COMPREHENSIVE TRANSPORTATION PLAN

Johnston County

JULY
2025

ACKNOWLEDGMENTS

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Thank you to the hundreds of residents, community leaders and governmental staff who participated in the developmentof this plan through meetings, events, comments forms and plan review.

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Public Input Fast Facts
Selected Project Proposals (major)
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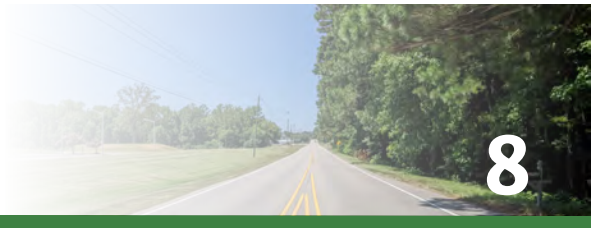
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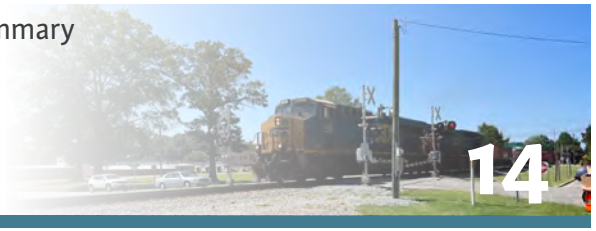
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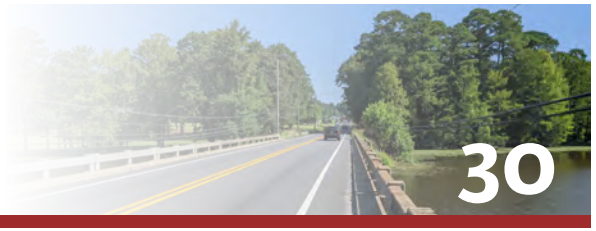
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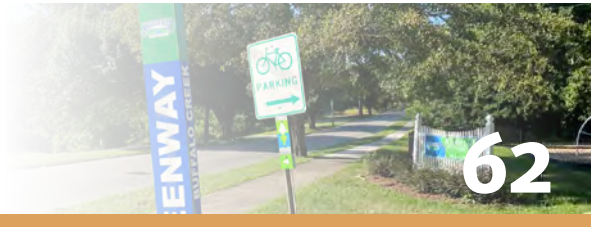
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EXECUTIVE SUMMARY

In 2024, Johnston County, in partnership with its municipalities, the Upper Coastal Plain Rural Planning Organization, the Capital Area Metropolitan Planning Organization (CAMPO), and the Transportation Planning Division of the N.C. Department of Transportation (NCDOT) began a Comprehensive Transportation Plan (CTP) study for Johnston County with a primary focus on the unincorporated portions of the County.

The Johnston County CTP is a "needs-based" plan that represents the community's consensus on its future transportation system to support anticipated growth and development over a 25-30 year timeframe. Modes of transportation evaluated as part of this plan included: highway, public transportation and rail, bicycle and pedestrian, and aviation.

The Johnston County Board of Commissioners adopted the Johnston County CTP locally in 2025. This plan does not cover routine maintenance or minor operations issues.

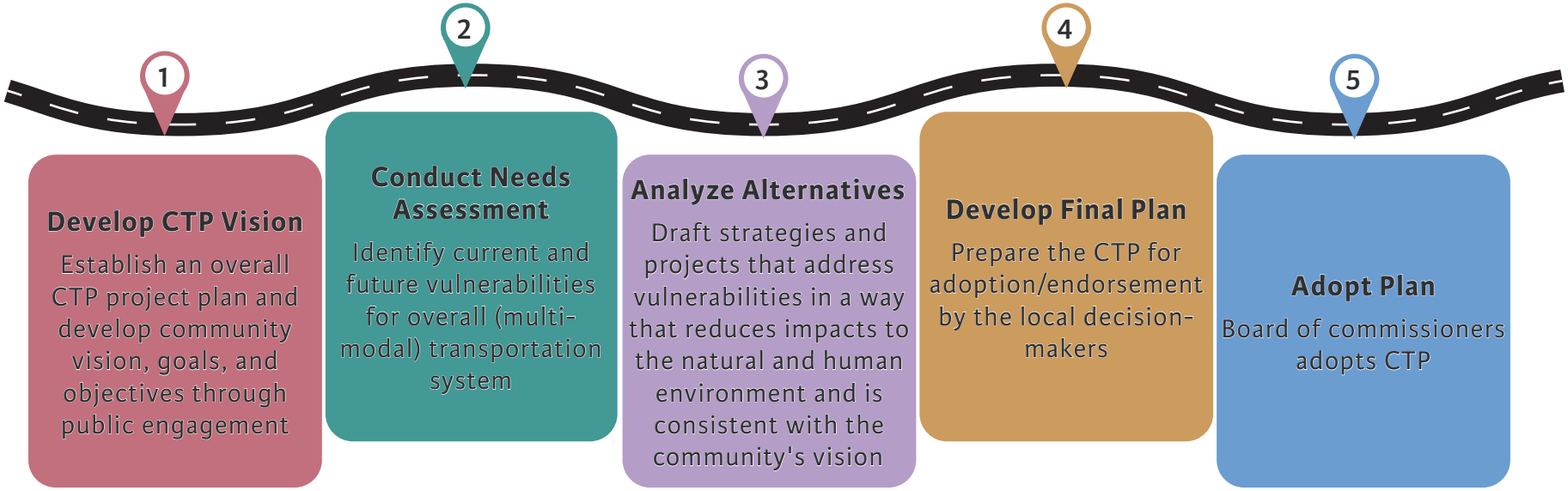
VISION

Connecting the residents of Johnston County, through safe and efficient multimodal travel options, to destinations within Johnston County and the region, while enhancing economic vitality.

GOALS

- Safety
- Efficiency
- Multimodal
- Travel within County
- Regional Connectivity
- Enhancing Economic Vitality

CTP PLANNING PROCESS



ANALYSIS AND PUBLIC INPUT

3
ROUNDS OF PUBLIC MEETINGS

1000+
PEOPLE ENGAGED

6
MODES COVERED

88
MILES OF BIKE AND PEDESTRIAN FACILITIES

170
MILES OF ROADWAY RECOMMENDATIONS

14
INTERSECTION IMPROVEMENTS

PROJECT SHEETS

Chapter 3 features the 6 project sheets, which include individual project maps with cost estimates and other details.

APPROVALS

The following groups have sought or received approvals.

- Johnston County Board of Commissioners adoption
- Johnston County Planning Board

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INTRODUCTIONS AND OVERVIEW

CHAPTER OVERVIEW

The Comprehensive Transportation Plan (CTP) is a multimodal long-range transportation plan. The CTP represents a community's vision for the future transportation system to support anticipated growth and development over a 25-30-year timeframe. The CTP creates a multimodal set of transportation recommendations for the unincorporated portions of one of North Carolina's fastest growing counties. Beginning with a robust public and stakeholder engagement process, the plan develops a vision for the transportation network that matches the community's vision, goals, and objectives. The plan includes comprehensive data collection, existing conditions analysis, future conditions analysis, recommendations, and the County will adopt this final plan. Johnston County's explosive growth necessitated a review of development patterns and future projections using the Triangle Regional Model, Census Bureau, State Demographer's Office, and Johnston County Planning department data, detailed in Chapter 2.

Chapter Contents:

- Purpose and Overview
- Vision
- Study Goals and Objectives
- CTP Process Summary
- State and Federal Policies and Plans
- Local Policies and Plans
- Project Identification Process

PURPOSE AND OVERVIEW

A CTP steering committee comprised of NCDOT, the Upper Coastal Plain Rural Planning Organization (RPO), the Capital Area Metropolitan Planning Organization (CAMPO), and local planning partners guide this plan. The CTP supports the community's adopted vision and goals by integrating land use and transportation planning. Local officials should use this to ensure that planned transportation facilities reflect the needs of the public, while minimizing the disruption to local residents, businesses, and environmental resources. The CTP process aims to provide information for the project development process.

VISION

The public involvement process develops the CTP vision, goals, and objectives and helps identify how residents in Johnston County would like to develop the transportation system. When starting this CTP study, County officials form a stakeholder committee of individuals who represent the various needs, issues and populations of the community. The committee develops the draft vision, goals, objectives and performance measures. Citizens provide input to further refine these and guide the development of the CTP.

PUBLIC INPUT FAST FACTS

The total number of interactions through the public survey and through public meetings is included below:

- 3,193 Viewers
- 1,060 Participants
- 25,270 Responses
- 3,335 Comments

STUDY GOALS AND OBJECTIVES

SAFETY

To enhance the existing transportation network with safer facilities and options for all modes and users.

EFFICIENCY

To provide timely means of travel that reduces the users travel time and vehicle miles traveled (VMT).

MULTIMODAL

To enhance the county's transportation network with additional transportation options that provide users with multiple modes of transportation and improve on existing modes.

TRAVEL WITHIN COUNTY

To enhance the transportation network within the county so that locations are easily accessible by multiple transportation modes and connected in efficient manners.

REGIONAL CONNECTIVITY

To establish new means and modes of transportation servicing Johnston County and its surrounding counties.

ENHANCING ECONOMIC VITALITY

To provide a transportation system that supports existing economic vitality and builds new economic opportunities.

CTP PROCESS SUMMARY

DEVELOP CTP VISION

Establish the overall CTP project plan and the necessary partnerships to produce community consensus on future transportation improvements that fully integrate with the community's vision, goals, and objectives, identify the roads to be studied, and establish measures of effectiveness.

CONDUCT NEEDS ASSESSMENT

Establish current and future deficiencies for the overall multimodal transportation system

ANALYZE ALTERNATIVES

Draft strategies that address deficiencies in a way that minimizes impacts to the natural and human environment and is consistent with the community's vision

DEVELOP FINAL PLAN

Prepare the CTP for adoption/endorsement by local decision-makers

ADOPT PLAN

Complete final adoption by the Board of Commissioners and complete CTP documentation

LOCAL POLICIES AND PLANS

The Project Team considered multiple local policies and plans while developing the Johnston County CTP, including those highlighted below.

