce development patterns that reduce trip distances and provide for alternative modes of travel. A compact grid network is well-connected, improving walkability and increasing travel options. This type of development is preferred over non-grid development, which offers fewer connections, leading to more congestion.

Policies

2.1 Land Use and Transportation Coordination

Over the past 70 years, Wilmington has experienced significant population and geographic growth and development. While the city has adopted a form of low-density, suburban-style land uses that have contributed to sprawl, the rate of population growth more rapidly than the rate of population increase in the surrounding region. This has led to address automobile congestion, such as building new streets and adding additional lanes to existing major roads. The city has adopted a compact grid pattern to encourage more walking and cycling. The city's mounting congestion, roadway investments and limited funding for transportation infrastructure must be balanced with investments in other modes of transportation, such as carpooling or bike sharing, greenways, bike lanes and paths, and sidewalks. They also include the need to develop transit systems that better serve the community, making it easier to use transit and make non-motorized trips. Successful transit areas with multimodal

access can thrive with less need for parking, fitting up land and capital for open spaces, and produce a more vibrant, walkable, and sustainable community. Decisions must mainly reinforce each other.

For decades, conventional transportation planning and engineering have focused exclusively on motorized modes, minimizing congestion, and reducing crash rates by prioritizing speed. Alternative approaches include active transportation planning and management (see 2.3) and multimodal planning, which consider the needs of all users of the roadways, including walking, cycling, and transit. Many established tools available. Industry practices have moved away from the traditional approach of separating transportation from other urban functions. Instead, the city has adopted a complex streets policy for city streets. While conventional funding of transportation infrastructure has been limited, the city has made more funding considerations made for bicycles, transit, and other modes of transportation.

2.1.1 Transportation planning and development, expansion, and investment in transportation facilities should be coordinated with the Growth Strategies Maps.

2.1.2 Safe and attractive transportation choices among all modes should be encouraged through investment in infrastructure, policies, programs, and incentives that support walking, cycling, transit, and non-motorized modes of travel. These choices should include options for people to access opportunities, goods, services, and information that improve the quality of their lives. In turn, the transportation sector should support economic development, and future transportation systems may have an impact on demand, choices, and patterns.

2.1.3 New roadways and widening of existing roadways should value context-sensitive design to minimize impacts on neighborhoods, neighborhoods, parks, and natural areas.

2.1.4 Consider transportation impacts, including parking and impacts on all modes of transportation should be identified and addressed before a development or redevelopment is implemented.

2.1.5 Key Planning Theme: Economic Opportunity

2.1.6 Create Walkable Comprehension Plan Policies

2.1.7 Create Multimodal Comprehension Plan Policies

Land Use and Transportation Coordination

The role of transportation professionals is evolving and more frequently requires them to understand the principles and practices of land use planning and transportation planning. The coordination of land use and transportation decisions that support the health, well-being, and quality of life of the community are critical. As transportation choices affect the quality of life of individuals and families, transportation options for people to access opportunities, goods, services, and information that improve the quality of their lives. In turn, the transportation sector should support economic development, and future transportation systems may have an impact on demand, choices, and patterns.

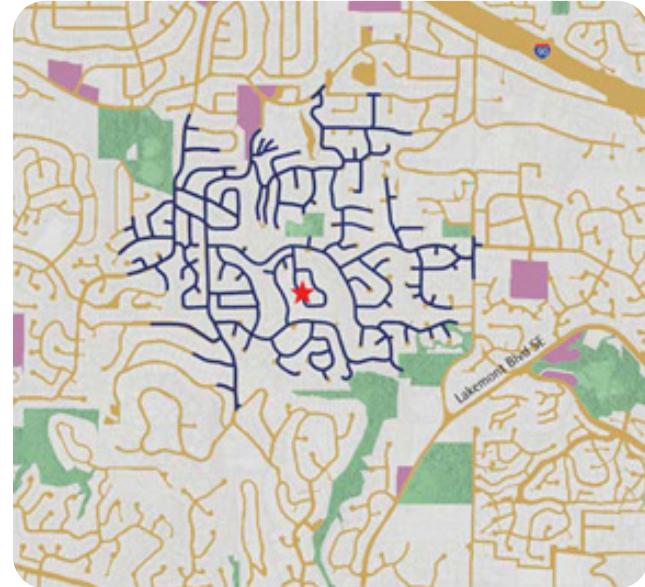
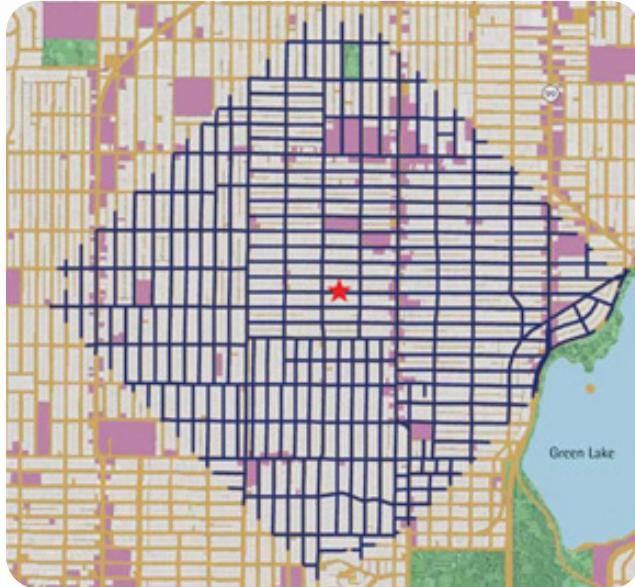
Market Street Corridor Study

Master planning efforts that coordinate the design and implementation of multimodal transportation investments is encouraged to continue.

High Density Corridor Example

Example: Orlando effectively uses a uniform structural system and high-density zoning along its route.

Above: The City of Wilmington's Comprehensive Plan includes policies to coordinate land use and transportation.



The maps above show a one-mile walk in a compact grid network (left) compared to a one-mile walk in a non-grid network (right). Source: Maps by Lawrence Frank & Co. and the Sightline Institute, accessed at <https://www.walkscore.com/walkable-neighborhoods.shtml>.

Coordination with the Congestion Management Process

In 2012, the WMPO was designated as a Transportation Management Area (TMA) by the FHWA. As a TMA, the WMPO is required to use an adopted CMP to evaluate and manage congestion in a regionally agreed upon manner. As part of this process, the WMPO collects congestion data to be published in a CMP report on a biennial basis. The CMP Steering Committee uses these biennial reports to evaluate the effectiveness of the WMPO's CMP strategies. Cape Fear Moving Forward 2045 recommends that TSMO strategies be incorporated into the congestion management process as potential mitigation techniques. Furthermore, CMP mitigation strategies have been incorporated into this plan as projects or policies.

Sources:

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- FHWA Office of Operations
 - "What is Access Management?"
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 - Traffic Control Systems Handbook
<https://ops.fhwa.dot.gov/publications/fhwahop06006/index.htm>
 - Traffic Signal Timing Manual
<https://ops.fhwa.dot.gov/publications/fhwahop08024/chapter9.htm#9.1>
 - "Smartphone Applications To Influence Travel Choices: Practices and Policies"
<https://ops.fhwa.dot.gov/publications/fhwahop16023/ch3.htm>
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- NCDOT State Farm® Safety Patrol
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- FHWA Diverging Diamond Interchange Informational Guide
https://safety.fhwa.dot.gov/intersection/alter_design/pdf/fhwasa14067_ddi_infoguide.pdf
- NCDOT Complete Streets
<https://www.completestreetsnc.org/>
- Reuters Technology News: "Where's the lane? Self-driving cars confused by shabby U.S. roadways"
<https://www.reuters.com/article/us-autos-autonomous-infrastructure-insig/wheres-the-lane-self-driving-cars-confused-by-shabby-u-s-roadways-idUSKCN0WX131>
- WalkScore: Walkable Neighborhoods
<https://www.walkscore.com/walkable-neighborhoods.shtml>
- Create Wilmington Comprehensive Plan
<https://www.wilmingtonnc.gov/departments/planning-development-and-transportation/comprehensive-plan>



APPENDIX M:

Transportation Demand Management Element

Introduction

Transportation Demand Management (TDM) has two main goals: promote more efficient travel modes in order to move more people with the same amount of roadway infrastructure; and spread travel demand over a longer portion of the day to better utilize available space and capacity.

The TDM portion of this plan was guided by the TDM Committee, otherwise known as the Go Coast Committee. This committee is comprised of representatives of community stakeholders, major employers, and WMPO member jurisdictions. During Go Coast Committee meetings, pertinent information regarding public feedback (Appendix D) and the current and possible future state of TDM initiatives throughout the Wilmington region were presented. Strategies identified to be included in this plan were divided into three categories: short-range, medium-range, and long-range. Each strategy aims to prioritize efforts to reduce traffic congestion and commute time, and expand travel options for residents.

The TDM strategies identified for Cape Fear Moving Forward 2045 can be found on the following pages.

SHORT-RANGE

- Alternative Work Schedules
- Bicycle and Pedestrian Infrastructure
- Bike Share
- Carpool and Vanpool
- Consulting for Telecommuting Opportunities
- Development Review
- Continued Employment of Full-time TDM Staff
- Personalized Commuter Plans

MEDIUM-RANGE

- Bicycle and Pedestrian Infrastructure
- Bus Rapid Transit (BRT)
- Car Share
- Employer Shuttles
- Park and Ride Lots
- Transit Amenities

LONG-RANGE

- Bicycle and Pedestrian Infrastructure
- Fixed Rail Transit
- High-Occupancy Vehicle (HOV) Lanes
- High-Occupancy Toll (HOT) Lanes
- Water Taxi Service

YEARS TO IMPLEMENT:

0-5

5-15

15-20



This element details each of the above strategies, including a description and specific examples, if applicable, as well as benefits, potential for application, and how to implement.



Short-Range TDM Strategies (0-5 Years to Implement)

Strategy 1: Alternative Work Schedules

Description: Alternative work schedules include a variety of work scheduling options including telecommuting, flextime, a compressed work week, and staggered shifts. This strategy assumes a traditional workday of 8:00 am – 5:00 pm for a total of 40 hours a week.

- Examples:
- Telecommuting is a work-from-home option. This would require obtaining all of the technological equipment required to perform work duties from the home of the employee.
 - Flextime allows employees some flexibility in their daily work schedules. This would follow a 5-day work week but would allow employees to work 7:00 am – 4:00 pm or 9:00 am – 6:00 pm rather than a typical 8:00 am – 5:00 pm schedule.
 - A compressed work week allows employees to work fewer, but longer days. Common examples are a 4 x 10 schedule (working four 10-hour days and having the fifth day off) or a 9 x 9 schedule (working nine 9-hour days and having the tenth day off).
 - Staggered shifts reduce the number of employees arriving and leaving a workplace at the same time by staggering the work schedule. For example, some shifts may be from 7:00 am – 4:00 pm, some 8:00 am – 5:00 pm, and others 9:00 am – 6:00 pm.



Benefits of Alternative Work Schedules include:

- Reduced individual commuting trips (could be by 20% or more)
- Increased employee job satisfaction, productivity, and morale
- Utilization as an effective tool for employee recruitment and retention
- Longer hours of customer service for businesses
- Improved traffic congestion on the roadway during peak commute times

Potential for Application: This strategy is driven primarily through education, outreach, and promotion. The WMPO's role will include communicating with area employers, determining if there are opportunities for alternative work schedules, assisting with the development of an alternative work schedule policy, and promoting and implementing the policy to current and new employees. The WMPO can also promote this strategy through public awareness and other campaigns.

How to Implement: Alternative work schedules should be bundled with other TDM tools presented to area employers. While discussing opportunities for carpooling/vanpooling and promoting bicycle and pedestrian infrastructure and park and ride lots, the TDM Coordinator should be discussing alternative work schedule opportunities with local business owners. Opportunities may lie with the local Chambers of Commerce, Wilmington Business Journal, and others to coordinate with the business community to help promote alternative work schedules and identify opportunities and constraints. Formal alternative work schedule policies should be developed/updated for suitable businesses.

These policies should specifically address which job categories are suitable; what is required of employees who qualify; what criteria are to be used to evaluate the performance of employees on alternative schedules; how employee schedules are determined and what is required to change schedules; periodic review of the arrangement; and model contracts and forms for establishing and tracking alternative work schedules.

Strategy 2: Bike Share

Description: Bike share is a service in which bicycles are made available for individuals to rent on a very short-term basis. One can pay by the hour to use a bicycle as needed and then return the bicycle to any designated location. There are a variety of bike share program styles. A “free roaming” program does not require the user to return the bicycle to a specific location when the ride has ended. A “station-based” program requires the user to return the bicycle to a specific location at the end of the trip. Some programs have physical kiosks where a user pays for and checks out a bicycle, while others work through a smartphone application. Bike share vendors provide the host municipality or county with a turn-key program, overseeing the even distribution of bicycles across the area, maintenance, marketing, customer service, and more.



Benefits of Bike Share include:

- Increased flexibility during the work day for alternative mode commuters
- Decreased air pollution and greenhouse gas emission from cars
- Reduced peak hour congestion
- Reduced congestion throughout the day, specifically in urban cores
- Added character (to a city or town)
- New opportunity for exercise
- Creation of green jobs/green business opportunities
- Popular alternative for Millennials
- Attractive to tourists
- Potential gateway to other forms of shared mobility like carpool and vanpool

Potential for Application: Although smaller than many cities with successful bike share programs, Wilmington's population density makes it a viable location for a bike share system. Bike share programs can conveniently connect many areas of the city. The opportunity to implement a bike share program should be explored, specifically in downtown Wilmington and at other strategic locations across the City such as Mayfaire, the area around the University of North Carolina at Wilmington (UNCW), parks, schools, and shopping centers. Routes should be identified incorporating existing facilities such as the River to Sea Bikeway and the Cross-City Trail.

How to Implement: The City of Wilmington is the only member jurisdiction that has shown interest in implementing a bike share program. To streamline the process, the WMPO should release a Request For Proposal (RFP) on behalf of all member jurisdictions and review responses with a committee.

Strategy 3: Carpool and Vanpool

Description: Carpooling is a strategy that creates opportunities for people to share a vehicle for transportation, primarily for their commute to and from work. This saves on fuel costs, saves time, and reduces the stress of driving. Vanpooling offers the same benefits as carpooling, but on a larger scale which requires more organization and often, longer distances. Carpool participants either use their own vehicle or ride in a vehicle owned by another participant. Vanpooling can require the cooperation of various private support programs. Often offered by a local transit agency or large employer, the van is not owned by any of the participants in the vanpool but is driven by a few designated people.



Benefits of Carpool and Vanpool include:

- Reduced traffic congestion
- Reduced commuting costs
- Reduced parking demand
- Reduced stress caused by driving in traffic
- Free time to do other work, socialize, or relax while commuting

Potential for Application: For carpooling, there could be a heavy marketing campaign to promote Share the Ride NC, the ride-matching platform maintained by NCDOT. The three current park and ride lots located at the Lowes Foods at Brunswick Forrest, Leland Town Hall, and the Food Loin on Mt. Misery Road, should be shared with major employers in the region. An Emergency Ride Home program should be established for carpoolers to have a way home immediately if they must leave work due to unforeseen circumstances.

The Wave Pool program offered by the Cape Fear Public Transportation Authority (Wave Transit) can be utilized by employers in the region. An employer can either fully subsidize Wave Pool for employees, split the cost with participants, or ask the participants to fund the Wave Pool.

How to Implement: Share the Ride NC must be greatly improved to make it attractive to citizens. Currently, the platform only works on a desktop—the user interface needs an upgrade and it needs to be made mobile friendly. When the platform becomes more user-friendly and practical, it can be promoted on numerous websites, within organizations represented on the Go Coast Committee, and at every event held throughout the year. Wave Transit's vanpool commuter program, Wave Pool, currently has three vehicles available for use. Large employers such as GE, PPD, Live Oak Bank, and New Hanover Regional Medical Center should be regularly informed about the Wave Pool program. Go Coast can collaborate with major employers to gauge the interest of employees in using a vanpool for long-distance commuting.