- Town of Clayton CTP
- Clayton Comprehensive Bicycle Plan
- Think Clayton 2045 Comprehensive Growth Plan
- Clayton Downtown Master Plan
- Clayton Pedestrian Plan
- Town of Clayton Parks & Rec Comprehensive Plan Update/ Addendum
- Benson Comprehensive Plan
- Town of Benson Parking Study
- Benson CTP
- Smithfield Town Plan
- Smithfield Comprehensive Pedestrian Plan
- Wilson's Mills Comprehensive Land Use Plan 2040
- Town of Selma Comprehensive Land Use Plan
- Town of Pine level Comprehensive Land Use Plan
- Town of Kenly Land Use Plan
- Johnston County CTP
- Johnston County Parks and Recreation Master Plan
- Agricultural Development Plan for Johnston County
- JCMH/NC Highway 42 Small Area Plan
- Envision Johnston County 2040
- CAMPO Southeast Area Study
- CAMPO Metropolitan Transportation Plan
- East Coast Greenway / Mountains-to-Sea Trail

PROJECT IDENTIFICATION PROCESS

The Project Team accumulated and reviewed a collection of existing conditions, existing plans, and relevant transportation data to establish current and future needs and deficiencies for the overall multi-modal transportation system. The Project Team reviewed several local plans from Johnston County and its municipalities, the Capital Area Metropolitan Planning Organization, the Upper Coastal Plain Rural Planning Organization, the North Carolina Department of Transportation, and others as identified on page 9. Particular importance was placed on existing adopted plans from the CAMPO, UCPRPO, and NCDOT. CAMPO's recently adopted Southeast Area Study provided a framework and a number of approved projects for the portion of Johnston County in the urbanized area. The Upper Coastal Plain RPO served the remainder of the county, and the projects from the most recently submitted prioritization list created by the RPO helped dictate project needs and coordination throughout those areas. Finally, an examination of NCDOT adopted documents such as the previous CTP and the list of maintenance projects helped in the continuation of previously determined needs as well as coordinating with existing planned projects and improvements.

To examine further and establish needs, specific relevant network data was reviewed and tools used:

- Existing Average Annual Daily Traffic (AADT) grown to Future AADT
- Triangle Regional Model Volume Projections
- NCDOT 5-Year Crash Data & Roadway Widths
- Subdivision Approvals
- Major Economic Development Locations
- Environmental Features

The public was also given the opportunity to provide additional projects and feedback on project development through public survey and public meeting opportunities.

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GREENWAY
BUFFALO CREEK
PARKING
East Coast
Greenway

EXISTING AND FUTURE CONDITIONS

CHAPTER OVERVIEW

Understanding existing conditions is key to forecasting future conditions of the transportation system. In Johnston County, forecasts of future travel patterns were used to estimate congestion and future travel demand. Using this information, along with demographic analysis of population growth, economic development potential, and land use trends, to determine potential impacts on the future transportation system.

Chapter Contents:

- Public Involvement Summary
- Community Demographics/Land Use Trends
- Transportation Network Summary
- Highway Analysis Summary
- Bicycle and Pedestrian Analysis Summary
- Goods Movement/Freight

PUBLIC INVOLVEMENT SUMMARY

Community engagement is an essential part of any planning process. The community spreads its vision and voice throughout its initiatives and recommendations in the most effective and supported plans. A key component of this plan was public involvement gathered through a variety of means and methods. Given the wide-reaching impacts of transportation projects, the Project Team paid special attention to ensuring they collected feedback in a way that sought out diversity and equitable engagement across the county. The feedback collected was influential in the projects selected and guided plan development along every stage of the process.

In addition to general public involvement efforts, Johnston County engaged with a staff-level Project Working Group and a Stakeholder Committee to guide the planning process. Both groups participated in data collection, the development of vision and goals for the transportation network within the county, and the review of project planning materials.

STAKEHOLDER AND PUBLIC INVOLVEMENT

The Project Team conducted a variety of engagement types to ensure engagement was inclusive and did not limit participation. To maximize the reach of public engagement efforts for this project, public engagement materials were supported across a variety of platforms, including mobile and paper surveys and in-person public meetings. Meetings were well attended and yielded feedback that drove the project prioritization process.

PUBLIC MEETINGS

Meeting #1

The first public meeting was held on Tuesday, June 4th at Johnston Community College. This meeting received 7 surveys and 14 map comments.

Key takeaways from the mapping exercise:

- The identification of several intersections with existing safety concerns and/or in need of other improvements
- A desire for roundabouts, density, pedestrianization of downtowns, greenways/rail trails, and rail transit from Clayton to Raleigh.
- Concerns of routes getting too big – specifically a desire to keep US-70 “small” and not expand through Clayton.

Key takeaways from the survey:

- Safety and Public Transportation are the top priorities, while Connectivity and Preserving Small Town/Rural Character are additional areas of focus.
- The majority of respondents disagreed that roads are safe for all users but agreed that it is easy to travel throughout the county.

BIG IDEA: Residents want to bolster what makes Johnston County special, and land use and transportation are interconnected. Along with, prioritize pedestrianization and density in small towns and divert heavy vehicular traffic out of the downtown cores.

Meeting #2

The second public meeting was held on Thursday, September 19th at Johnston Community College. This meeting provided the public with the opportunity to review initial public feedback along with draft project recommendations and how the two are interrelated. Additionally, the Project Team allowed the public the opportunity to provide feedback on the project recommendations and express additional needs.

Key takeaways from the meeting include:

- The identification of additional intersections and corridors with existing safety or congestion concerns and/or in need of other improvements, making them possible locations for Hot Spot Analysis.
- The need and desire for additional transportation options outside of the traditional highway mode, including expanded transit service and more trail and greenway connectivity and access, were discussed.

BIG IDEA: While officials have identified the needs of the major highway, some localized concerns remain, and residents also desire the expansion of transportation options within the county and for traveling between counties.

Meeting #3

The third public meeting was held on Monday, March 31st at the Public Library of Johnston County in Smithfield after the originally scheduled third meeting was postponed due to inclement weather. The third meeting presented the public with the final project recommendations as well as the designs and concepts for the identified Hot Spots.

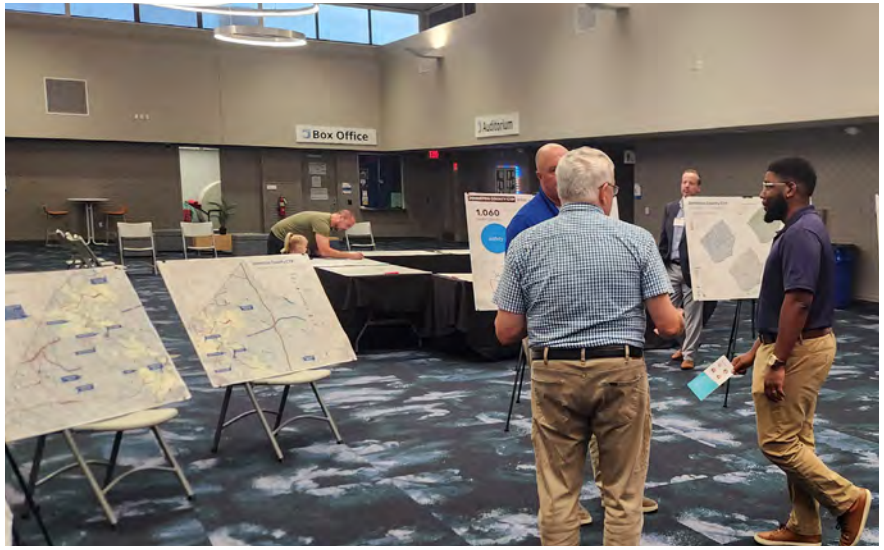
Key takeaways from the meeting include:

- There were limited questions regarding project recommendations. Most of the concern revolved around timelines for implementation and potential project designs.
- The desire to commute efficiently to work locations outside of Johnston County, namely the Triangle area, remains a priority for residents.

BIG IDEA: It is important to help the public understand that this is a long-range plan with projects that will be implemented over a 25 to 30 year timeframe to understand fully the plan's purpose. Meanwhile, knowing that growth from the Triangle area will continue to spill into Johnston County over that same timeframe is crucial to addressing commute patterns and the existing transportation network effectively.

Surveys

The Project Team conducted a survey from June 12 to September 30, 2024 using the PublicInput engagement platform. Johnston County promoted the survey through social media, primarily using Facebook, and paid for targeted advertising to ensure that the virtual ads reached as many people in the county as possible. A total of 1,112 respondents provided feedback on their top transportation priorities, perceptions of safety while driving, walking, or biking, and their use of public transportation. While a total of 1,112 respondents provided feedback, not all respondents answered every question. This is important to note when reviewing the analysis. Completed surveys helped the Project Team understand how the community feels about existing congestion, safety, access, and what they want to see in the future.



Johnston County Public Meeting at Johnston Community College on September 19th.

Key takeaways:

- Over half of all participants (55%) affirmed that it is easy to travel throughout Johnston County. However, ninety-four percent (94%) of participants also acknowledged that it is difficult to move between destinations in Johnston County without a car.
- Long-distance commuting is customary for Johnston County residents. Almost sixty percent (58%) of participants travel outside of the county at least three (3) times a week, further highlighting the modal split as relying on single-occupancy vehicle travel. Furthermore, thirty percent (30%) of respondents travel out of county five (5) times a week or more.
- Safety is the leading priority for the community. Ninety-five percent (95%) of respondents disagreed that roads in the county are safe for bicyclists and pedestrians, and a majority (59%) of respondents disagreed that motor vehicles and bicycles should share the road.
- Access is a challenge for active transportation in Johnston County. Respondents identified the need for more bike lanes, wide shoulders, sidewalks, and greenways—aligning with the theme of moving non-motorized users off the roadway as much as possible.
- People do not currently utilize public transit (97% do not use public transit), but 26 percent view it as an investment priority (see Figure 3).
- Participants ranked their top priorities from most important (1) to least important (4). In order, the top priorities identified were:
  - 1. Safety (77%)
  - 2. Preserving Small Town & Rural Characteristics (57%)
  - 3. Shorter Travel Times (49%)
  - 4. Accessibility and Efficiency (49%)

BIG IDEA: While limited existing opportunities hinder what the public can enjoy now and visualize for their future, Some respondents express an interest in alternative modes of transportation. Respondents want to preserve small town charm while addressing pressing roadway safety issues for all users and planning for future congestion.

Analysis:

Due to the distinct priority that respondents placed on safety, the Project Team further analyzed data related to safety concerns. Participants were asked to identify whether they thought that roads are safe for all users. Overall, seventy percent (70%) of respondents expressed that they did not feel the roads are safe for all users.

The Project Team then looked at respondents who provided both home zip codes and answered the question asking them to either "Agree," "Somewhat Agree," "Somewhat Disagree," or "Disagree" with the statement: "I feel most roads in Johnston County are safe for all users, including vehicles, pedestrians, and bicyclists." The Project Team sought to understand differing perspectives on roadway safety by location of respondents while reviewing location data provided by 488 participants. The table below summarizes the perceptions of safety on the roads in Johnston County by location:

MUNICIPALITY	NUMBER OF PARTICIPANTS	PERCENTAGE THAT DO NOT FEEL THAT ROADS ARE SAFE FOR ALL USERS
Angier	16	87.5%
Benson	24	50%
Clayton	239	75%
Four Oaks	28	68%
Garner	30	76.7%
Princeton	13	76.9%
Selma	32	65.6%
Smithfield	67	70.1%
Wendell	9	100%
Willow Springs	11	63.6%
Cary, Davis, Dunn, Kenly, Middlesex, Micro, Pine Level, Raleigh, and Zebulon (fewer than 5 responses in each municipality)	22	68.2%

Participants reviewed various statements and then either "Agree" or "Disagree" (Figure 1). From this series of questions, the Project Team surmised that while most participants (64%) felt that Johnston County roads are safe for cars, only five percent (5%) of participants felt that Johnston County roads are safe for bicyclists and pedestrians.

The statements also asked individuals whether they think Johnston County should include or expand bike lanes, sidewalks, and greenways. (Figure 2).

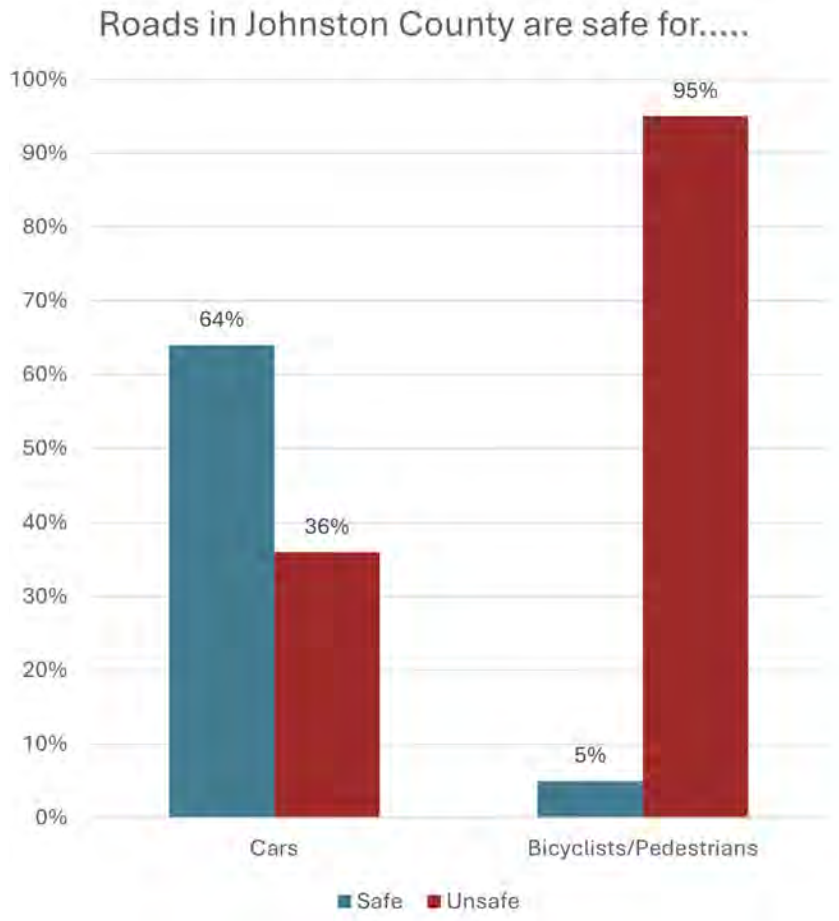


Figure 1. Safety perception by mode

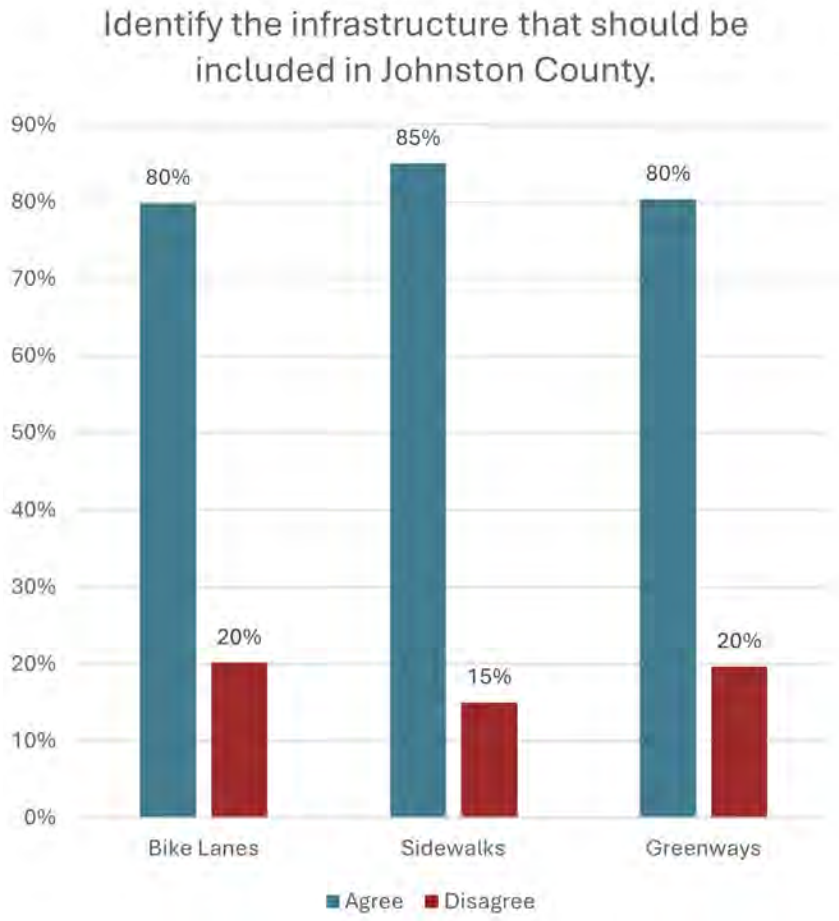


Figure 2. Interest in infrastructure

The last question that participants were asked involved picking their top three (3) priorities for transportation investment in Johnston County (Figure 3). These investment priorities aligned with the overall priorities in the County:

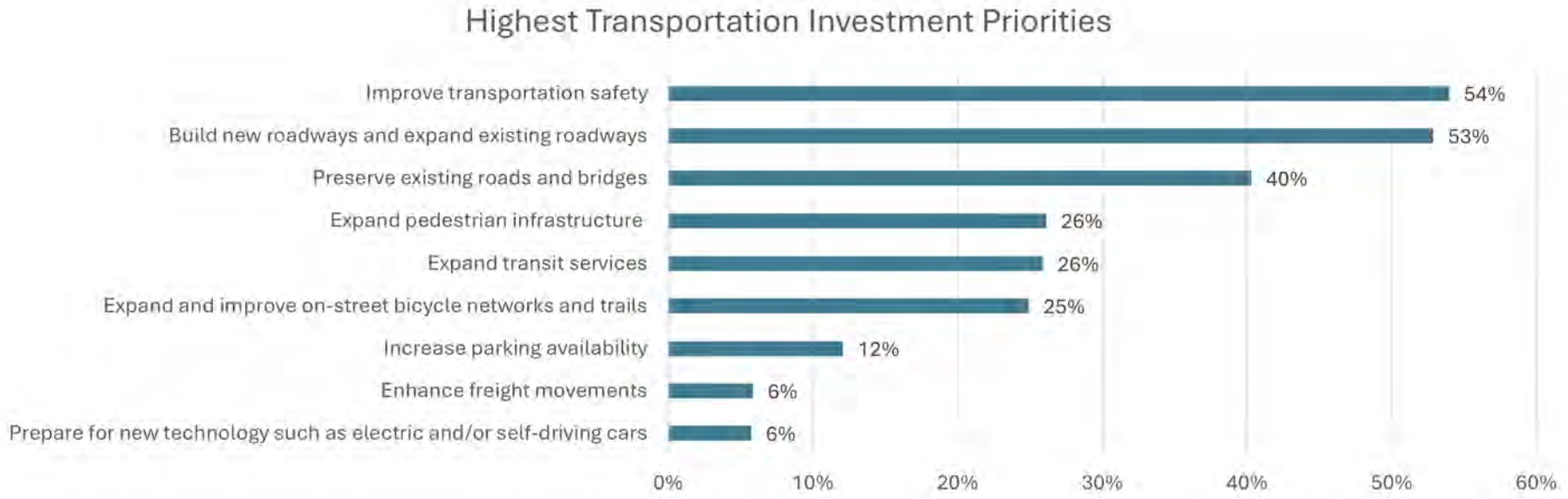


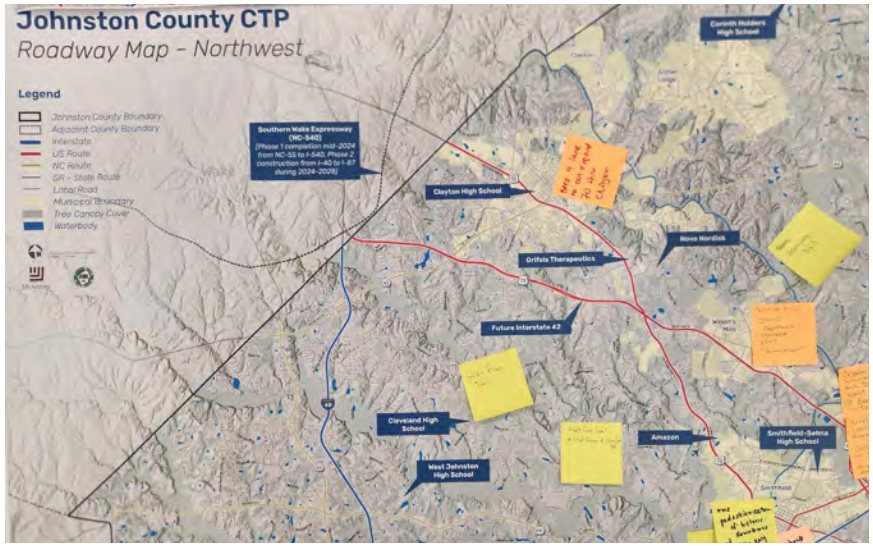
Figure 3. Johnston County Investment Priorities

Participant Demographics:

- Of the respondents, over half (54%) identified as female and forty-four percent (44%) identified as male.
- Eighty-five percent (85%) of respondents identified as White, and only seven percent (7%) identified as Black or African American.
- Twenty-five percent (25.2%) of respondents were between the ages 45-54; twenty-four percent (23.9%) were between 55-64, and twenty-four percent (23.5%) of respondents were over sixty-five (65) years old.
- The median household income in Johnston County is $75,288 (2022 American Community Survey 5-Year Estimates, S1901 Income in the Past 12 Months). The highest percentage of respondents who provided household income information fell within the $100,000 to $199,999 bracket. Twenty-five percent (25%) of respondents identified as having a household income between the $50,000 and $99,999 bracket. Only eleven percent (11%) of respondents came from households with under $50,000. This indicates that the survey reached individuals with above-average household incomes.