Strategy 4: Consulting for Telecommuting Opportunities

Description: Consulting services for telecommuting opportunities is an optional preliminary step towards developing and implementing an alternative work schedule for an organization. This TDM strategy was inspired by Maryland's Teleworking Partnership with Employers (TPE) service. The TPE service offers a free, professional telecommuting consulting series to any Maryland employer looking to start a telecommuting program, or to expand an existing program.



Benefits of Consulting for Telecommuting Opportunities include:

- Assistance to businesses which are hesitant or unsure of how to implement a telecommuting option for employees
- Free to businesses with no obligation
- Improved employee satisfaction, increased retention, reduced office space costs
- Reduced need for parking infrastructure

Potential for Application: Modeling after the Maryland DOT program, the WMPO TDM Coordinator could act as a consultant for this strategy. As employers provide information about employees and the business, the TDM Coordinator could advise on any adoptable telecommuting strategies or policies.

How to Implement: This service should first be offered to members of the Go Coast Committee. The Committee could then advise the TDM Coordinator on any pertinent information to perform the level of analysis necessary to provide consulting to an employer. Collaboration could also take place with the Chamber of Commerce, which has direct contact with the region's largest employers.

Strategy 5: Development Review

Description: Development review is a TDM strategy that includes reviewing development proposals and providing comments regarding transit or alternative transportation facilities, including the addition of sidewalks, bike lanes, multi-use paths (MUPs), crosswalks, bus pullouts, bike racks, and more. This strategy can also include developing codes and ordinances. Although the product of this TDM strategy would not be seen for possibly several years, this strategy is categorized as short-range because the municipal code may be adopted within five years.



Benefits of Development Review include:

- Funding for bicycle, pedestrian, public transportation projects
- Increased bicycle, pedestrian, public transportation infrastructure
- Cost of infrastructure is placed on developers rather than the residents of an area

Potential for Application: For this strategy, the TDM Coordinator and Go Coast Committee would collaborate with municipal/county planners to review development proposals in the area.

How to Implement: The TDM Coordinator should establish a partnership with development review staff to determine the best process for suggesting alternative transportation facilities in development proposals. The TDM Coordinator should work with the Go Coast Committee to develop a model ordinance that could be adopted by member jurisdictions.

Strategy 6: Continued Employment of Full-time TDM Staff

Description: The full-time position of TDM Coordinator has existed since 2015. Since the creation of the position, a short-range TDM plan has been written and carried out while promotion of alternative transportation services has expanded immensely. It is critical for the WMPO to staff a TDM Coordinator because of the number of ongoing action items included in the TDM portion of the Metropolitan transportation Plan (MTP). The TDM Coordinator is responsible for the implementation of these items, including:

- Conducting consistent outreach to community stakeholders and employers
- Carrying out the marketing plan
- Coordinating events such as Bike to Work Week/Month, the Commuter Challenge, and River to Sea Bike Ride
- Advocating for improved transit, bicycle, and pedestrian infrastructure
- Assisting member jurisdictions with projects and initiatives
- Cultivating partnerships with public school systems, UNCW, and Cape Fear Community College (CFCC)
- Implementing TDM strategies based on the adopted priorities
- Securing TDM program funding
- Staffing the Go Coast Committee



Benefits of Full-time TDM Staff include:

- Increased numbers of people and organizations employing TDM strategies in their personal and professional lives
- Mitigation of growing traffic congestion
- Implementation of TDM Strategies
- Education, outreach, and promotion of TDM in the community and to employers
- Support for the smaller member jurisdictions in the WMPO planning area
- Data tracking from events to show evidence of need for improved infrastructure

Potential for Application: TDM works in conjunction with the public involvement, bicycle and pedestrian, public transportation, roadway, and congestion management elements of the MTP. The WMPO continues to be the most suitable organization to house this position and has secured funding, in partnership with NCDOT, for the TDM Coordinator as well as for education, outreach, and other programs.

How to Implement: The WMPO should work with NCDOT to follow the statewide TDM plan and apply for the TDM grant each year. The Go Coast Committee and WMPO Board should be relied upon heavily to guide all Go Coast decisions and ensure multiple partners are involved in the grant-funded program.

Strategy 7: Personalized Commuter Plans

Description: A personalized commuter plan is a strategy catered to an individual to show him or her ways in which TDM strategies can be applied to his or her day-to-day transportation. These plans consider the locations of an individual's home and work as well as frequented locations, such as the gym, park, grocery store, or shopping center, and demonstrate opportunities to reduce single-occupancy vehicle (SOV) traffic by carpooling/vanpooling, biking, walking, or taking public transportation.



Benefits of Personalized Commuter Plans include:

- Guidance to individuals on how to use TDM strategies
- Promotion of bicycle and pedestrian infrastructure
- Promotion of public transit routes and timetables
- Carpool matching

Potential for Application: Inquiring about a personalized commuter plan is an option on the new Go Coast website, which launched in January of 2020. An individual can answer a few questions about his or her destinations, habits, goals, and abilities, and the TDM Coordinator will assist in creating a plan to change commuting habits as little or as often as the individual wishes.

How to Implement: This service will be offered to anyone working or living within the WMPO planning boundary. Pertinent and confidential information will be required by the individuals, such as work and home addresses. The service will be promoted first to affiliates of the organizations represented on the Go Coast Committee, then to the public via email and social media.



Medium-Range TDM Strategies (5-15 Years to Implement)

Strategy 1: Bicycle and Pedestrian Infrastructure

Description: This strategy includes promoting existing bicycle and pedestrian facilities while constructing new facilities to expand the network. This infrastructure includes MUPs, bike lanes, sidewalks, high-visibility crosswalks, push-button pedestrian signal heads, and other improvements for multimodal transportation.



Benefits of Bicycle and Pedestrian Infrastructure include:

- Increased number of people walking and biking
- Reduced traffic congestion
- Promotion of active transportation
- Increased interest in tourism and property investment

Potential for Application: Bicycle and pedestrian infrastructure is in high demand in the Wilmington region. The following are some of the results of the Cape Fear Moving Forward 2045 public survey:

- 68% would prefer to bike more often
- 61% would prefer to walk more often
- 72% would bicycle more often if there were more off-road MUPs
- 51% would bicycle more often if there were more on-road bicycle lanes
- 73% would walk more if there were more off-road MUPs
- 67% would walk more if there were more safe intersection crossings

Two reliable sources of funding in the region are Surface Transportation Block Grant Program-Direct Attributable (STBG-DA) and Transportation Alternative Set Aside-Direct Attributable (TASA-DA). These funds are allocated to the WMPO on an annual basis of about \$3.75 million. An application process has been created in which member jurisdictions may apply for this money, which can be spent on most bicycle and pedestrian projects. Additional funding sources include STIP funding, grants, and Capital Improvement funds allocated within certain local jurisdictions' approved budgets.

How to Implement: The TDM Coordinator should provide input in the bicycle and pedestrian planning process and support local jurisdictions in their efforts to secure funding. Data from events such as Bike to Work Month and the Commuter Challenge should be shared with planners to provide evidence of the active bicycling population in the region.

Strategy 2: Bus Rapid Transit

Description: Bus Rapid Transit (BRT) is a high-quality, bus-based transit system designed to improve the capacity and reliability of a conventional bus system. Some BRT systems have a dedicated lane for the bus.

**Benefits of Bus Rapid Transit include:**

- Increased public transportation reliability as a result of separate travel lanes for buses and other vehicles
- Reduced traffic congestion
- Reduced need for expanding roadways
- Promotion of dense urban area and mixed-use development
- Complements infrastructure for walkability and bikeability

Potential for Application: The WMPO should work with Wave Transit to recommend BRT in their next short-range plan. Corridors for pilot BRT routes should be identified, such as Oleander Drive, Independence Boulevard, Military Cutoff Road, Market Street, etc. If applicable, the WMPO and its partners should heavily market any new BRT routes to the community and identify park and ride lots along these corridors for riders who cannot walk or bike to bus stops.

How to Implement: This strategy would be implemented by Wave Transit and most likely within the city limits of Wilmington. WMPO staff should begin conversations with the WMPO Board and Wave Transit to discuss the feasibility and a timeline for a BRT pilot program.

Strategy 3: Car Share

Description: Car share is a car rental model in which individuals may rent a car for short periods of time. One can pay by the hour to use a car as needed and then return it to an appropriate parking space according to the program's operational area. There are several car share vendors present in cities and on college campuses throughout the United States. These vendors provide the car, maintenance, and insurance while working with municipalities and counties to determine designated parking spaces for the vehicles.

**Benefits of Car Share include:**

- Reduced parking demand
- Popular among Millennials
- Reduced need for car ownership
- Allows employees who work near car share locations to use alternative transportation to and from work but have reliable transportation in case of emergency or for lunch hour use

Potential for Application: Successful car sharing programs tend to be associated with densely populated areas such as city centers or college campuses. Within the Wilmington region, car share would be feasible for UNCW and the downtown area. Parking spots could be identified in the County and City parking decks downtown; at Wilmington International Airport (ILM); at Wave multimodal centers; and in major shopping centers located near residential areas, specifically lower income areas.

How to Implement: Car share vendors would first conduct an internal feasibility study to determine if car share is practical in the Wilmington area. While not as dense as other regions, the population density could allow for a successful program.

Strategy 4: Employer Shuttles

Description: An employer shuttle is a shuttle provided by the employer to connect employees from a park and ride lot and/or satellite parking to the place of work. It is possible to share a shuttle between neighboring employers who, though an agreement, share the cost of the shuttle.



Benefits of Employer Shuttles include:

- Decreased need for parking
- Reduced traffic congestion

Potential for Application: A survey should be conducted of major employers to determine if any organizations in the region are interested in this strategy.

How to Implement: ILM implemented this strategy in the Fall of 2019 to prioritize closer parking for patrons of the airport. ILM now utilizes an existing distant parking lot for its employees and does not have to build additional parking facilities. The TDM Coordinator and Go Coast Committee should be in contact with all major employers and organizations that have local campuses.

Strategy 5: Park and Ride Lots

Description: Park and ride lots provide opportunities for individuals to drive a portion of the distance to their destinations in their SOV, park their car, and join a carpool, vanpool, or take public transportation.



Benefits of Park and Ride Lots include:

- Reduced traffic congestion
- Reduced stress caused by traffic congestion
- Commuters can avoid parking expenses
- Increased opportunities for carpooling, vanpooling, and taking public transportation

Potential for Application: There are currently three park and ride lots in Leland. As the Wilmington region grows, park and ride lots should be identified on both public and private property. Shopping centers and big box stores are great locations for park and ride lots because they can host so many vehicles. Successful park and ride lots are typically found outside the city center.

How to Implement: Property owners/managers should be included in the conversation when determining official park and ride lots for the region. The TDM Coordinator should take the lead on establishing park and ride lot locations. As infrastructure is created, the population grows, development takes place, and public transportation services expand, the TDM Coordinator should identify new locations for park and ride lots, and priority spaces should be given to those using public transportation or carpooling.

Strategy 6: Transit Amenities

Description: Transit amenities include:

- Comfortable and convenient shelters, stations, and stops (including benches, bike racks, lighting, transit information, and cover)
- Perceived safety and cleanliness of vehicles, stops, stations, and facilities
- Improved technology regarding arrival and departure times



Benefits of Transit Amenities include:

- Increased public transportation ridership
- Reduced traffic congestion
- Improved community cohesion through potential increased choice ridership

Potential for Application: Of the listed transit amenities, the top priority is comfortable and sheltered bus stops. Wave Transit is responsible for providing these transit amenities and is making great strides to improve amenities throughout its service area. Funding needs to be secured in order to implement new stops with these amenities and make amenity improvements at existing stops.

How to Implement: The TDM Coordinator should work with Wave Transit to identify and obtain funds to make these improvements.



Long-Range TDM Strategies (15-20 Years to Implement)

Strategy 1: Fixed Rail Transit

Description: Fixed rail transit is a mode of public transportation that carries passengers in rail cars or streetcars that usually travel along a single line of rail. The rails are located in the right-of-way and are often separated from other traffic. Fixed rail transit is often operated electrically and driven by an on-board operator. Fixed rail can refer to light rail, trolley, subway, or passenger train.



Benefits of Fixed Rail Transit include:

- Reduced traffic congestion
- Often provides a more convenient and quicker option than bus transit
- Attractive to tourists and new residents to the region

Potential for Application: The City of Wilmington and NCDOT are in the early stages of the rail realignment project to relocate the freight rail line that currently runs through the heart of Wilmington. This will open up the potential for the installation of a fixed rail system in its place.

How to Implement: Coordination with the City of Wilmington, the Rail Realignment Director, Wave Transit, and NCDOT should take place to determine the best options for any installation of a future rail transit system with priority placed upon the relocation of the freight rail line.

Strategy 2: High-Occupancy Vehicle Lanes

Description: HOV lanes are restricted travel lanes reserved at peak travel times (or more) for the use of vehicles with a driver and one or more passengers. This includes carpools, vanpools, and buses. HOV lanes are created to increase average vehicle occupancy and give priority to cars carrying more than one passenger.



Benefits of High-Occupancy Vehicle Lanes include:

- Reduced traffic congestion
- Promotion of carpool, vanpool, and public transportation
- Provide an incentive for individuals participating in carpool, vanpool, and public transportation

Potential for Application: HOV lanes are rarely on non-freeway/interstate roads. The only controlled access roads within the WMPO planning area are the last miles of I-40 and US74/76 between the Cape Fear Memorial Bridge and Leland. HOV lanes could be identified for commuters coming from Brunswick County, northern New Hanover County, and Pender County into Wilmington.

How to Implement: When appropriate, conversations between the WMPO and NCDOT about adding or altering an existing lane on I-40 and US74/76 in each direction should take place. Population growth and subsequent traffic growth will determine the timing of this discussion.

Strategy 3: High-Occupancy Toll (HOT) Lanes

Description: High-Occupancy Toll (HOT) lanes are travel lanes that are available to high-occupancy vehicles without charge; however, single-occupancy vehicles (SOVs) are permitted to use these lanes at a cost that is adjusted in response to demand. HOT lanes go one step further than HOV lanes by allowing non-HOV vehicles to still use an express lane, but at a premium which varies throughout the day to ensure it remains an express lane. The toll for a HOT lane would cost more at 5:00pm than midnight because the need to reserve the express lane for HOVs or toll payers changes with traffic congestion.



Benefits of High-Occupancy Toll Lanes include:

- Increased use of HOV lanes, while remaining express
- Additional source of income
- May encourage more carpooling once toll payers experience the benefit of using an express lane

Potential for Application: Typically, a HOT lane is converted from an HOV lane only after there is data to support that the HOV lane may be used by more vehicles and still remain significantly more efficient than a normal travel lane.

How to Implement: If I-40, I-140, or US74/76 should develop an HOV lane that is underutilized by carpoolers, there may be potential to convert the HOV lane into a HOT lane. Population growth and, subsequently, traffic growth will determine the timing of this discussion.

Strategy 4: Water Taxi Service

Description: A water taxi is used to provide public transportation along and crossing waterways. Service may be scheduled with multiple stops, operating in a similar manner to a bus, or on-demand, similar to a taxi. Unlike a ferry, a water taxi does not accommodate vehicles.



Benefits of Water Taxi Services include:

- Congestion management
- Attractive to tourists
- Access to major employment centers (specifically from Brunswick County to Wilmington across the Cape Fear River)

Potential for Application:	The geographic nature of the Wilmington region lends itself to the development of a water taxi service. All of the WMPO member jurisdictions have shorelines on either the Cape Fear River, Intracoastal Waterway, or the Atlantic Ocean.
How to Implement:	Opportunities for public-private partnerships should be explored. Grant funding opportunities may be available in the realm of clean fuel for companies interested in exploring water taxi opportunities. In the distant future, Wave Transit could have the ability to expand to include water transportation.



Conclusion

TDM has been described numerous times in this plan as an effort to mitigate the growth in traffic congestion. While an SOV component remains, the main goal of these strategies is to give residents of the region transportation options other than travel by SOV. Every strategy provided within the TDM element of this plan is program-focused, rather than infrastructure-focused. To prevent long commute times for short distances as well as the incessant building of highways, multilane roads, and other infrastructure built for cars, TDM strategies must continue to be implemented within the Wilmington region.

Sources:

- FHWA Organizing and Planning for Operations
<https://ops.fhwa.dot.gov/tsmo/index.htm#q2>
- “What is Car Sharing and How Does it Work?” by Michael Graham Richard
<https://www.treehugger.com/cars/what-is-car-sharing-and-how-does-it-work.html>
- Institute for Transportation and Development Policy
<https://www.itdp.org/library/standards-and-guides/the-bus-rapid-transit-standard/what-is-brt/>
- Texas A&M Transportation Institute “Mobility Investment Priorities”
<https://mobility.tamu.edu/mip/strategies-pdfs/travel-options/technical-summary/trip-reduction-ordinances-4-pg.pdf>
- US Department of Transportation
<https://www.transportation.gov/mission/health/High-Occupancy-Vehicle-Lanes>



APPENDIX N: Environmental Justice and Critical Resources

Introduction

The WMPO conducted an evaluation of the impacts of Cape Fear Moving Forward 2045 roadway projects on both critical environmental resources and traditionally underserved environmental justice (EJ) communities. As the inclusion of a project in the Metropolitan Transportation Plan (MTP) is an initial step towards project funding and implementation, it is important to understand during the planning phase any potential major environmental or social impacts a project may have. The purpose of this analysis is not meant to replace more detailed, thorough, and project-specific environmental screening and analysis. Instead, this analysis is meant to offer an outline for these future studies.

An early understanding of the potential impacts a project may have on an environmental resource or EJ community is critical to long-term project success. For example, the analysis could identify issues that may require additional, detailed review. By identifying these issues at the planning level, opportunities exist to avoid, minimize, or mitigate these negative impacts from a project. Early identification can also provide time and cost savings by avoiding project delays or even the discontinuation of a project.

The following discussion of the Cape Fear Moving Forward 2045 Metropolitan Transportation Plan environmental screening process is divided into two parts. The first focuses on overall impacts to the natural and cultural environment. The second section addresses issues specifically related to demographic statistics and environmental justice.

Environmental Analysis

Assessing Environmental Impacts

A qualitative screening was performed to assess the potential environmental impacts of the roadway projects

recommended for inclusion in Cape Fear Moving Forward 2045. For this analysis, project locations were overlaid onto a series of critical resource maps. Only resources with available GIS data were evaluated, as this was meant to be a planning level study. Project encroachments into natural or community resources were identified and given a score (0-3), based on the perceived degree of impact of the project on the resource. The tables below define the scoring parameters for various factors within three categories: Hydrologic, Environmental, and Community.

Perceived Degree of Impact	Score
No Impact	0
Minor Impact	1
Moderate Impact	2
Major Impact	3

Hydrologic Factors		
Score	Water Supply Watershed	Flood Zone
0	not within 1/4 mile	not within 1/4 mile
1	has 1 within 1/4 mile	passes through 1 section of flood zone
2	has 2 or more within 1/4 mile	passes through 2 or more sections of flood zone
3	is predominantly within water supply watershed	is predominantly flood zone

Score	Wetlands*	High Quality Waters	Water Bodies
0	not within 1/4 mile	not within 1/2 mile	not within 1/4 mile
1	passes through 1 section of wetlands	within 1/2 mile of HQW	crosses 1 water body
2	passes through 2 or more/ is close to 50% wetland	within 1/4 mile of HQW	crosses 2 or more water bodies
3	3 or more and 50%+ is wetland	is along or passes through HQW	is along a water body or a sensitive area/predominantly water body

Environmental Factors				
Score	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas
0	not within 1/2 mile	not within 1/2 mile	not within 1/2 mile	not within 1/2 mile
1	within 1/2 mile	within 1/2 mile	within 1/2 mile	within 1/2 mile
2	within 1/4 mile	within 1/4 mile	within 1/4 mile	within 1/4 mile
3	has more than 1	passes through or along	passes through or along	passes through or along

Community Factors				
Score	Schools	Parks	State Owned Land	Federally Owned Land
0	not within 1/2 mile	not within 1/2 mile	not within 1/2 mile	not within 1/2 mile
1	within 1/2 mile	within 1/2 mile	within 1/2 mile	within 1/2 mile
2	within 1/4 mile	within 1/4 mile	within 1/4 mile	within 1/4 mile
3	has more than 1	passes through or along	passes through or along	passes through or along

*Wetland mapping utilizes remote sensing tools in order to predict where wetlands will occur. The wetland locations used for this analysis are estimations from the National Wetland Inventory (NWI).

The table below scores each proposed roadway project in terms of the hydrologic, environmental, and community factors listed on the previous page. These scores are then added to determine a total score for the project. Projects that receive a total score of zero (0) points are considered to have no impact on the surrounding natural environment. Those that score one (1) to ten (10) points are considered to have a minor impact; those that score 11 to 16 points are considered to have a moderate impact; and those that score 17 points or more are considered to have a major impact.

These total scores are used to evaluate candidate projects and their potential impact on the environment. The information gained from this analysis allows proposed roadway alignments to be adjusted or refined to avoid or minimize environmental impacts. This screening process also allows for early identification of likely impacts and areas of uncertainty that will need to be investigated in more detail as a project moves forward in planning and design.

The following list is based on the projects' initial project identification numbers (RW-#) and does not reflect the scoring criteria developed by the Roadway modal subcommittee.

The table below is continued on pages 398-402.

Total Score	Project's Perceived Impact on the Surrounding Natural Environment
0	None
1-10	Minor
11-16	Moderate
17+	Major

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic					Environmental				Community				Total Score
					Water Supply Watershed	Flood Zone	Wetlands*	High Quality Waters	Water Bodies	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas	Schools	Parks	State Owned Land	Federally Owned Land	
68	RW-5	US74/76/Heide Trask Bridge Replacement	2045	\$234,500,000	0	3	1	2	3	0	0	1	0	0	1	3	0	14
39	RW-6	Hoover Road Modernization	2030	\$4,620,000	0	1	2	0	0	0	0	0	0	2	0	0	0	5
61	RW-7	Lanvale Road NE Widening	2040	\$64,620,000	0	1	2	0	1	0	3	3	0	0	0	0	2	12
31	RW-10	New Centre Drive Extension to Clear Run Drive	2025	\$1,290,000	0	0	1	0	1	0	0	0	1	1	0	1	0	5
44	RW-13	Godfrey Creek Road Extension to US17/NC210	2035	\$25,780,000	0	2	3	0	0	0	0	0	0	3	0	0	0	8

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic	Environmental	Community	Total Score
50	RW-16	Myrtle Grove Road Widening	2035	\$79,670,000	0 2 2 3 3	0 0 2 2	3 1 1 0	19
33	RW-17	US17/76/Oleander Drive Access Improvements	2030	\$20,860,000	0 1 2 0 1	0 2 3 0	3 3 0 0	15
62	RW-18	Sloop Point Road Modernization	2040	\$8,870,000	0 2 2 0 3	0 0 0 0	0 0 1 0	8
41	RW-20	US17/74/76/Causeway Improvements Phase 2	2035	\$92,090,000	0 3 3 0 3	3 1 3 3	0 0 3 0	22
74	RW-23	Sidbury Road Modernization	2045	\$19,200,000	0 2 3 0 3	0 2 1 3	2 1 0 0	17
51	RW-25	Piner Road Widening and Intersection Realignment	2035	\$21,200,000	0 1 3 1 0	0 0 3 0	3 2 0 0	13
38	RW-26	Blue Clay Road Modernization	2030	\$1,420,000	0 1 2 0 3	0 0 2 0	2 2 2 0	14
69	RW-29	Center Drive Extension (Segment 1)	2045	\$15,080,000	0 0 3 0 0	0 0 0 0	0 0 0 0	3
70	RW-30	Center Drive Extension (Segment 2)	2045	\$31,600,000	0 0 3 0 0	0 0 0 0	0 0 0 0	3
71	RW-31	Center Drive Extension (Segment 3)	2045	\$12,000,000	0 1 0 0 0	0 0 2 0	0 0 0 0	3
75	RW-35	Harrison Creek Road Extension (Segment 3)	2045	\$45,350,000	0 0 3 0 0	0 0 0 0	0 0 0 0	3
48	RW-42	US17 Access Management Improvements	2035	\$6,700,000	0 2 2 0 3	0 2 3 3	0 0 0 0	15
67	RW-51	NC 133/River Road SE Widening	2045	\$164,990,000	0 3 3 0 3	2 0 1 3	2 3 3 0	23
73	RW-55	River Road Realignment	2045	\$20,270,000	0 1 1 0 2	2 0 0 1	3 2 2 0	14
76	RW-57	Plantation Road Extension	2045	\$103,470,000	0 0 3 0 1	0 0 2 0	0 0 0 0	6

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic					Environmental				Community				Total Score
					Water Supply Watershed	Flood Zone	Wetlands*	High Quality Waters	Water Bodies	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas	Schools	Parks	State Owned Land	Federally Owned Land	
43	RW-77	Basin Street Extension	2035	\$39,430,000	0	2	2	0	1	0	0	1	3	3	0	0	12	
55	RW-78	Old Fayetteville Road Modernization	2035	\$3,521,006	0	2	2	0	2	0	1	1	1	3	3	0	0	15
40	RW-83	Dogwood Lane Extension	2035	\$63,220,000	0	3	2	0	3	0	0	1	0	1	1	0	0	11
35	RW-92	US17/76/Dawson Street Streetscape Improvements	2030	\$6,370,000	0	0	1	0	0	3	0	2	1	3	2	0	0	12
37	RW-93	US17/76/Wooster Street Streetscape Improvements	2030	\$6,280,000	0	0	0	0	0	3	0	2	1	3	3	0	0	12
46	RW-99	Murrayville Road Modernization and Extension	2035	\$60,250,000	0	1	3	0	3	0	0	2	0	1	3	0	0	13
65	RW-102	Greenville Loop Road Widening	2045	\$81,450,000	0	2	2	0	3	0	1	2	0	2	2	0	0	14
36	RW-106	US17/Ocean Hwy E to NC133/River Road SE Connector Road	2030	\$48,110,000	0	1	1	0	3	0	0	0	1	0	2	1	0	9
42	RW-115	Internal Port Access Road	2035	\$34,010,000	0	3	1	0	3	3	0	2	2	3	2	3	0	22
64	RW-123	Burnett Boulevard Widening	2045	\$8,798,055	0	3	3	0	3	1	0	2	2	1	2	3	0	20
29	RW-124	US 117/Shipyards Boulevard Speed Sensors and Warning System	2025	\$20,000	0	0	1	0	1	2	0	1	1	3	3	3	0	15
58	RW-127	US76/421/17/17 BUS/Cape Fear Memorial Bridge Replacement	2040	\$377,480,000	0	3	2	0	3	3	0	2	3	1	2	1	0	20
49	RW-129	Navaho Trail and Masonboro Loop Road Roundabout (Northern Intersection)	2035	\$1,790,000	0	1	3	0	2	0	0	0	0	0	0	0	0	6

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic					Environmental				Community				Total Score
					Water Supply Watershed	Flood Zone	Wetlands*	High Quality Waters	Water Bodies	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas	Schools	Parks	State Owned Land	Federally Owned Land	
78	RW-136	NC210 & NC133 Intersection Improvements	2045	\$2,950,000	0	0	1	0	3	0	0	0	0	0	0	0	4	
77	RW-137	US117 & NC210 Intersection Improvements	2045	\$2,280,000	0	0	1	0	0	0	0	0	1	0	0	0	2	
57	RW-166	Future NC417/ Hampstead Bypass & Sidbury Road Interchange	2035	\$22,340,000	0	0	3	0	3	0	0	0	2	0	0	0	8	
56	RW-175	NC210 & Island Creek Road Intersection	2035	\$1,560,000	0	1	0	0	1	0	0	0	0	0	0	0	2	
32	RW-176	US74/76/Andrew Jackson Hwy & Old Fayetteville Road Interchange	2030	\$43,410,000	0	0	1	0	1	0	1	1	1	3	0	0	8	
45	RW-181	I-140 & Blue Clay Road Interchange	2035	\$24,870,000	0	0	1	0	3	0	0	0	0	0	0	0	4	
72	RW-186	US17/17 BUS & NC140 Interchange Improvements	2045	\$21,310,000	0	0	3	0	0	0	0	2	0	0	0	0	5	
53	RW-191	Mohican Trail & Masonboro Loop Road Roundabout	2035	\$10,700,000	0	1	2	0	1	0	0	0	0	0	0	0	4	
54	RW-192	Navaho Trail and Masonboro Loop Road Roundabout (Southern Intersection)	2035	\$9,660,000	0	1	3	0	1	0	0	0	0	0	0	0	5	
52	RW-193	Myrtle Grove Road/Piner Road/Masonboro Loop Road Roundabouts	2035	\$10,080,000	0	1	3	0	2	0	1	1	0	1	1	0	9	
66	RW-202	US74/Salisbury Street & US76/Causeway Drive Roundabout	2045	\$53,290,000	0	3	1	3	3	0	0	2	0	0	2	2	16	
28	RW-216	CoW Signal Ethernet Improvements	2025	\$338,604	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic					Environmental				Community				Total Score
					Water Supply Watershed	Flood Zone	Wetlands*	High Quality Waters	Water Bodies	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas	Schools	Parks	State Owned Land	Federally Owned Land	
30	RW-219	US17 BUS/Market Street Road Diet (I of II)	2025	\$2,620,000	0	0	0	0	1	0	0	1	1	3	3	2	0	11
34	RW-220	US17 BUS/Market Street Road Diet (II of II)	2030	\$4,230,000	0	1	1	0	1	0	0	1	0	3	3	3	0	13
60	RW-221	US421/Snow's Cut Bridge Replacement	2040	\$149,090,000	0	1	2	0	2	3	0	3	2	0	3	2	0	18
47	RW-222	Independence Blvd Road Widening	2035	\$23,620,000	0	2	3	0	2	0	0	2	1	0	2	0	0	12
59	RW-223	Independence Blvd Access Management	2040	\$89,110,000	0	1	3	0	2	0	2	1	1	3	3	0	0	16
63	RW-226	US421/74/NC133 & US17/76 Merge Lane Addition	2040	\$20,660,000	0	3	3	0	3	3	1	3	3	0	0	3	0	22
1	R-3300	Future NC417/Hampstead Bypass	2025	\$205,485,000	0	2	3	0	2	2	0	1	0	3	0	1	0	14
15	U-3338	Kerr Avenue & MLK Jr Pkwy Interchange	2025	\$20,500,000	0	0	2	0	1	0	0	1	0	1	1	0	0	6
8	U-4434	Independence Blvd Extension	2025	\$151,499,000	0	1	1	0	2	0	0	2	0	3	2	0	0	11
7	U-4751	Military Cutoff Rd Extension	2025	\$47,650,000	0	0	3	0	2	0	0	3	0	1	3	0	0	12
14	U-4902	US17 BUS/Market Street Access Management Improvements (Includes US74/MLK Jr Pkwy & Market Street Interchange & RW-188)	2025	\$59,300,000	0	0	2	0	1	3	0	2	0	3	1	1	0	13
16	U-5702	US117/NC132/College Road Access Management	2025	\$100,966,000	0	0	1	0	1	0	0	3	0	3	3	3	0	14