Survey Conclusion:

Limited existing infrastructure for non-motorized users hinders what the public can enjoy and visualize for their future; however, there is a desire for alternative modes of transportation. Respondents want to preserve small town charm while addressing critical safety concerns for pedestrians and bicyclists and finding solutions to congestion that accommodate all users.

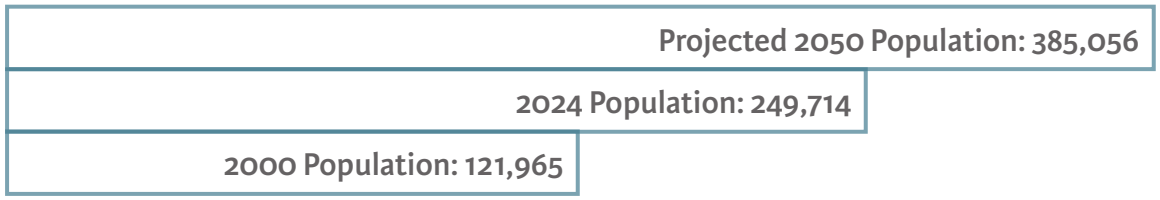


Public meeting map responses at Johnston Community College on June 4th.

Johnston County Stakeholder Meeting at Johsnton County Public Library on March 31st.

THE COMMUNITY

The analysis performed in this plan assumes a timeframe of 2020 to 2050. Growth is expected to be concentrated in and around the Clayton, Flowers, and Powhatan areas as the Greater Raleigh area continues to grow east and as more people locate in and around significant transportation connections to the Triangle.



DEMOGRAPHIC ANALYSIS

As Johnston County has seen robust growth of 29.5 percent since 2012, Smithfield and Selma have shown the slowest growth in the county at 3.7 percent and 5.3 percent, respectively. Smithfield and Selma, two of the county's largest municipalities, have a hotspot of disadvantaged communities, highlighting the importance of non-traditional modes of transportation in these areas.

Minority Population:

Johnston County 24.4%
Smithfield 40%
Selma 64.8%

Median Income:

Johnston County $75,288
Smithfield $37,000
Selma $29,325

No Vehicle Access:

Johnston County 4.1%
Smithfield 13.9%
Selma 14.6%

Poverty Rate:

Johnston County 10.7%
Smithfield 27.8%
Selma 27.1%

High School Education or Higher:

Johnston County 89.5%
Smithfield 78.8%
Selma 80.7%

LAND USE ANALYSIS

The "Envision Johnston" Comprehensive Land Use plan dictates future land uses throughout the county. An analysis of the planning document highlighted a consistent trend of land use intensity, with the highest densities and majority of activity centers in Clayton and around the Wake County Line. Moving southeast through the county, there is a consistent de-escalation of land use intensity until I-95. The large majority of land to the southeast of I-95 designates open space and conservation/agricultural area. Clusters of Planned Employment Centers surround Micro, Kenly, Wilson's Mill, the I-40 Corridor, and Benson.

The highest density of commercial and residential activity is found near the Wake County line within the county and outside town centers. Of additional note are a slew of planned employment centers, regional mixed-use centers, neighborhood centers, and rural crossroads within the future land use plan. They largely occupy locations along and/or parallel to the I-40, I-42/US-70, and I-95 corridors. The highest classifications (regional mixed-use center) are located along I-40 at NC-42 and NC-210. Along NC-42 are also 3 planned neighborhood centers.

The future land use plan prominently features extensive open space and conservation areas along streams and waterways, particularly a large area along the Neuse River south of US-70 and I-95, and east of US-701. View map on *page 66*.

ENVISION JOHNSTON: COMPREHENSIVE LAND USE PLAN

TRANSPORTATION NETWORK SUMMARY

Johnston County has a network of multi-modal facilities serving both passenger and freight needs alike. A key step in identifying future needs is cataloging and analyzing existing infrastructure. Below is a breakdown of major facilities within the county's network.

PRIMARY NW/SE ROADWAYS	I-40 | US-70/I-42
PRIMARY SW/NE ROADWAYS	I-95
STRATEGIC TRANSPORTATION CORRIDORS	I-40 | I-95 | US-70/I-42 | NCRR | CSX
PUBLIC TRANSIT SERVICES (DEMAND RESPONSE)	JCATS (Johnston County Area Transportation System)
FIXED ROUTE TRANSIT SERVICE	None
GENERAL AVIATION AIRPORTS	Johnston Regional Airport (JNX)
PARK AND RIDE LOTS	None
FREIGHT AND PASSENGER RAILROAD	CSX and NCRR
PRIMARY FREIGHT MOVEMENT	I-95
SIDEWALKS	Within Incorporated areas
BICYCLE LANES	Sparse
STATEWIDE BICYCLE ROUTES	None
GREENWAYS	Several proposed/existing long route paths
FERRIES	None

HIGHWAY ANALYSIS

Johnston County is home to several transportation thoroughfares of local, regional, and national importance. These serve as vital corridors for freight and passenger movement, as well as spurring community growth and economic development. Of the many highways and arterials serving the county, the three most prominent corridors are: I-95, I-40, and I-42.

While population is located throughout, Johnston County's municipalities and town centers cluster around two major highway networks: the I-95 (Benson-Four Oaks-Smithfield-Selma-Micro-Kenly) axis and the I-42/US-70 (Clayton-Wilson's Mill-Selma-Smithfield-Pine Level-Princeton) axis.

ROADWAY SYSTEM CAPACITY DEFICIENCIES

An analysis of roadway demand vs. capacity reveals how well a roadway is performing. When the volume approaches or exceeds the capacity, capacity deficiencies occur. Currently, a majority of the roadway network in Johnston County performs adequately, with no major sections over capacity and most roadways below 40 percent. The highest V/C values are found near Clayton, the Wake County line, and the I-40 corridor.

Projections for 2050 show that traffic will increase around Clayton, I-40, and I-95

TRAFFIC CRASH ANALYSIS

A total of twenty-five (25) intersections in the county were identified as having over fifty (50) accidents between 2020 and 2024. Various intersections improvements have been proposed to address the existing configurations and causes of accidents at these intersections. The highest intersection crash frequencies are in Clayton, I-42/I-40 near Wake County, and in the Smithfield-Selma area. View map on *page 76*.

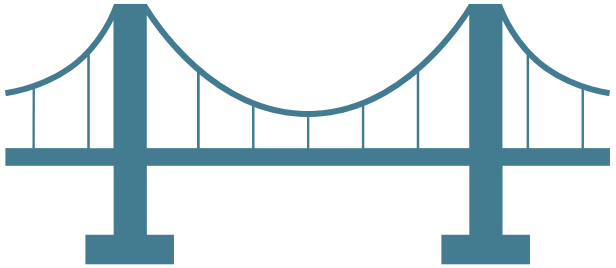
According to the Federal Highway Administration, a quarter of traffic fatalities and half of traffic injuries occur at intersections each year. While crashes have occurred throughout Johnston County, some locations experience a higher rate of crashes than others and may be priority locations for investments. The following intersections are identified as high crash intersections. View map on *page 79*.

- NC-42 at Cleveland Rd
- US-70 Bus at Shotwell Rd
- US-70 Bus at Amelia Church Rd
- NC-42 at Cornwallis Rd
- NC-42 at Cleveland Crossing Dr

BRIDGE DEFICIENCY ASSESSMENT

There are forty (40) functionally obsolete bridges in Johnston county, with the highest concentration along I-95. There are eight (8) bridge projects in the STIP. View map on *page 74*.

40 OBSOLETE BRIDGES



BICYCLE AND PEDESTRIAN ANALYSIS SUMMARY

There are three concentrations of planned and existing pedestrian facilities within the county: Clayton/Archer Lodge, Smithfield, and Selma. The Johnston County Comprehensive Greenways & Trails Plan covers a more detailed analysis identifying intracommunity level gaps in the county. That plan identifies and makes recommendations for routes to connect existing trails and greenways as well as connecting communities and points of interest. These projects include the proposed East Coast Greenway, which would link Benson, Four Oaks, and Smithfield together and connect to other existing and planned trails forming a corridor across the east coast. Additional proposed projects include segments of the Neuse River Trail, which would connect Smithfield/Selma, Wilson's Mills, and Clayton/Archer Lodge with the existing Neuse River Trail that runs to Raleigh, and a planned shared use facility along US-70 that would connect Selma with Pine Level and Princeton. Additional planned facilities with external connections include the proposed Mountains-to-Sea Trail connecting Four Oaks to Goldsboro and the proposed NC-231 side path connecting Archer Lodge to Wilson. These projects, combined with other existing and proposed facilities will create a regional network of bicycle and pedestrian connectivity. However, of note, this greater regional network of planned and existing facilities leaves Micro and Kenly without any connections. However, of note, the greater regional network of planned and existing facilities leaves Micro and Kenly without any connections.

Outside of gaps in regional connections, there is a notable absence of dense planned or present intra-community facilities within the towns of Pine Level, Princeton, Micro, Kenly, Four Oaks, and the generally well populated cluster of residential development towards the northwest of the county. Planned bike facilities are dense towards the Wake County border, but none are present south towards the I-95 corridor of communities. View map on *page 97*.