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic	Environmental	Community	Total Score										
					Water Supply Watershed	Flood Zone	Wetlands*	High Quality Waters	Water Bodies	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas	Schools	Parks	State Owned Land	Federally Owned Land	
3	U-5704	US17/76/Oleander Drive & US17/NC132/College Road Interchange	2025	\$55,300,000	0	0	1	0	1	0	0	3	0	3	0	0	11	
13	U-5710	US74/Eastwood Road & Military Cutoff Road	2025	\$29,637,000	0	0	3	0	1	0	0	0	0	0	1	0	0	5
6	U-5729	US421/Carolina Beach Road Upgrade	2025	\$13,000,000	0	1	1	0	3	1	0	3	3	3	3	2	0	20
11	U-5731	US74/NC133/Isabel Holmes Bridge Flyovers	2025	\$36,000,000	0	3	3	0	3	3	3	3	3	0	1	0	0	22
9	U-5732	US17/NC210 Superstreet	2025	\$19,389,000	0	0	1	0	0	0	0	1	1	0	1	0	0	4
5	U-5734	US421/Front Street Widening	2025	\$26,000,000	0	3	1	0	3	3	0	3	3	1	3	3	0	23
4	U-5790	US421/Carolina Beach Road Widening and Intersection Improvements	2025	\$25,094,000	0	0	2	0	1	0	0	1	0	3	1	0	0	8
12	U-5792	US74/MLK Jr Pkwy & US117/NC132/College Road Intersection	2025	\$25,110,000	0	3	2	0	3	3	0	3	0	0	0	0	0	14
2	U-5863	NC133/Castle Hayne Road Widening	2025	\$30,374,000	0	2	1	0	2	0	0	2	1	2	1	2	0	13
17	U-5881	US117/NC132/College Road Upgrade Roadway	2025	\$81,700,000	0	3	3	0	3	3	0	3	1	1	2	1	0	20
18	U-5914	NC133/River Road SE Modernize Roadway	2025	\$1,800,000	0	3	3	0	3	0	0	2	2	2	1	1	0	17
19	U-5926	New Route 23rd Street to 26th Street	2025	\$5,322,000	0	1	3	0	3	0	0	2	0	0	2	0	0	11
23	U-5954	NC133/Castle Hayne Road & N 23rd Street Roundabout	2030	\$2,350,000	0	0	1	0	0	0	0	0	0	0	0	1	0	2

Final Rank	Project ID	Project Name	Planning Year	Planning Year Cost	Hydrologic					Environmental				Community				Total Score
					Water Supply Watershed	Flood Zone	Wetlands*	High Quality Waters	Water Bodies	DPDE Discharge Site	Land Trust Conservation Property	Protected Open Space	Natural Heritage Areas	Schools	Parks	State Owned Land	Federally Owned Land	
22	U-6080	Kerr Ave Widening	2030	\$25,900,000	0	0	1	0	1	0	0	1	0	3	1	2	0	9
20	U-6083	N 23rd Street Widening	2030	\$23,000,000	0	3	3	0	3	0	0	1	0	0	0	3	0	13
26	U-6128	US17/76/Oleander Drive & Greenville Loop Road/Greenville Avenue Intersection	2035	\$9,500,000	0	1	1	0	3	0	1	1	0	0	2	0	0	9
25	U-6199	Wilmington Citywide Signal System	2030	\$15,960,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	U-6201	Kerr Avenue Extension	2030	\$5,400,000	0	0	1	0	1	0	0	3	0	3	3	0	0	11
27	U-6202	Gordon Road Widening	2035	\$85,115,000	0	2	2	1	2	0	0	1	0	1	1	1	0	11
20	U-6235	Wilmington Signal Preemption Phase II	2025	\$1,271,020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
79	U-4738	Cape Fear Crossing (Funded Portion)	2045	\$158,670,000	0	3	3	3	0	3	0	3	3	1	1	3	0	23

*Wetland mapping utilizes remote sensing tools in order to predict where wetlands will occur. The wetland locations used for this analysis are estimations from the National Wetland Inventory (NWI).

Impact and Mitigation Activities

Since the transportation planning activities of the WMPO are regional in scope, this environmental mitigation discussion does not focus on individual projects within the plan but rather offers a summary of environmentally sensitive areas. The WMPO conducts analyses to identify conflicts between planned transportation projects and these areas, in an effort to minimize negative impacts that a project may have on the environment.

The greatest potential environmental impacts of transportation projects being constructed in North Carolina's coastal plain are on wetlands, floodplains, and other hydrologic features. Other common potential environmental impacts include habitat fragmentation and loss of forest land. Beyond the ecological impacts, the human environment also requires careful monitoring to mitigate any adverse effects on the community, such as an increase in noise or light pollution, bisection of communities, the loss of cultural or historical elements, or reduced accessibility to businesses. All of the Cape Fear Moving Forward 2045 Roadway projects should continue to be evaluated for any and all environmental and community impacts.

Federally funded projects, or those requiring some form of federal approval, must meet the requirements of the National Environmental Policy Act (NEPA) when moving forward into scoping, design, and eventually construction. Within NEPA, there are three classes of necessary action: Class I Environmental Impact Statement (EIS); Class II Environmental Assessment (EA); and Class III Categorical Exclusion (CE).

Class I Environmental Impact Statements (EIS)

An Environmental Impact Statement (EIS) is required by NEPA for major capital projects which significantly impact the natural and human environments. For applicable transportation projects, an EIS provides a detailed explanation of the project development process, including the consideration of alternatives as well as an analysis of the potential impacts of each alternative. EIS documentation requires the most extensive environmental and human impact review of the three classes of action.

In order to streamline the NEPA process requirements and accelerate project delivery, NCDOT developed a project delivery process known as the “Merger Process,” which is a collaboration between NCDOT, the US Army Corps of Engineers (USACE), FHWA, and NCDEQ (formerly NC DENR). One of the products of this process is an EIS. The Merger Process allows agencies to work more quickly and efficiently by providing a common forum for personnel to discuss and discover means to comply with key elements of their respective agency’s mission. The process utilizes Concurrence Points (CP) representing key, defining decisions made by the numerous agencies’ representatives and the agreement to accept the decision made. There are seven concurrence points within the process and they are as follows:

- Concurrence Point 1, Purpose and Need and Study Area Defined
- Concurrence Point 2, Detailed Study Alternatives Carried Forward
- Concurrence Point 2A, Bridging Decisions and Alignment Review
- Concurrence Point 3, LEDPA/Preferred Alternative Selection
- Concurrence Point 4A, Avoidance and Minimization
- Concurrence Point 4B, 30 Percent Hydraulic Review
- Concurrence Point 4C, Permit Drawing Review

The Merger Process helps to document how opposing mandates are adjusted during a collaboration, which results in representatives reaching a “compromise-based decision” to satisfy regulatory and individual mandates.

Class II Environmental Assessments (EA)

Environmental Assessments (EA) are required when the proposed transportation project does not meet the criteria for a CE or an EIS. The assessment is used to determine if additional environmental documentation is required. If the EA confirms no significant impacts, a Finding of No Significant Impact (FONSI) is issued for the project.

Projects funded with state and local funds still require environmental review. In 2015, the State Environmental Policy Act (SEPA) was reformed to create criteria for which a SEPA review would be required. Projects that meet three criteria throughout the process of scoping to construction must submit a SEPA Environmental Review Document. The criteria are as follows:

- Incur an expenditure of \$10 million in state funds or involve land-disturbing activity on 10+ acres of public land;
- Includes an action by a state agency;
- Has a potential to negatively affect natural resources, public health and safety, natural beauty, or historical or cultural elements, of the state's common inheritance.

If it is determined that a project meets these three requirements, the organization must begin the SEPA Review Process, which may require an EIS or an EA/FONSI.

Class III Categorical Exclusions (CE)

There are three types of Categorical Exclusion (CE) as defined by 23 CFR 771.117(c-e). All types are considered to have no significant environmental impacts. Types I and II are defined as having minimal impacts, and include projects such as bridge replacements, bicycle and pedestrian facilities, and parking facilities. Type III CEs have slightly greater, yet still not significant, impacts. This type includes projects such as roadway widenings.

Environmental Mitigation

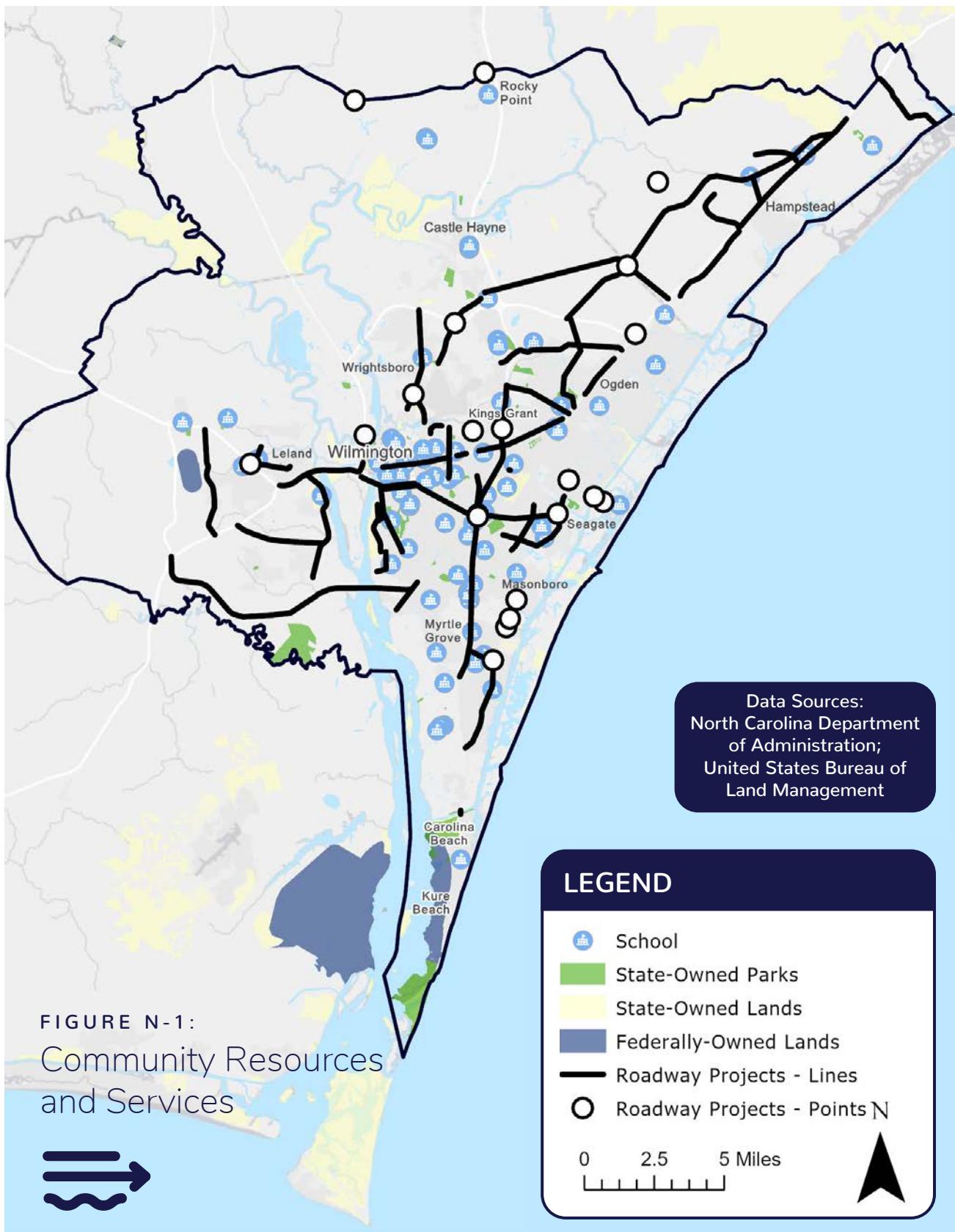
Preserving the natural and built environment is essential for maintaining the quality of life for which our region has become known. The WMPO is committed to developing transportation projects which avoid or minimize impacts on the natural and built environment. Projects should be considered on an individual basis and assessed for all potential impacts. The assessment contained within this section offers a high level, first look analysis of the potential impacts a project may have. The WMPO strongly encourages the use of this analysis during the early stages of project development.

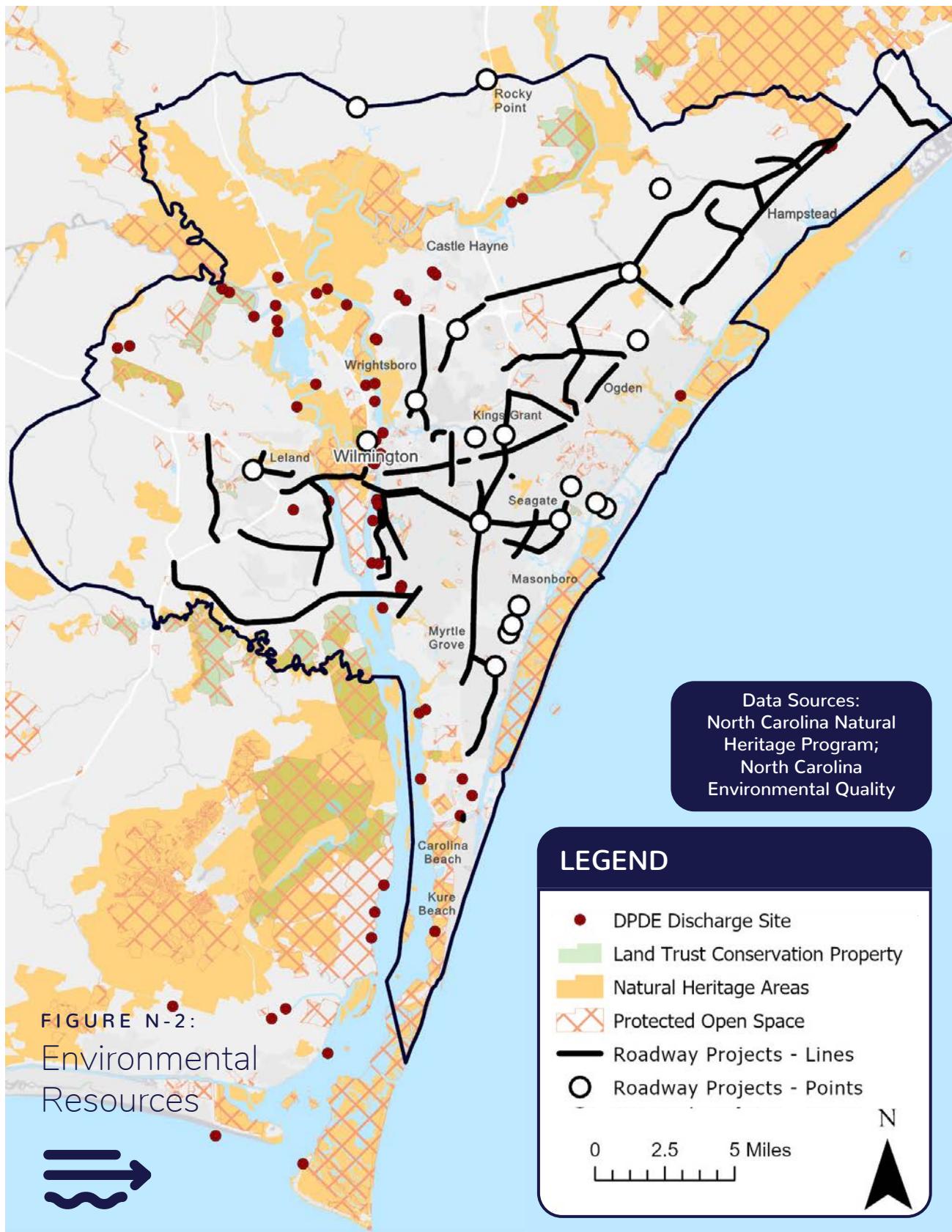
If impacts are unavoidable, and cannot be minimized, mitigation measures should be implemented. It is critical to determine which mitigation measures may be necessary early in the planning and design phases to avoid potential project stoppage or delays once a project is under construction. The table on the following page outlines potential mitigation measures that should be considered.

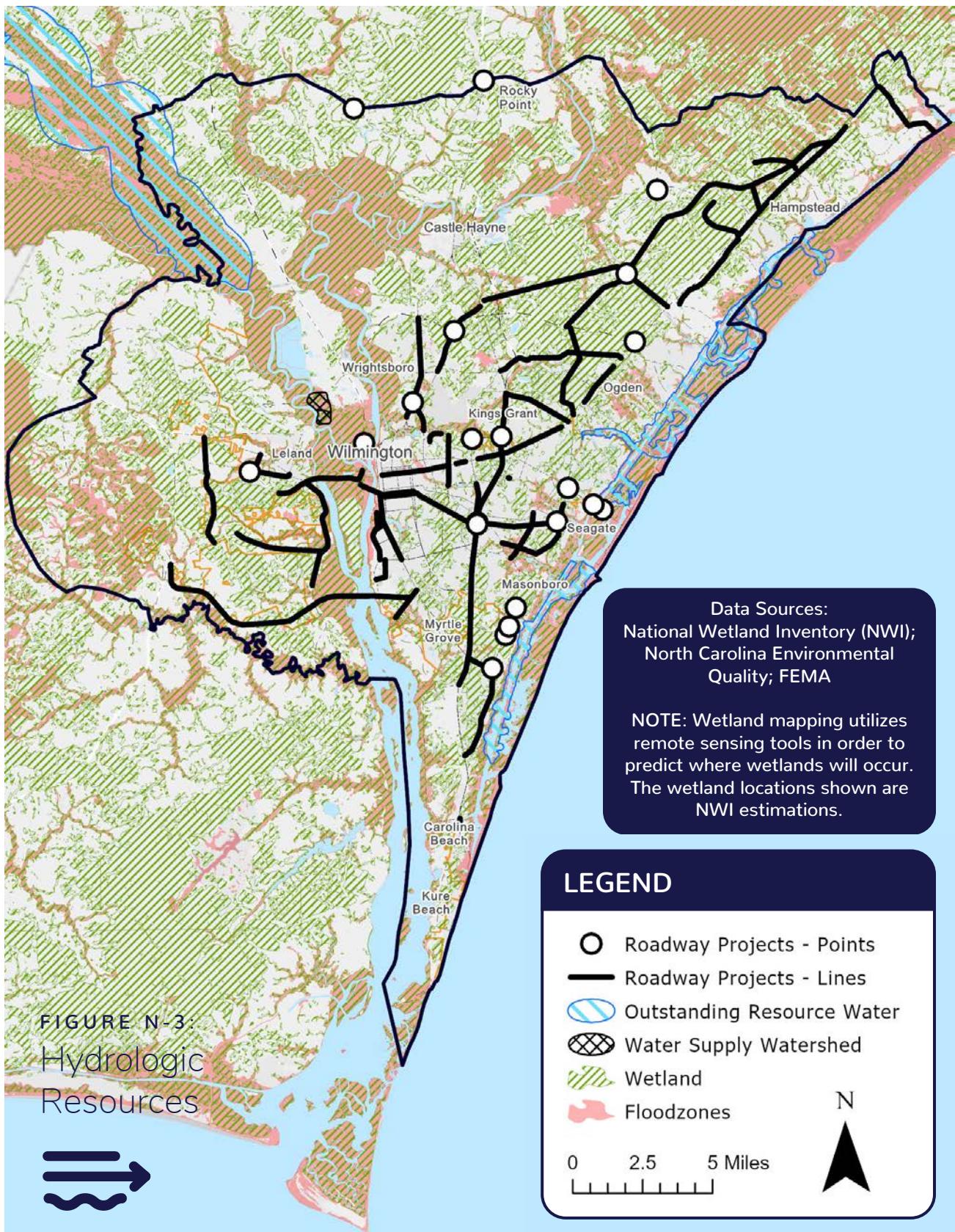
Environmental Impact Mapping

See pages 505, 506, and 507 for Cape Fear Moving Forward 2045 fiscally-constrained Roadway projects overlaid on mapping of environmental, community, and estimated hydrologic resources, respectively. The locations of resources shown are based on available GIS data, as noted on each map, and are approximate.

Impact	Mitigation Measure(s)
Air Quality	<ul style="list-style-type: none"> Designate pedestrian/transit-oriented development areas Adopt local air quality mitigation fee program Develop energy efficient incentive programs Adopt air quality enhancing design guidelines
Archaeological	<ul style="list-style-type: none"> Archaeological excavation Design modifications to avoid area Educational activities
Community Impacts	<ul style="list-style-type: none"> Bridge community Sidewalks Bike lanes Develop recreational areas Traffic calming Oral history project
Endangered/Threatened Species	<ul style="list-style-type: none"> Preservation Enhancement or restoration of degraded habitat Creation of new habitats Establishment of buffer areas around existing habitats Modifications of land use practices Restrictions on land access
Farmland	<ul style="list-style-type: none"> Protect one to one farmland acre for every acre converted Agricultural conservation easement on farmland Compensation
Fragmented Animal Habitats	<ul style="list-style-type: none"> Construct overpasses with vegetation Construct underpasses, such as culverts and viaducts Other design measures to minimize potential fragmenting of animal habitats
Historic Sites	<ul style="list-style-type: none"> Relocation of historical property Design modification Landscaping to reduce visual impacts Photo documentation Historic archival recording to present historic information to the public
Light Impacts	<ul style="list-style-type: none"> Lens color Direction of lighting Low level lighting
Noise	<ul style="list-style-type: none"> Noise barriers Planting trees
Park Impacts	<ul style="list-style-type: none"> Construct bike/pedestrian pathways Dedicate land Compensation for park dedication fees Replace impaired functions
Viewshed Impacts	<ul style="list-style-type: none"> Vegetation and landscaping Screening Buffers Earth berms Camouflage Lighting
Wetlands	<ul style="list-style-type: none"> Compensation Wetland restoration possible through NCDEQ's Division of Mitigation Services (DMS) On-site wetland restoration Preservation of wetlands in threat of being impacted Wetland preservation to help control flooding Strict erosion and sedimentation control measures







Environmental Justice

Introduction

The WMPO seeks to fulfill the tenants of environmental justice as defined by Executive Order 12898, signed into law by President Clinton in 1994. The projects selected for this plan seek to strike a balance between improving and maintaining the region's transportation networks, ensuring that low-income and minority populations are not disproportionately impacted and that the natural environment is preserved. This section identifies and highlights the areas within the Wilmington region that are characterized by higher populations of low-income and minority residents and estimates the impact of this plan's bicycle and pedestrian, public transportation, and roadway projects on these areas.

Public Outreach

The strategy for providing and promoting public involvement throughout the development of this plan included a specific focus on communities located in areas identified as being of interest to the plan's environmental justice efforts. Using 2017 American Community Survey (ACS) 5-Year Estimates, areas with higher concentrations of minority, low-income, and Limited English Proficiency (LEP) were identified using GIS. Community organizations such as churches, community centers, and language/multicultural centers within these recognized areas were contacted to help spread awareness of the MTP and disseminate information to their members. Over twenty-five communities were contacted and, of these, thirteen agreed to give their members information about the MTP and how to participate in the public outreach process. The following organizations disseminated MTP resources to their communities:

- Hemenway Community Center
- Unitarian Universalist Congregation Wilmington
- Life Community Church
- Royal Palms Mobile Home Park
- New Beginning Christian Church
- St. Stanislaus Catholic Church
- Saint Nicholas Greek Orthodox Church
- Wilmington Baptist Association
- Port City Church
- Bible Baptist Church
- Oleander United Methodist Church
- Amigos Internaciona
- UNCW, World Languages & Cultures Department

Demographic Characteristics

In the analysis of the area's demographics, seven markers were identified as critical to the environmental justice of transportation throughout the WMPO region. The seven markers are as follows: African American, Hispanic, other minority, household poverty, LEP, disability, and households with no vehicle. Poverty, LEP, and disability status all have regulations regarding their definitions, which are outlined in the subsequent paragraph.

The U.S. Census Bureau has set thresholds for these various statistics. As previously stated, 2017 ACS 5-Year Estimates were utilized for this analysis. At this time, poverty was defined by the Census Bureau as an individual earning an annual income of about \$13,000 or less, or a family of four below about \$26,000. For disability, the International Classification of Functioning, Disability, and Health attempts to bridge many of these definitions by considering disability as an umbrella term for impairments, activity limitations, and participation restrictions. Lastly, LEP is defined more obscurely by LEP.gov—an individual who does not speak English as their primary language and who has a limited ability to read, speak, write, or understand English.

Cape Fear Moving Forward 2045 examined the seven EJ population groups—African American, Hispanic, other minority, poverty, LEP, disability, and households with no vehicle—to determine where these populations occur at higher rates than the regional average. The average percentages for the WMPO planning area as a whole can be found in the table below, as compared to state and national averages.

WMPO, North Carolina, and National Demographic Percentages (2017 ACS 5-Year Estimates)			
Population	WMPO	North Carolina	United States
African American	13.30%	21.50%	13.30%
Hispanic	5.40%	9.10%	17.60%
Other Minority	5.40%	8.00%	9.50%
Household Poverty	16.40%	15.30%	13.80%
Limited English Proficiency (LEP)	1.40%	2.50%	4.50%
Disability	15.80%	13.70%	12.60%
Households with No Vehicle	5.40%	6.10%	8.80%

Degree of Impact Analysis

With these locations recognized, concentrations of marginalized and underrepresented populations can be identified in conjunction with the proposed transportation network. A Degree of Impact (DOI) analysis is rooted in a need to appropriately identify populations and geographical areas where residents have traditionally not been involved in the planning process or have been negatively impacted by transportation decisions. A DOI analysis attempts to illustrate for decision-makers where it may be necessary to conduct enhanced study of either the proposed transportation network, or specific projects. This type of analysis relies on data which is current, consistent, and readily-accessible. DOI analyses are beneficial because they can be easily understood and similarly disseminated to the public, while illustrating to decision-makers and the public where enhanced study may be needed in order to fully assess potential impacts.

Process

Using a DOI analysis, both decision-makers and the public can see which areas within a region have the highest rates of underrepresented populations. An explanation of the process to identify these locations can be found on the following page.

1. The WMPO identified seven demographically-based EJ populations within the WMPO planning boundary. These populations include:
 - African American
 - Hispanic
 - Other Minority
 - Household Poverty
 - Limited English Proficiency (LEP)
 - Disability
 - Households with No Vehicle

NOTE: See the table on page 410 for percentages of these populations in the region.

2. Data from the 2017 ACS 5-Year Estimates was used to find percentages at the census block group level for the seven identified EJ groups. For each census block, the total number of persons in each EJ group was divided by the total population or number of households for that census block.
3. The percentage of the population within each census block belonging to an identified EJ group was then compared to the regional average for that group. A four-level DOI assessment was applied:
 - Block groups with 0 EJ groups exceeding area averages denote 'No Concentration'
 - Block groups with 1-2 EJ groups exceeding area averages denote 'Slight Concentration'
 - Block groups with 3-4 EJ groups exceeding area averages denote 'Moderate Concentration'
 - Block groups with 5-7 EJ groups exceeding area averages denote 'High Concentration'
4. Proposed Cape Fear Moving Forward 2045 Bicycle and Pedestrian, Public Transportation, and Roadway projects were then overlaid on the demographic data to assess the overall impact on EJ populations.
5. Decision-makers will be able to use the resulting information to determine if a proposed project includes service gaps for EJ populations or has impacts on EJ populations that may require amplified analysis by project planners.

Analysis and Conclusions

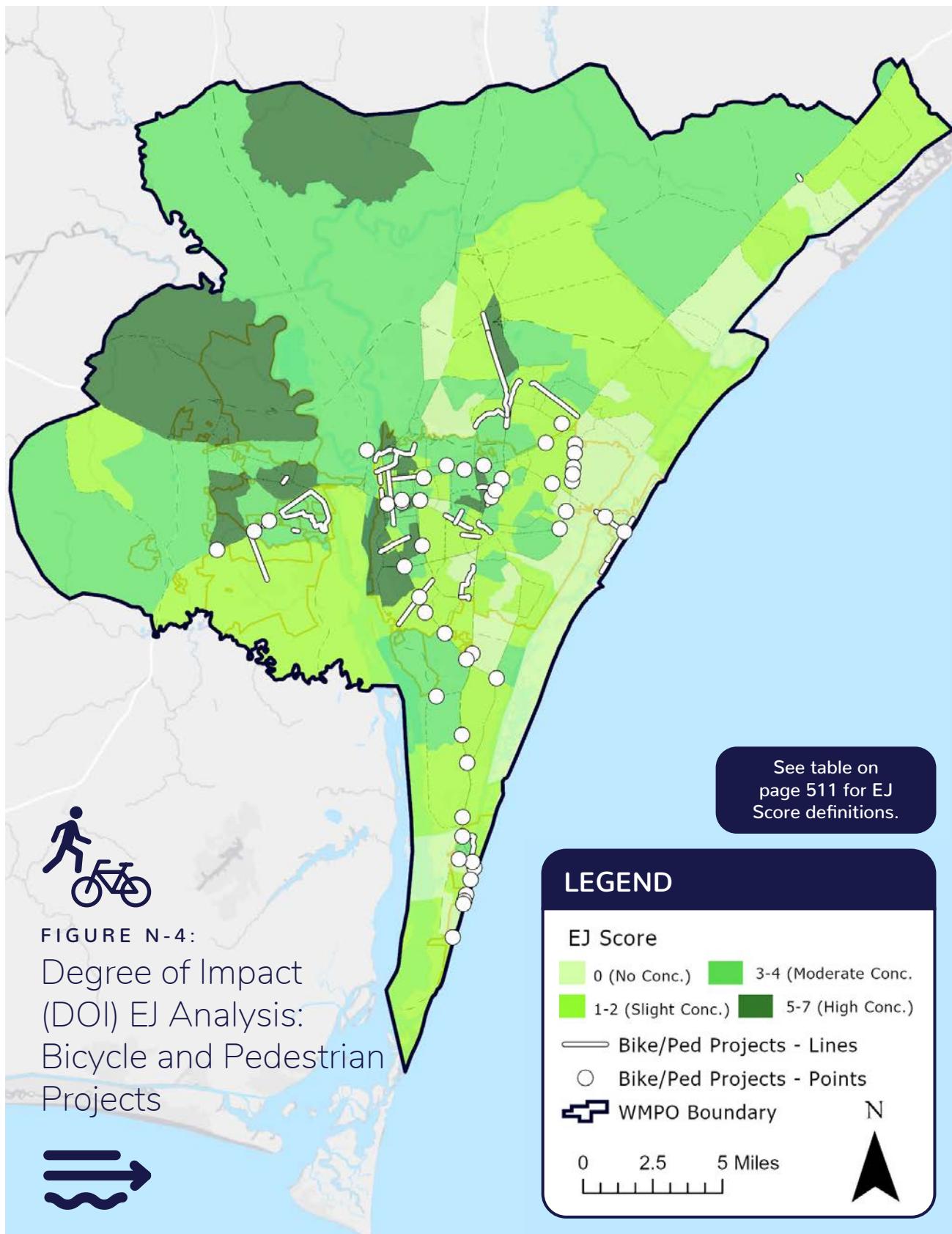
The maps on the following pages display the bicycle and pedestrian, public transportation, and roadway projects overlaid on the layer derived from the previously stated methodology. This single layer visualization of the environmental justice populations improves upon previous methods by ensuring these populations are not singled out, nor are areas with multiple EJ populations—denoted in the map as 'High Concentration'—only seen once. Areas scoring highest (5-7), with a high concentration of EJ groups exceeding the regional average, are generally located in the downtown Wilmington area, and the northwestern portion of the WMPO planning boundary, in rural Brunswick and Pender counties.