PUBLIC TRANSPORTATION ANALYSIS SUMMARY

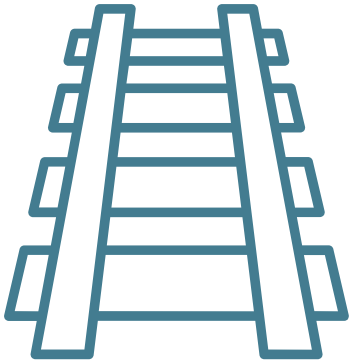
The Johnston County Area Transit System (JCATS), a division of Community and Senior Services, operates public transportation in Johnston County. JCATS provides contracted human services transportation for seniors and Medicaid members and on-demand general public transportation for all Johnston County residents. They provide service throughout Johnston County and to a select list of cities outside the County. Trailways and Greyhound also provide intercity bus services with a stop in Johnston County at 2104 S Bright Leaf Boulevard in Smithfield. This service allows residents the opportunity to connect to different cities and towns throughout the country.

AIRPORTS

The only airport in Johnston County is Johnston Regional Airport (JNX), serving both the county and Triangle region as a whole. JNX is the busiest general aviation airport in the state of North Carolina. The Johnston County Airport Authority owns and operates JNX, which serves corporate, military, and general aviation aircraft.

RAIL

Rail serves both freight and passengers in Johnston County. There are 66 miles of rail in the county, ranking third highest in the region – behind Wake and Durham Counties – with 13 percent of the total regional rail infrastructure. North Carolina Railroad (NCRR) owns the east-west rail line that runs between the Triangle Region and the NC coast, and Norfolk Southern operates it. CSX Transportation owns and operates the second rail line, which runs north-south. Passenger rail runs on the NCRR track between Raleigh and the existing Amtrak station in Selma, as well as on the CSX track. Four trains a day serve the Selma station on two routes: the Carolinian (Charlotte-New York), Palmetto (New York-Savannah), and the Silver Meteor and Silver Star (New York-Miami).



GOODS MOVEMENT/FREIGHT

Johnston County has a significant amount of freight transportation and production, highlighting the importance of planning for these movements. Three main corridors should constitute the focus of freight planning efforts within the county for roadway, rail, and aviation modes, as they contain heavy freight movement and a concentration of industrial activity. I-95, I-40, and I-42/US-70.

In addition to highway freight traffic, there is freight rail running parallel to I-95 with two intermodal facilities. View map on *page 86*.

There is a cluster of industrial activity located in and around the Clayton area.

ENVIRONMENTAL

Johnston County is ripe with regions of environmental importance. The defining feature of the county is the Neuse River, which meanders through and adjacent to several of the towns along a Northwest-Southeast path. A large majority of land within the county is part of a target local watershed, with two water supply watersheds along the Neuse River near Princeton and Wilson's Mill/Clayton. The county uniformly locates wetlands following stream beds. The largest managed natural area is near the Wayne County Line in south Johnston County.

The large presence of streams throughout the county, along with adjacent continuous wetlands, creates an opportunity for planners to analyze and consider linear parks/greenway corridors in bike/ped planning. These also serve as corridors where minimizing environmental impacts will be a factor in roadway projects.

The large presence of streams throughout the county, along with adjacent continuous wetlands, creates an opportunity for planners to analyze and consider linear parks/greenway corridors in bike/ped planning. View map on *page 83* .

CTP PROJECT RECOMMENDATIONS

CHAPTER OVERVIEW

The CTP serves as a foundation for long-range planning and project prioritization. NCDOT's five stage project delivery process and the recommended projects in this chapter help address identified transportation needs. Maps and tables in this chapter detail the recommended projects by mode, along with three scenarios to guide ordinances related to right-of-way reservation, dedication, and/or facility construction.

Chapter Contents:

- NCDOT Project Delivery Process
- CTP Project Recommendations List
- Hot Spot Cut Sheets
- Ordinance Recommendations

PROJECT DELIVERY PROCESS

Long-range planning is the starting point for project origination. This long-range CTP, will serve as a starting point for Johnston County in their project selection and prioritization process. Working with the Upper Coastal Plain RPO, the Capital Area Metropolitan Planning Organization, and the North Carolina Department of Transportation Division 4, the county can submit needed projects for inclusion in the State Transportation Investment (STI) prioritization process with the intent of getting those projects funded and programmed in the State Transportation Improvement Program (STIP). From there, NCDOT has a multi-stage stage system for delivering projects, laid out below.

STAGE 1: PROJECT INITIATION

Goal: Develop an initial vision and conceptual layout and report (e.g., Express Design and the Project Scoping Report) sufficient to commence the subsequent environmental and design process.

Milestone: Notice to Proceed (NTP)

STAGE 2: ENVIRONMENTAL AND ROW PLANS

Goal: Complete the needed survey, analyses, and design work to establish a horizontal and vertical roadway alignment, advance the environmental document, and progress design to develop the Field Inspection Plan Set, which will include cross-discipline coordination and review for constructability considerations. This stage concludes with the Project Team incorporating field inspection comments to finalize the Right-of-Way Plan Set.

Milestone: Right of Way Plans Complete (RPC)

STAGE 3: FINAL PLANS

Goal: Complete all design, finalize the environmental document, and continue right-of-way and utility acquisition and relocation activities initiated in Stage 2.

Milestone: Design Complete (DC)

STAGE 4: PLANS, SPECIFICATIONS, & ESTIMATE (PS&E) AND LETTING

Goal: Finalize all plans, specifications, and estimates to be packaged for letting and prepare the project for advertisement.

Milestone: Let

STAGE 5: POST-LETTING/CONSTRUCTION

Goal: Complete the necessary post-letting/construction activities to support the project's construction phase.

CTP PROJECT RECOMMENDATION LIST

Included in the following list is information about projects recommended for Johnston County. These projects aim to address an identified transportation deficiency, but may not represent the final location or cross-section associated with the improvement and may change over time as conditions evolve, priorities shift, and funding becomes available.Additionally, local communities are responsible for helping to protect identified transportation corridors for new location facilities to ensure they don't get developed over, or are implemented piecemeal as development comes through. The following pages include maps of the recommended projects by mode and accompany the table with additional project details.

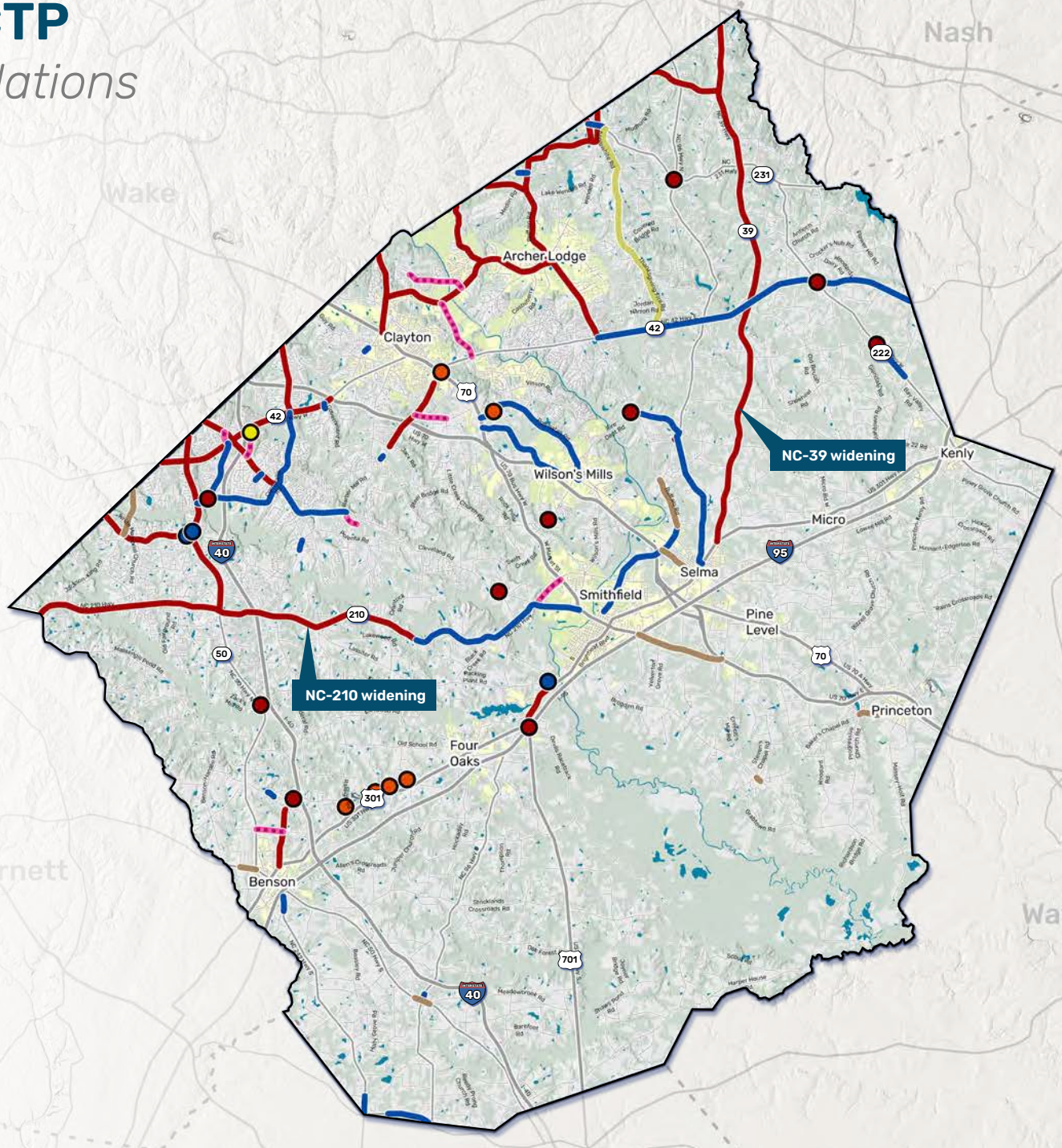
Projects by Mode:

- Roadway Recommendations
- Bicycle + Pedestrian Recommendations
- Rail + Public Transit Recommendations
- Aviation Recommendations

Johnston County CTP

Roadway Recommendations

Some projects include improvements associated with other modes, such as bike/ped or transit.