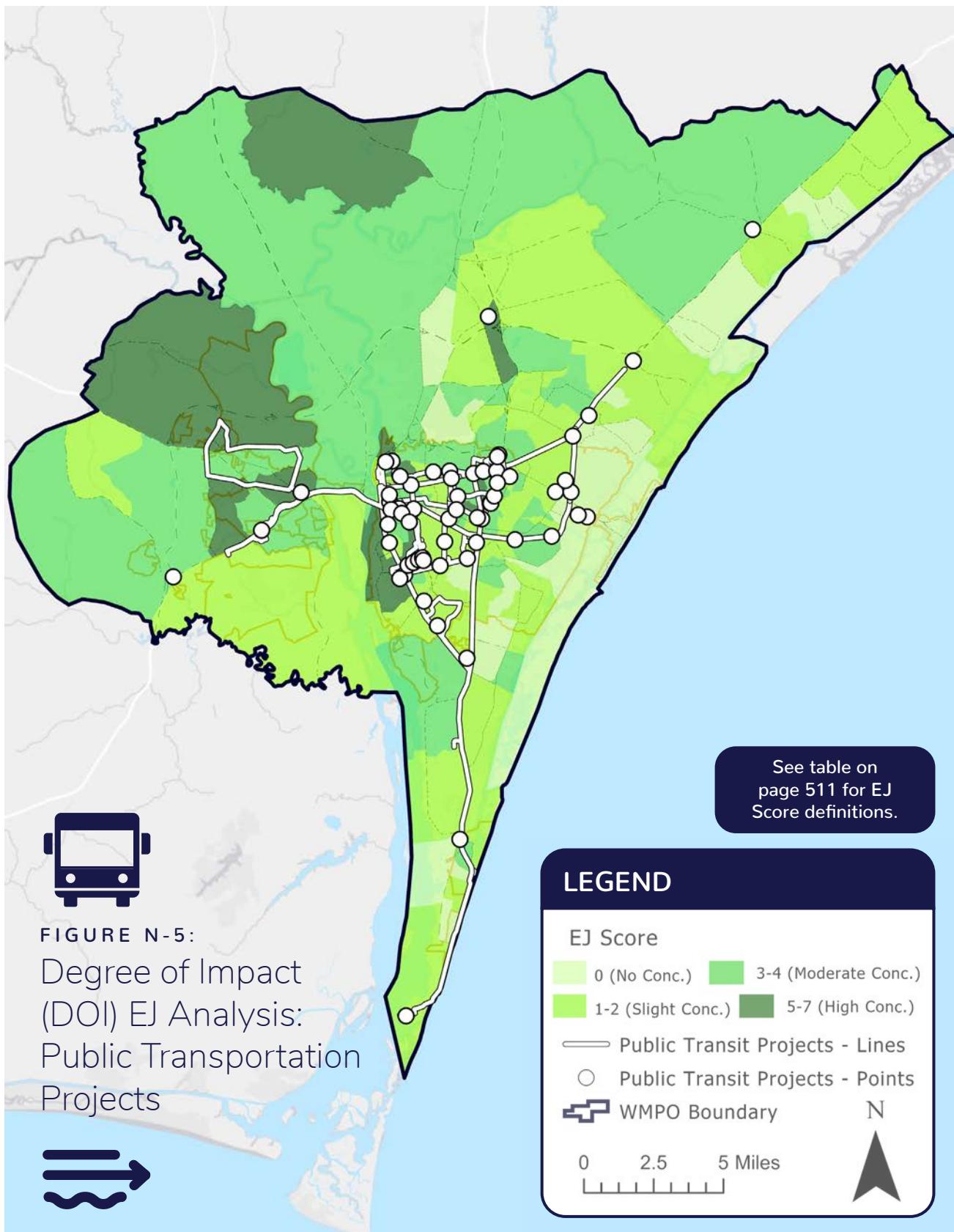
This analysis model takes a more holistic approach to environmental justice visualization throughout the WMPO planning boundary. Many of the roadway projects border block groups of the highest concentration of EJ communities. These projects may assist those populations in acquiring essential goods and services while aiding fluid movement throughout those areas. Decision-makers should remain mindful of these

communities and potential negative impacts that may occur as a result of these projects during the scoping, design, and implementation phases. Efforts should continually be made to involve representatives of the affected community in the design process and to avoid or minimize any negative impacts.

Mapping EJ Populations			
Map Value	EJ Score	Definition	Level of Concentration
	0	0 of the 7 defined EJ populations exceed area averages	No Concentration
	1-2	1-2 of the 7 defined EJ populations exceed area averages	Slight Concentration
	3-4	3-4 of the 7 defined EJ populations exceed area averages	Moderate Concentration
	5-7	5-7 of the 7 defined EJ populations exceed area averages	High Concentration

Additional maps showing the distribution of each individual EJ population across the WMPO planning boundary can be found at the end of this Appendix.





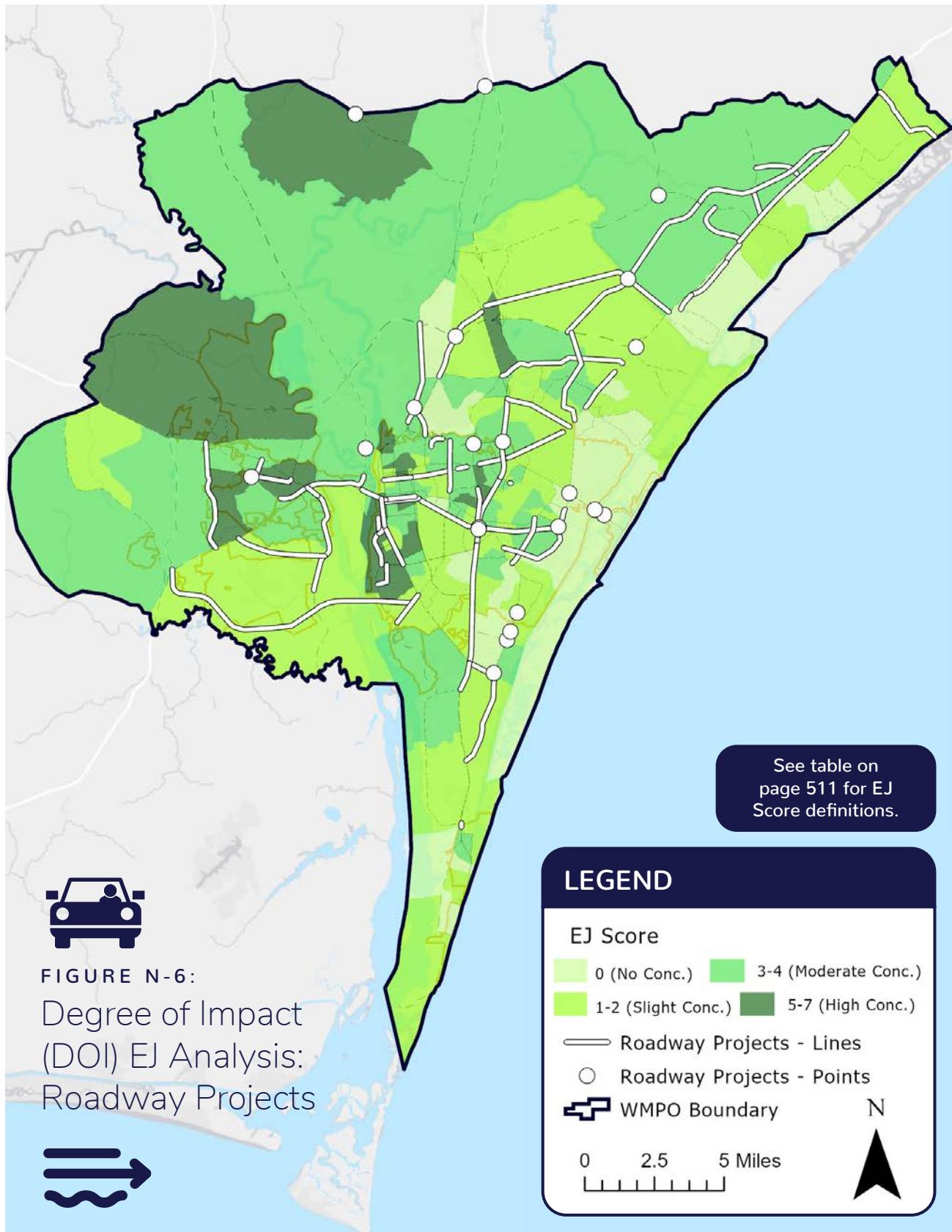


FIGURE N-6:
Degree of Impact (DOI) EJ Analysis:
Roadway Projects

Other Considerations

While the DOI EJ Analysis maps demonstrate the geographic relationships between MTP projects and the varying concentrations of EJ populations, WMPO staff also utilized total project costs to measure transportation impacts.

Total Project Costs by Mode	
Mode	Total Project Costs
Bicycle and Pedestrian	\$76,714,947
Public Transportation*	\$26,429,423
Roadway**	\$3,456,448,664
TOTAL	\$3,559,593,034

*Total does not include projects TA-5222, TA-5221, TA-5223, or TG-4797 (routine capital and replacement vehicles not associated with a particular route or location)

**Total does NOT include R-2633, I-140/Wilmington Bypass (funded by GARVEE Bonds to be paid back through 2025; Construction complete 2017)

Total Project Costs by Level of Concentration (rounded to nearest dollar)								
Mode	Non-EJ Population		EJ Populations					% of Region Total
	No Concentration	% of Region Total	Slight Concentration	Moderate Concentration	High Concentration	Total (EJ)		
	\$8,243,104	10.7%	\$40,119,215	\$18,113,942	\$10,238,686	\$68,471,843	89.3%	
	\$2,148,609	8.1%	\$10,083,087	\$9,518,081	\$4,679,646	\$24,280,814	91.9%	
	\$396,002,593	11.5%	\$1,560,846,083	\$1,177,743,986	\$321,856,002	\$3,060,446,071	88.5%	
TOTAL	\$406,394,306	11.4%	\$1,611,048,384	\$1,205,376,009	\$336,774,335	\$3,153,198,728	88.6%	

The graphic below shows the breakdown of land area within the WMPO boundary by EJ population concentration level, as well as total project costs per square mile for each.



The goal is a fair distribution of federal, state, and local transportation dollars among non-EJ and EJ populations, but there are limiting factors. For example, many of the areas with a high concentration of EJ populations are found in outlying, rural areas where it is not feasible or cost effective to operate public transportation routes, resulting in lower total project costs for this mode in the high concentration areas. Because of longer distances between origins and destinations, there are typically less bicycle and pedestrian projects in these areas as well, further reducing total project costs. Another limiting factor to be considered when reviewing project distributions are the hydrological features of the region. Although cost distributions are considered for each concentration per square mile, large portions of the higher concentration TAZs are uninhabitable, unbuildable waters and swamps.

Additionally, it should be noted that this is a high-level planning analysis. With the exception of committed STIP projects, most projects contained within this plan are far from being designed and engineered. The total project cost comparison is really the only method to quantitatively assess transportation impacts among non-EJ and EJ populations at a regional scale this early in the planning process. As a project enters the design phase, however, an in-depth study of all potential positive and negative effects (benefits and burdens) should be conducted. Other types of measures should be identified to assess transportation system benefits and burdens. Examples include accessibility, congestion, and safety.

The goal of environmental justice is to achieve an even distribution of benefits and burdens, ensuring that disproportionately high and adverse effects are not placed on EJ populations. According to the U.S. DOT Environmental Justice Order, in order to determine if an effect is disproportionately high and adverse, the following may be taken into account:

- Mitigation measures to be implemented
- Offsetting benefits to the EJ population(s) affected
- Project design
- Comparable impacts
- Number of existing similar elements in non-EJ areas

The tables on the following pages provide examples of benefits, burdens, and mitigation measures typically associated with the following types of transportation projects:

- New Road on New Location
- Road Widening
- Modernization/Superstreet, Operational Improvements
- Bicycle and Pedestrian
- Public Transportation

Project Type	Possible Benefits	Possible Burdens	Possible Mitigation Measures
 New Road on New Location	<ul style="list-style-type: none"> • Improve system connectivity and redundancy • Improve mobility and access; increase route options • Improve traffic flow and Level of Service (LOS) on existing/ alternative routes • Reduce congestion • Travel time savings, more favorable commuting conditions • Improve safety by removing thru traffic from local traffic (in the case of a new bypass) • Enhance freight movement • Increase property values where new access is provided to developable land • Improve police, fire, and other safety operations as a result of increased mobility and reduced congestion • Could help expedite an evacuation due to a hurricane or other emergency (Cape Fear Crossing project in particular) 	<ul style="list-style-type: none"> • Benefits limited to those with access to a motor vehicle • Right-of-way (ROW) acquisition • Displacement of homes, businesses, and/or community facilities and services • Community barriers • Negative effects on businesses as a result of traffic being diverted to new routes • Decrease in property values where new roadway is in close proximity to residential areas • Decrease in aesthetics • Increase in noise, emissions • Adverse environmental effects, loss of open space, increase in stormwater runoff • Temporary construction impacts including travel delay due to road closures and detours as well as erosion and sedimentation • Could generate more traffic, increasing vehicle miles traveled (VMT) 	<ul style="list-style-type: none"> • Include bicycle and pedestrian facilities such as sidewalks, bike lanes, and multi-use paths (MUPs)* • Include provisions for bus stops and bus pull outs (where appropriate) along new roadways where service is feasible and expected* • Select project design alternatives and rights-of-way for minimal impacts to existing homes, businesses, and community facilities/ services • If a proposed project will displace an essential business or community resource, perform a site comparison analysis to determine if an alternative location would be appropriate or if the relocation would negatively impact EJ populations in the study area (revision of roadway plans may be necessary) • Conduct increasingly detailed studies of noise impacts as project design progresses; install noise barriers where needed and feasible • Identify and protect environmentally sensitive areas during construction • Implement strict erosion control measures and best management practices • Prepare a traffic control plan for use during construction; plan construction activities to minimize travel delays

*Refer to information on NCDOT's updated Complete Streets policy on pages 37-38

Project Type	Possible Benefits	Possible Burdens	Possible Mitigation Measures
Road Widening	<ul style="list-style-type: none"> • Reduce congestion • Improve operations/efficiency • Improve safety • Increase capacity with additional travel lanes • Improve traffic flow and Level of Service (LOS) • Travel time savings • Improve reliability • Reduce crashes (when turn lanes are added) • Improve access to homes, businesses, and/or community facilities and services (when turn lanes are added) • Improve police, fire, and other safety operations as a result of reduced congestion 	<ul style="list-style-type: none"> • Benefits limited to those with access to a motor vehicle • Acquisition of additional ROW from adjacent homes, businesses, and community facilities and services • Displacement of homes, businesses, and/or community facilities and services • Changes in access to homes, businesses, and/or community facilities and services • Increase in noise, emissions • Adverse environmental effects, loss of open space • Temporary construction impacts including travel delay due to road closures and detours as well as erosion and sedimentation • Negative effects on businesses as a result of construction traffic and road closures • Could generate more traffic, increasing VMT • Speeding/unsafe traffic flow 	<ul style="list-style-type: none"> • Include bicycle and pedestrian facilities such as sidewalks, bike lanes, and MUPs* • Include bus pull outs along heavily-traveled corridors with public transportation routes* • If a proposed project will displace an essential business or community resource, perform a site comparison analysis to determine if an alternative location would be appropriate or if the relocation would negatively impact EJ populations in the study area (revision of roadway plans may be necessary) • Identify and protect environmentally sensitive areas during construction • Implement strict erosion control measures and best management practices • Prepare a traffic control plan for use during construction; plan construction activities to minimize travel delays

*Refer to information on NCDOT's updated Complete Streets policy on pages 37-38

Project Type	Possible Benefits	Possible Burdens	Possible Mitigation Measures
Modernization/ Superstreet, Operational Improvements	<ul style="list-style-type: none"> • Preservation of the existing transportation system • Improve safety and operations • Reduce congestion • Travel time savings • Improve mobility and access • Improve system reliability • Improve system connectivity (new interchanges) • Bring roadways and intersections up to current design standards • Reduce number of crashes, reduce severity of crashes by decreasing the number of conflict points at intersections • Improve police, fire, and other safety operations as a result of reduced congestion 	<ul style="list-style-type: none"> • Benefits limited to those with access to a motor vehicle • Acquisition of additional right-of-way from adjacent homes, businesses, and community facilities and services • Displacement of homes, businesses, and/or community facilities and services • Changes in access to homes, businesses, and/or community facilities and services • Temporary construction impacts including travel delay due to road closures and detours as well as erosion and sedimentation • Negative effects on businesses as a result of construction traffic and road closures • Could generate more traffic, increasing VMT 	<ul style="list-style-type: none"> • Include bicycle and pedestrian facilities such as sidewalks, bike lanes, and MUPs* • Include bus pull outs along heavily-traveled corridors with public transportation routes* • If a proposed project will displace an essential business or community resource, perform a site comparison analysis to determine if an alternative location would be appropriate or if the relocation would negatively impact EJ populations in the study area (revision of roadway plans may be necessary) • Identify and protect environmentally sensitive areas during construction • Implement strict erosion control measures and best management practices • Prepare a traffic control plan for use during construction; plan construction activities to minimize travel delays

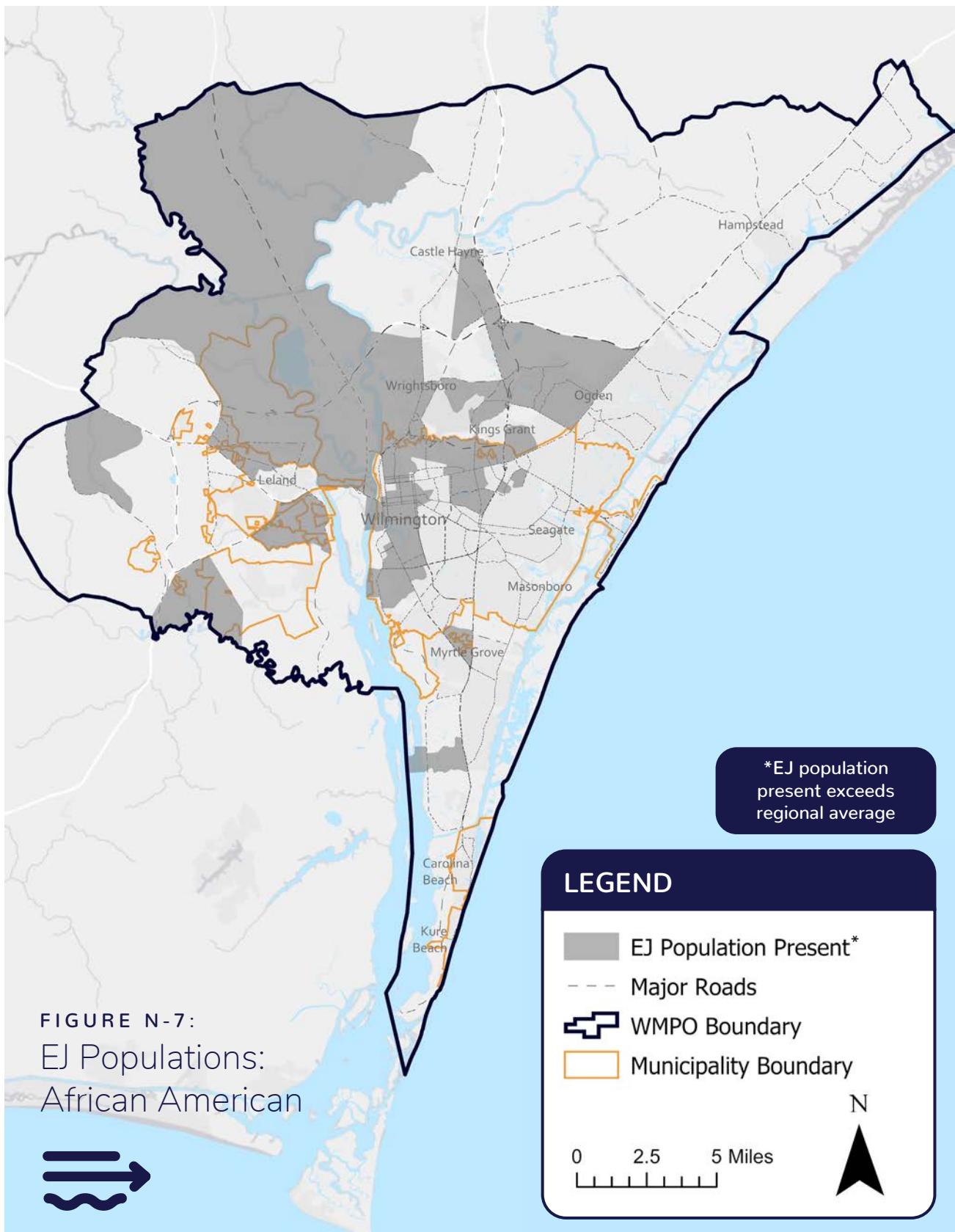
*Refer to information on NCDOT's updated Complete Streets policy on pages 37-38

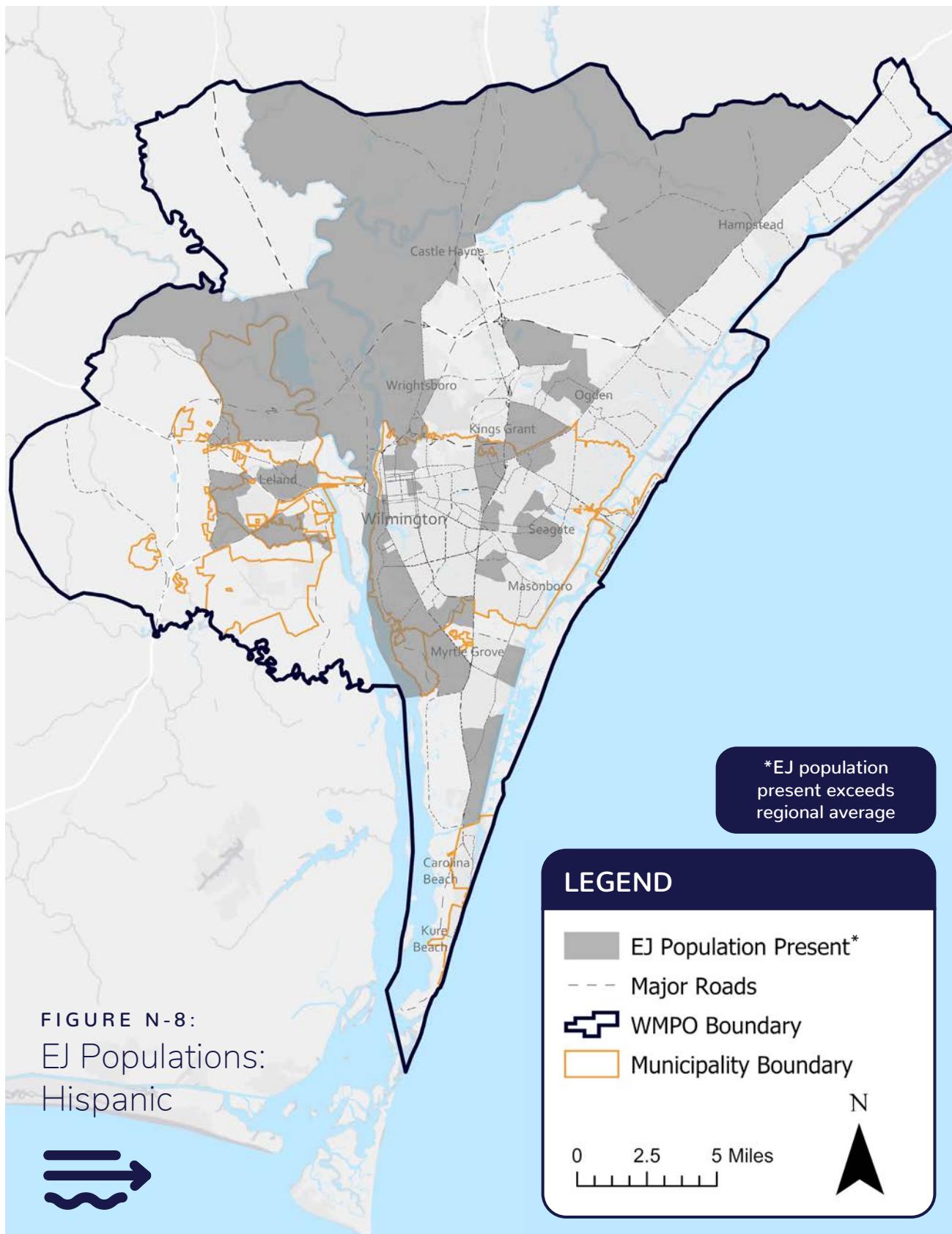
Project Type	Possible Benefits	Possible Burdens	Possible Mitigation Measures
	<p>Bicycle and Pedestrian</p> <ul style="list-style-type: none"> • Increase travel options • Increase mobility and access, especially for populations without access to a motor vehicle (including low-income and minority populations) and/or those who do not drive (youth and the elderly) • Improve safety • Decrease use of single-occupancy vehicles (SOVs) • Decrease VMT • Reduce congestion • Improve air quality • Reduce required parking • Promote active living, improving community health • Increase property values • Generate economic activity (tourism and recreation) 	<ul style="list-style-type: none"> • Acquisition of additional right-of-way from adjacent homes, businesses, and community facilities and services • Increase number of conflict points at intersections • Gaps in the network 	<ul style="list-style-type: none"> • Reduce travel lane width for motor vehicles to eliminate or minimize the need for additional right-of-way (also serves as traffic-calming measure) • Implement access management improvements, alternative intersection designs, and grade-separated crossings when possible to improve safety for bicyclists and pedestrians • Incorporate connections to other alternative modes of travel (bus stops, ferry terminal) whenever possible

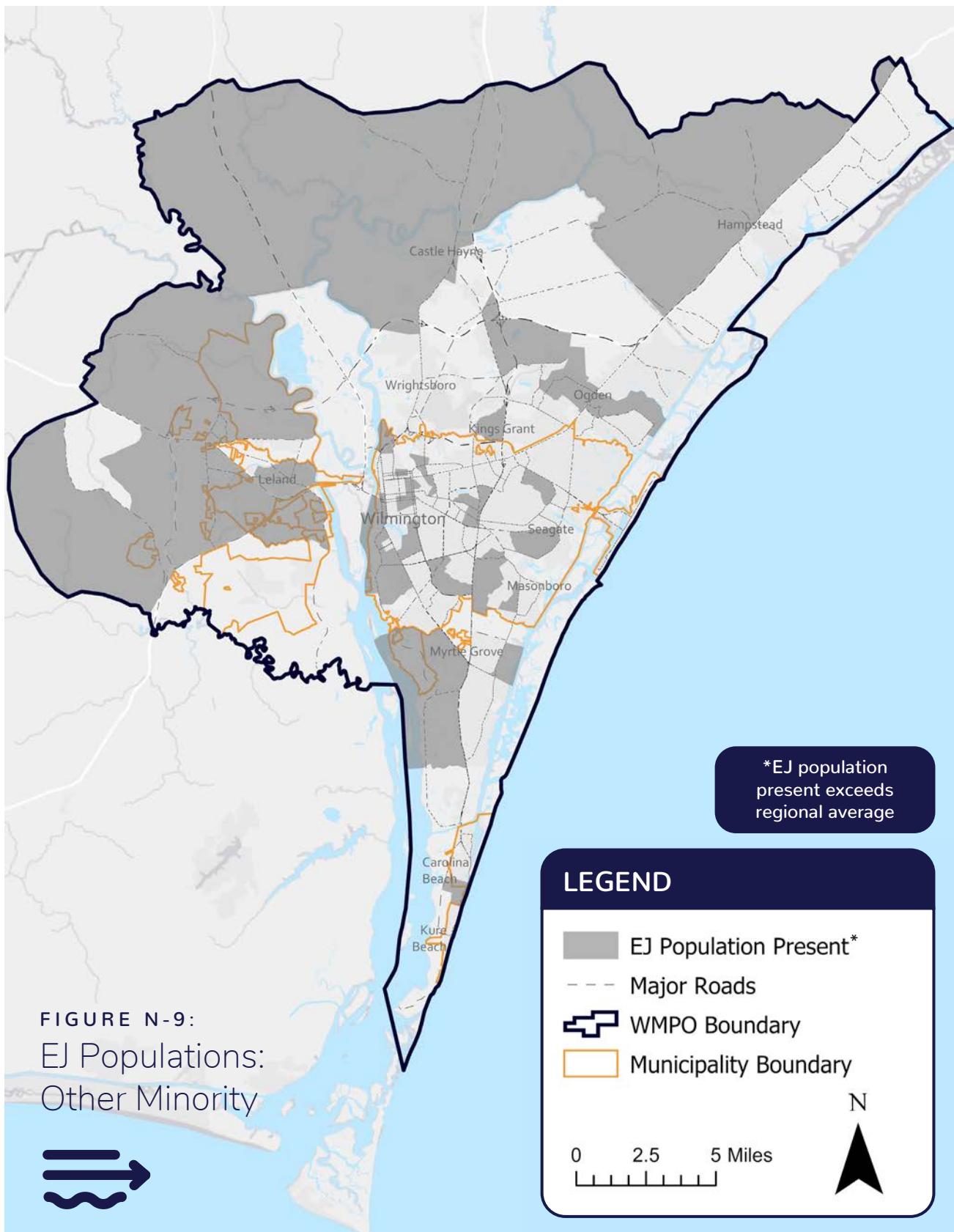
Project Type	Possible Benefits	Possible Burdens	Possible Mitigation Measures
 Public Transportation	<ul style="list-style-type: none"> • Increase travel options • Increase mobility and access, especially for populations without access to a motor vehicle (including low-income and minority populations) and/or those who do not drive (youth and the elderly) • Provide transportation for those with mobility limitations via paratransit service such as Wave Transit's DART (Dial-A-Ride-Transportation) Program • Decrease use of SOVs • Decrease VMT • Reduce congestion • Improve air quality 	<ul style="list-style-type: none"> • Public transportation is not a competitive option in terms of travel time • Service limitations (fixed-route) • Noise and emissions from buses • Buses stopping in travel lanes slow traffic • Not all bus stops are ADA accessible • Negative perception of public transportation by the general public 	<ul style="list-style-type: none"> • Improve frequency, especially on high-ridership routes • Incorporate connections to other alternative modes of travel (bus stops, ferry terminal) whenever possible • Locate bus routes within walking distance of identified concentrations of EJ populations • Implement alternative energy fuel sources such as compressed natural gas (CNG) and electric vehicles (EV) • Design bus pull-outs, especially along heavily traveled corridors • Design new bus stops and upgrade existing non-compliant bus stops to be ADA accessible