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Roadway*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

CTP Project Type

- *Intersection Improvements*
- *Intersection Realignment*
- *Construct Roundabout*
- *Grade Separation*
- *New Location Roadway*
- *Roadway Modernization*
- *Roadway Widening*
- *Add Center Turn Lane*
- *Add Paved Shoulders*

0 2 mi.
Scale: 1" = 2 miles

McAdams

ROADWAY RECOMMENDATIONS

Roadway and highway recommendations are included in the following table and corresponding map. This set of projects includes a significant number of projects because there is some overlap with other modes where bicycle and pedestrian facilities are proposed to be included. View interactive project map *here*. NCDOT cross-sections on *page 102.*

*NOTE: The public right-of-way (ROW) is also where public utilities, as defined in NCGS 62, may install their distribution infrastructure—such as pipelines, communication lines, sewers, and similar facilities. In North Carolina, public ROW is typically dedicated to a governmental entity (usually the state or a local municipality) through a recorded plat—which subdivides a larger tract of land and establishes new boundary lines, often for development purposes—or conveyed through a separate real estate transaction.

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-W1	Earpsboro Rd	Morphus Bridge Rd	NC-39	Widening	Southeast Area Study Update	4A
H-W2	NC-39	US-301/Selma	Wake County	Widening	Southeast Area Study Update	4A
H-I1	Lake Wendell Rd/NC-96/NC-231 intersection			Realign	Crash data and Rural Crossroads designation in future land use	3A
H-W3	Stotts Mill Rd	Buffalo Rd	Wendell Rd	Widening	Southeast Area Study Update	2M
H-N1	Stotts Mill Rd extension	Wendell Rd	Wake County	New roadway - part of East Wendell Bypass	Southeast Area Study Update	2M
H-W4	Buffalo Rd	Archer Lodge	Wake County	Widening	Southeast Area Study Update	2M
H-W5	Lake Wendell Rd	Wake County	Buffalo Rd	Widening	Southeast Area Study Update	2M

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-W6	Wendell Rd	Stotts Mill Rd	Wake County	Widening	Southeast Area Study Update	2M
H-W7	Buffalo Rd	Archer Lodge	NC-42	Widening	Southeast Area Study Update	4I
H-M1	NC-42	Buffalo Rd	Wilson County	Modernization	Southeast Area Study Update	2A
H-W8	Covered Bridge Rd	Neuse River	Archer Lodge	Widening	Southeast Area Study Update	4A
H-W9	Pritchard Rd	Wake County	Covered Bridge Rd	Widening	Southeast Area Study Update, bike facilities shown in MTP	4D
H-W10	Covered Bridge Rd	Shotwell Rd	O'Neil St	Widening	Southeast Area Study Update	4A
H-W11	Shotwell Rd	Wake County	US-70 BUS	Widening	Southeast Area Study Update	4C
H-N2	Clayton North Connector	N O'Neil St	NC-42	New roadway	Southeast Area Study Update	2B
H-M2	NC-96	Little Devine Rd	Selma	Modernization	Southeast Area Study Update	2A
H-I2	NC-222/NC-42 intersection			Realign	Safety, and Rural Crossroads designation in future land use	2A
H-N3	Loop Rd extension	Covered Bridge Rd	Bobbitt Rd	New roadway	Southeast Area Study Update	2A
H-I3	Buffalo Rd/Little Devine Rd/Fire Dept Rd intersection			Realign	Crash data	2A

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-W12	Live Oak Church Rd/NC-96	Sullivan Rd	Little Devine Rd	Widening	Rural Crossroads designation in future land use	4C
H-M3	Powhatan Rd	US-70	Wilsons Mills	Modernization	Southeast Area Study Update, new growth	3E
H-M4	Gordon Rd	US-70	Wilsons Mills	Modernization	Southeast Area Study Update, new growth	2A
H-W13	Ranch Rd	NC-42 extension	Jack Rd	Widening	Southeast Area Study Update	4I
H-N4	Pony Farm Rd	Little Creek Church Rd	Ranch Rd	New roadway	Southeast Area Study Update	2A
H-M5	Buffalo Rd	Old Beulah Rd	US-70	Modernization - includes grade separation at railroad	Southeast Area Study Update, Johnston County CTP	3D
H-C1	Noble St	Buffalo Rd	Selma	Add center turn lane	Southeast Area Study Update, Johnston County CTP	3A
H-M6	Buffalo Rd	US-70	Smithfield	Modernization	Southeast Area Study Update, Johnston County CTP	3D
H-C2	Buffalo Rd	Old Beulah Rd	Live Oak Church Rd	Add center turn lane	Johnston County STI list	3D
H-M7	Ranch Rd	Lee Woods Dr	Lee Rd	Modernization	Narrow surface width	2A
H-M8	Little Devine Rd	Buffalo Rd	NC-96	Modernization	Narrow surface width	2A
H-M9	NC-231	Wendell Rd	Applewhite Rd	Modernization	Narrow surface width	2A
H-M10	Turnipseed Rd	Gin Branch Rd	Buffalo Rd	Modernization	Narrow surface width	2B
H-M11	Amelia Church Rd	Springwood Pl	Farmington Dr	Modernization	Narrow surface width	2B

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-M12	NC-222	Old Stancil Rd	Beulahtown Rd	Modernization	Narrow surface width	2A
H-I4	Old Stancil Rd/NC-222 intersection			Realign	Safety	2A
H-C3	Holts Pond Rd	Martin Livestock Rd	Princeton	Add center turn lane and pedestrian facilities	Johnston County STI list, elementary school and neighborhoods	3E
H-C4	Brogden Rd	Brogden School Rd	Bakers Chapel Rd	Add center turn lane	Safety, Rural Crossroads future land use designation	3A
H-C5	US-70 BUS	I-95	US-70	Add center turn lane	Southeast Area Study Update	3A
H-C6	NC-50	Meadowbrook Rd	Meadow	Add center turn lane	Access management/ safety	3A
H-M13	NC-55	Leon Ln	Sampson County	Modernization	Narrow surface width	2A
H-M14	NC-242	NC-55/ Sampson County	Sampson Rd	Modernization	Narrow surface width	2A
H-M15	NC-96	Old Hwy 96	NC-50	Modernization	Narrow surface width	2A
H-M16	NC-242	Water Pl Landing	Massengill Farm Rd	Modernization	Narrow surface width	2A
H-W14	NC-42	US-70	Wake County	Widening	STIP, Southeast Area Study Update	2A
H-W15	Cornwallis Rd	NC-540	NC-42	Widening	Southeast Area Study Update	2N
H-M17	Cornwallis Rd	NC-42	Old Drug Store Rd	Modernization	Southeast Area Study Update	2M

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-M18	Old Drug Store Rd	NC-50	NC-42	Modernization	Southeast Area Study Update	3D
H-I5	Cornwallis Rd/Old Drug Store Rd intersection			Realign	Southeast Area Study Update	2A
H-W16	Cleveland Rd	Wake County	Cornwallis Rd	Widening	Southeast Area Study Update	4J
H-M19	Cleveland Rd	Cornwallis Rd	Barber Mill Rd	Modernization	Southeast Area Study Update	3D
H-W17	NC-50	NC-210	Wake County	Widening	Southeast Area Study Update	4B
H-N5	West Smithfield Connector	US-70	NC-210	New roadway	Southeast Area Study Update	2B
H-M20	NC-210	Smithfield	Lassiter Pond Rd	Modernization	Southeast Area Study Update	2N
H-W18	NC-210	Lassiter Pond Rd	Raleigh Rd	Widening	Southeast Area Study Update	4I
H-W19	NC-210	Raleigh Rd	NC-50	Widening	Southeast Area Study Update	4I
H-W20	NC-210	NC-50	Harnett County	Widening	Southeast Area Study Update	4I
H-I6	Cleveland Rd/Swift Creek Rd intersection			Intersection improvements	Southeast Area Study Update, Smithfield Town Plan	3A
H-W21	Mount Pleasant Rd	Wake County	NC-50	Widening	Southeast Area Study Update	4B
H-I7	Mount Pleasant Rd/Edmondson Rd/Old Fairground Rd intersection			Intersection improvements	Southeast Area Study Update	2A

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-I8	Mount Pleasant Rd/NC-50/ Sanders Rd intersection			Intersection improvements	Southeast Area Study Update	3A
H-C7	Jackson King Rd	Wake County	Mount Pleasant Rd	Add center turn lane	Southeast Area Study Update	3A
H-N6	Cleveland Crossing Dr	Cleveland Crossing Dr	Cleveland Rd	New roadway	Southeast Area Study Update	2B
H-I9	Cleveland Crossing Dr/Walmart access			Roundabout	Southeast Area Study Update	2B
H-N7	Old Drug Store Rd	NC-42	Glen Rd	New roadway	Southeast Area Study Update	2B
H-W22	US-301	Smithfield	I-95	Widening	Southeast Area Study Update	4H
H-I10	US-301/US-701/NC-96/I-95 interchange			Realign	STIP, Southeast Area STudy Update	3A
H-N8	Banner Elk Rd extension	NC-50	NC-242	New roadway	Southeast Area Study Update	2A
H-W23	NC-242	Tarheel Rd	US-301	Widening	Southeast Area Study Update, Benson CTP	4I
H-I11	Woodall Dairy Rd/Federal Rd Ext intersection			Realignment	Southeast Area Study Update, Benson CTP	2A
H-C8	NC-27	Mingo Rd	Main St	Add center turn lane	Southeast Area Study Update, Benson CTP	3A
H-I12	Swift Creek Rd/Strickland Rd intersection			Roundabout	Johnston County STI list	2B
H-I13	Zack's Mill Rd/NC-50 intersection			Realign	Safety, Rural Crossroads designation in future land use	2A

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
H-M21	Jackson King Rd	Wake County	Phillippi Dr	Modernization	Narrow surface width	2A
H-M22	Government Rd	NC-42	David Ln	Modernization	Narrow surface width	2B
H-M23	Short Journey Rd	Cleveland Rd	Wildwood Ln	Modernization	Narrow surface width	2B
H-M24	Raleigh Rd	Sonny Rd	Polenta Rd	Modernization	Narrow surface width	2B
H-M25	S Shiloh Rd	Cleveland Rd	Katherine Dr	Modernization	Narrow surface width	2B
H-M26	Tarheel Rd	Woodall Dairy Rd	Creek Crossing Dr	Modernization	Narrow surface width	2B
H-I14	Gallilee Rd/Packing Plant Rd intersection			Intersection improvements	Safety	2A
H-N9	Monroe Rd extension	Monroe Rd	Cleveland Rd	New roadway	Southeast Area Study Update	Realign with Barber Mill Rd intersection
H-I15A	Mudham Rd/Applewhite Rd intersection (short-term)			Realignment	Safety	Realignment of Mudham Rd north to Applewhite
H-I15B	Mudham Rd/Applewhite Rd intersection (long-term)			Roundabout	Safety	New roundabout including Mudham and Applewhite roads, along with NC-231

Johnston County CTP

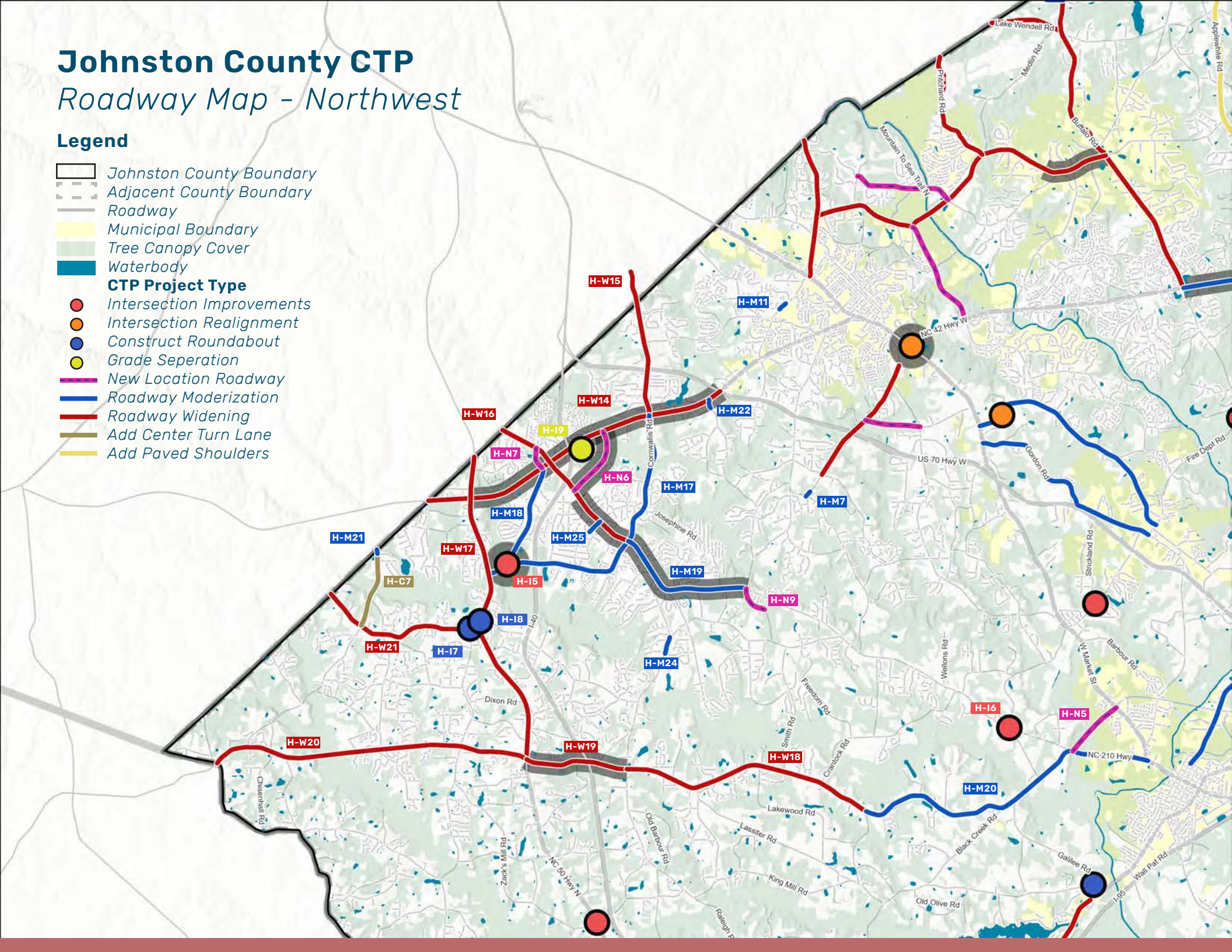
Roadway Map - Northwest

Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Roadway*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

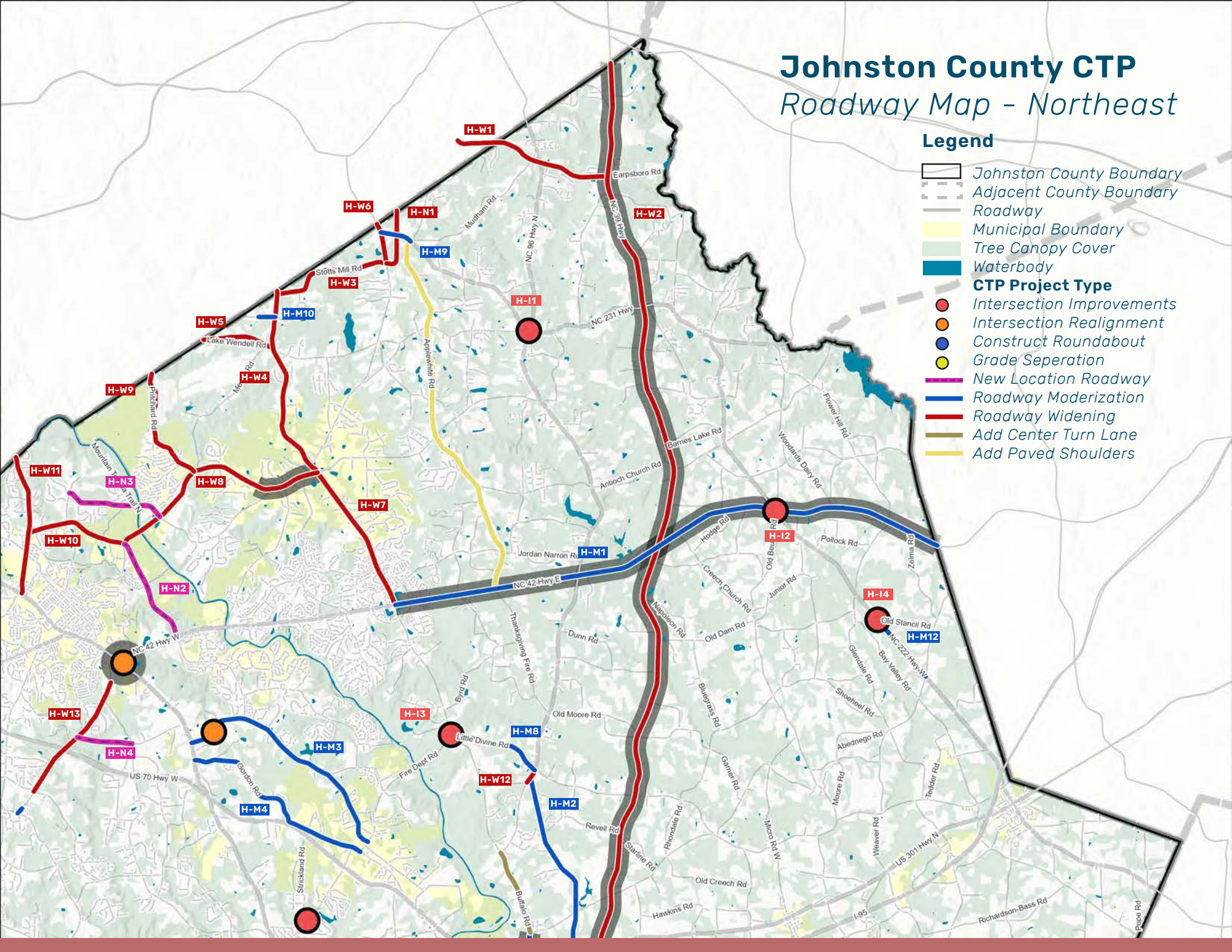
CTP Project Type

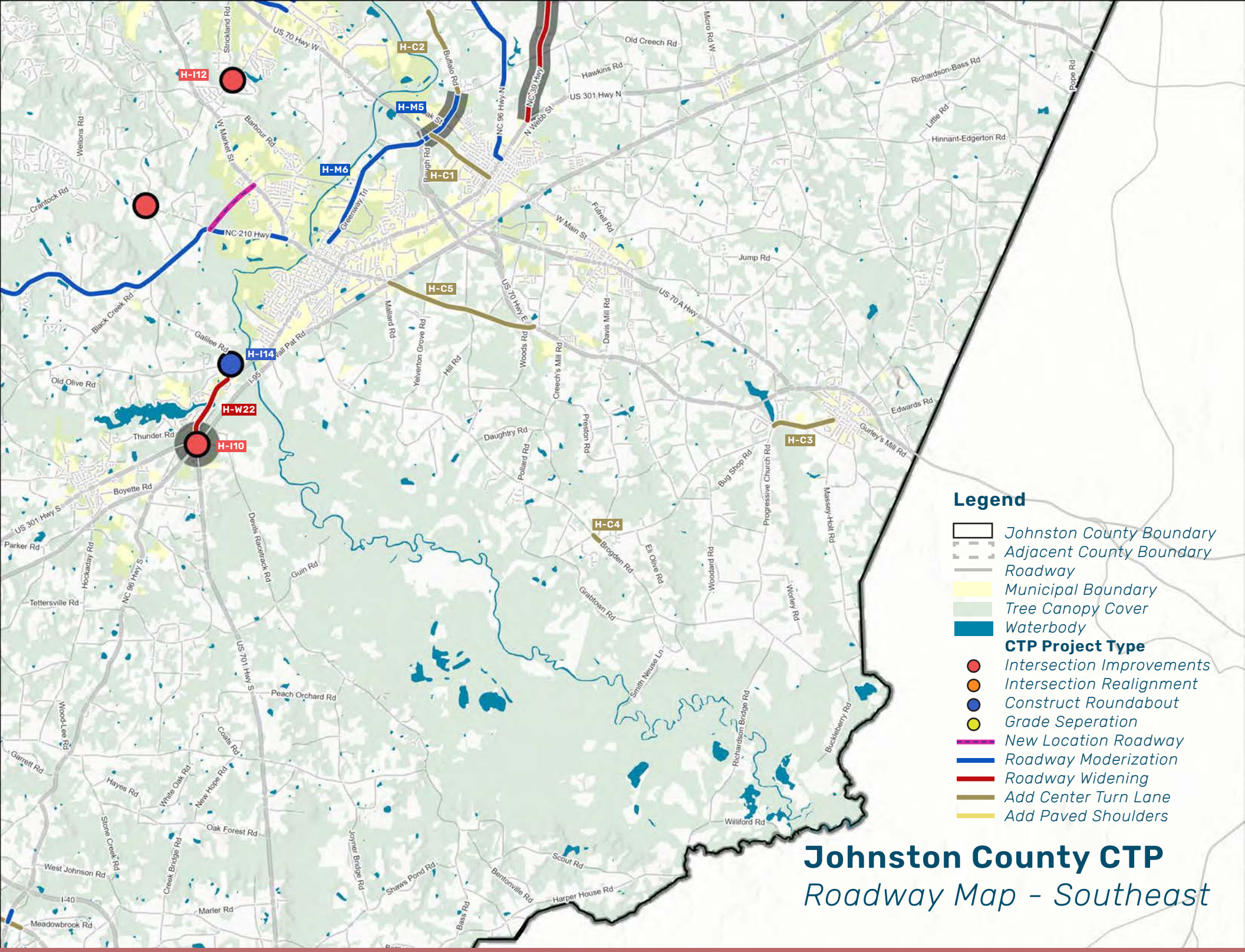
- *Intersection Improvements*
- *Intersection Realignment*
- *Construct Roundabout*
- *Grade Seperation*
- *New Location Roadway*
- *Roadway Moderization*
- *Roadway Widening*
- *Add Center Turn Lane*
- *Add Paved Shoulders*