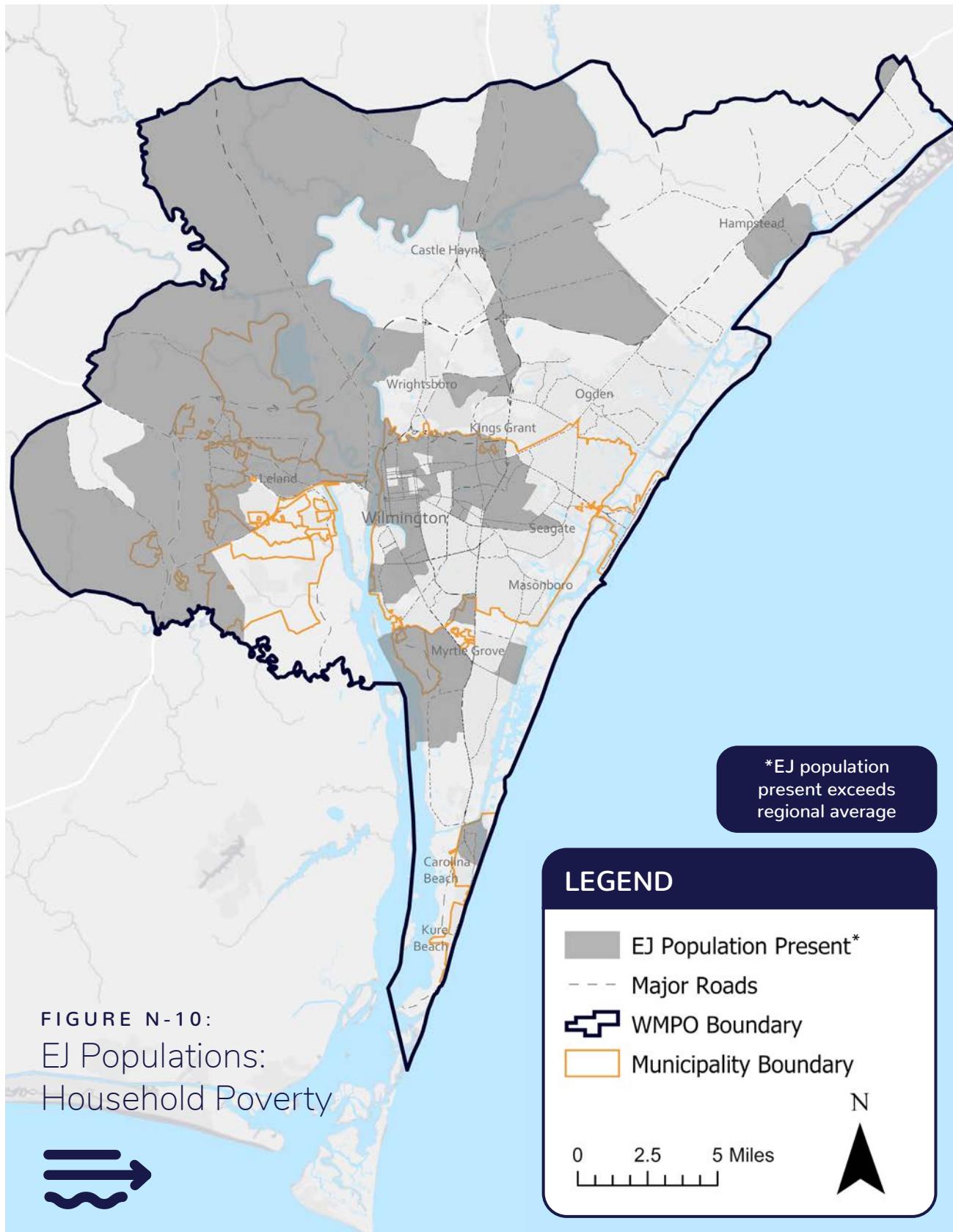
Additional Mapping

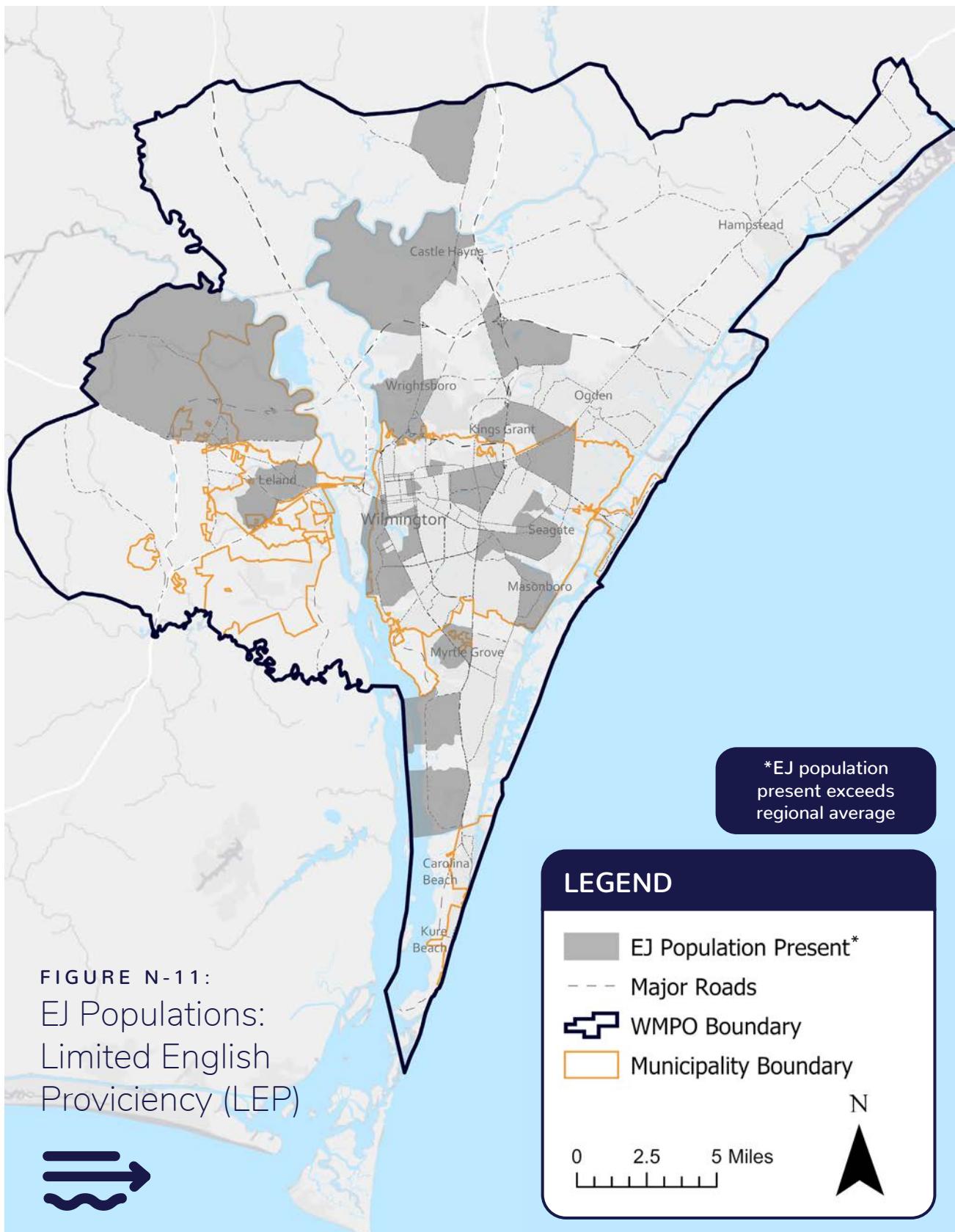
Figure	Title	Page Number
N-7	EJ Populations: African American	527
N-8	EJ Populations: Hispanic	528
N-9	EJ Populations: Other Minority	529
N-10	EJ Populations: Household Poverty	530
N-11	EJ Populations: Limited English Proficiency (LEP)	531
N-12	EJ Populations: Disability	532
N-13	EJ Populations: Households with No Vehicle	533

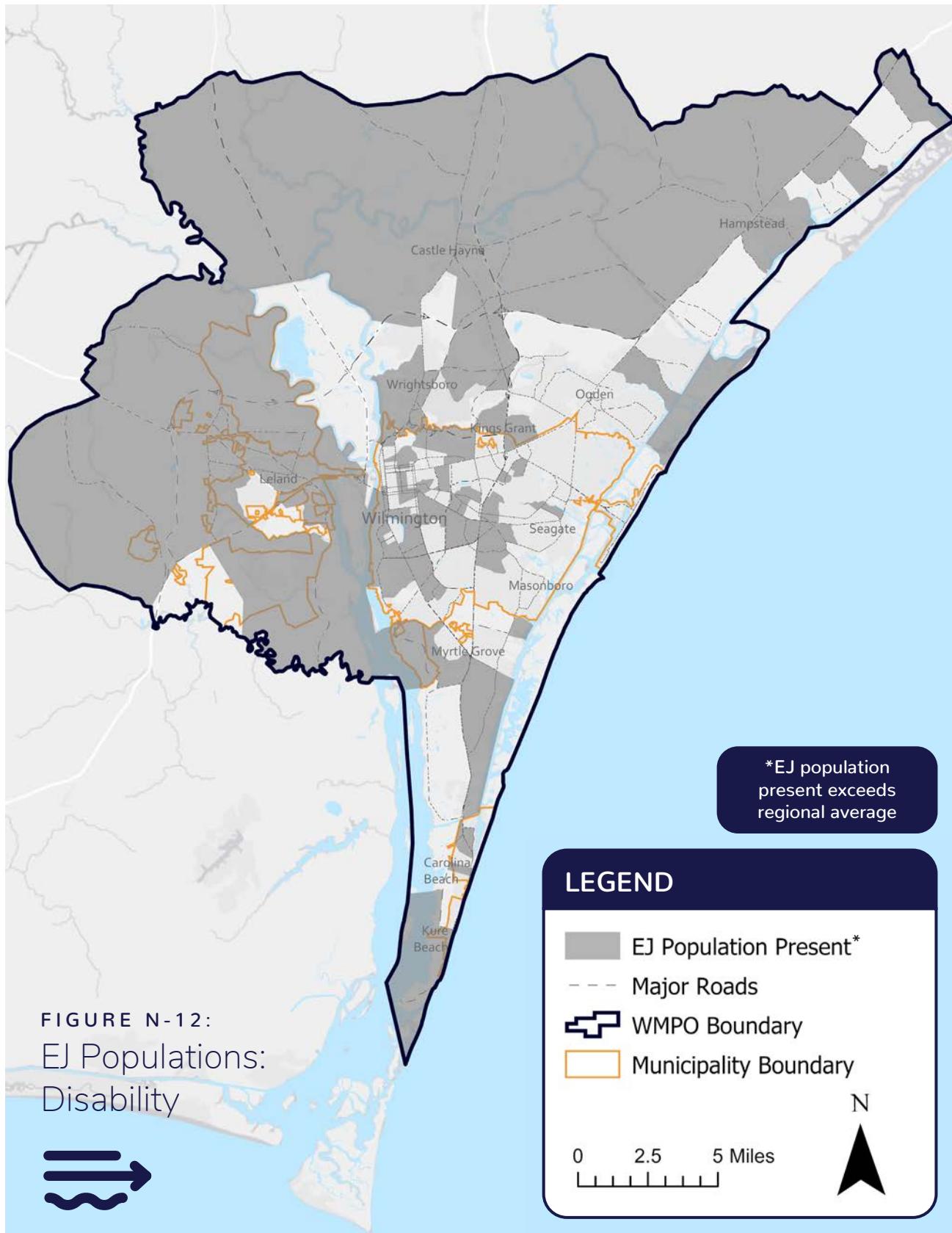


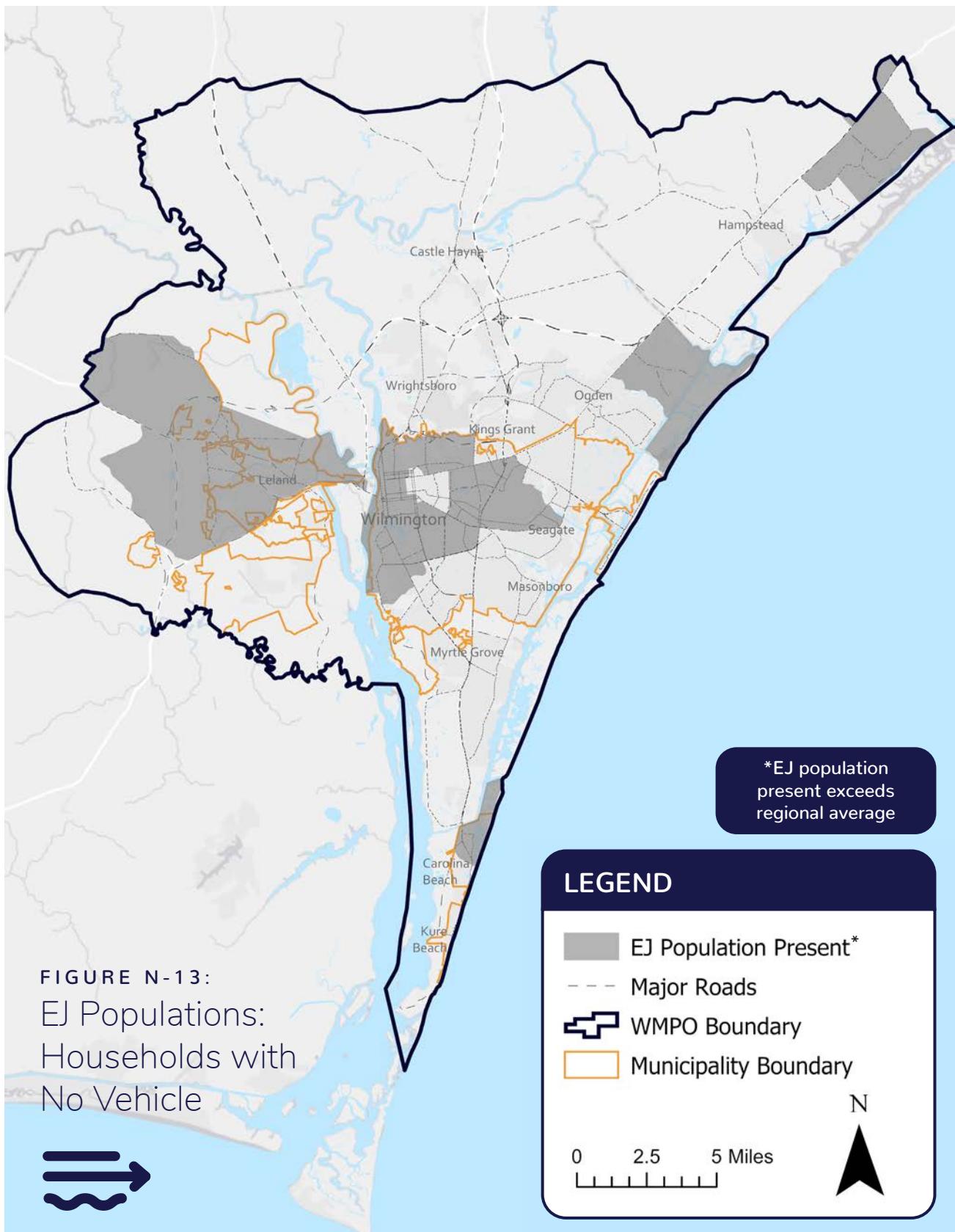












Sources:

- Mitigation Measures
 - The mitigation measures are derived from the Compensatory Mitigation Measures set by the EPA in the 1990 Memorandum of Agreement between the EPA and Army, as well as the Clean Water Act, specifically section 404.
- FHWA Environmental Review Toolkit, NEPA and Project Development
https://www.environment.fhwa.dot.gov/nepa/classes_of_action.aspx
- Lep.gov / Executive order 13166
- U.S. Census Bureau Poverty Thresholds for 2017
- FHWA Environmental Justice Reference Guide, April 1, 2015
https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/fhwahelp15035..pdf
- U.S. DOT Department of Transportation Order 5610.2(a)
<https://www.transportation.gov/transportation-policy/environmental-justice/department-transportation-order-56102a>