Johnston County CTP

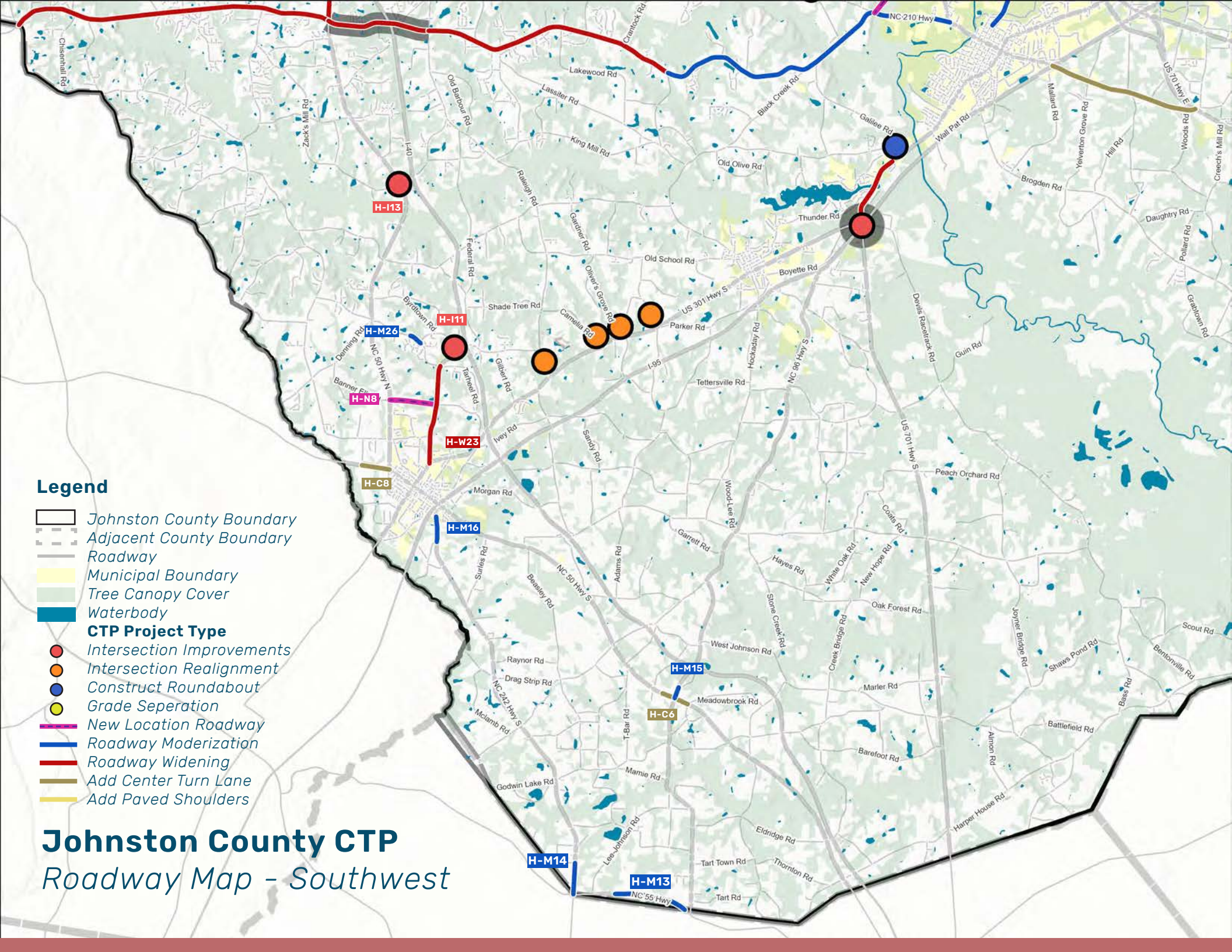
Roadway Map - Northeast





Johnston County CTP

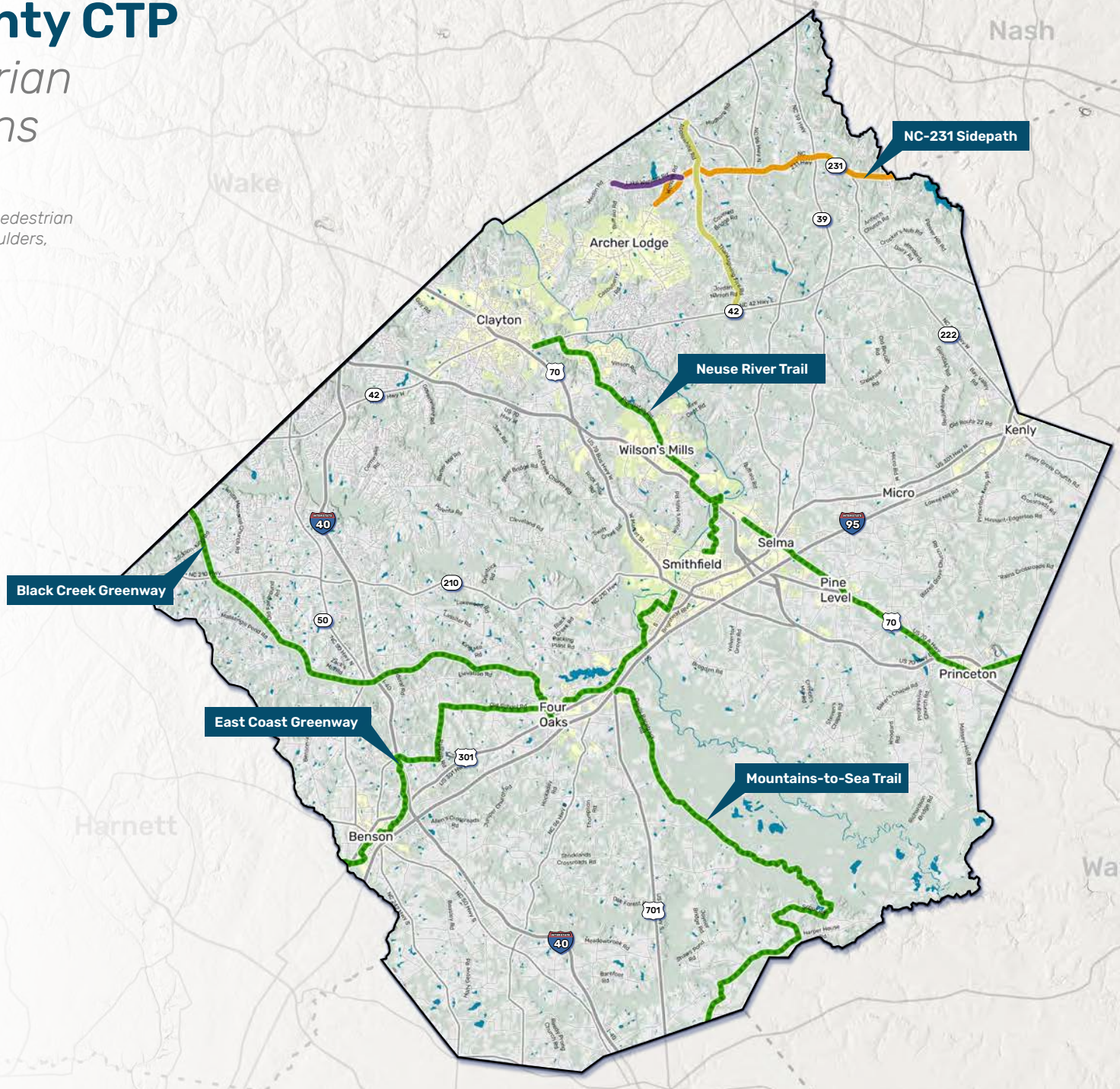
Roadway Map - Southeast


H-I13
H-I11
H-M26
H-N8
H-W23
H-C8
H-M16
H-M15
H-C6
H-M14
H-M13
NC 210 Hwy
Lakewood Rd
Lassiter Rd
King Mill Rd
Old Olive Rd
Galilee Rd
Wall Pal Rd
Brogden Rd
Thunder Rd
Daughtry Rd
Old School Rd
Boyette Rd
US 301 Hwy S
Parker Rd
Shade Tree Rd
Tettersville Rd
I-95
Guin Rd
Peach Orchard Rd
US 701 Hwy S
Morgan Rd
Garrett Rd
Hayes Rd
Oak Forest Rd
West Johnson Rd
Meadowbrook Rd
Marler Rd
Battlefield Rd
Barefoot Rd
Mamie Rd
Godwin Lake Rd
Eldridge Rd
Tart Town Rd
Tart Rd
Harper House Rd
NC 55 Hwy
Raynor Rd
Drag Strip Rd
NC 242 Hwy S
Mclamb Rd
NC 50 Hwy S
Beasley Rd
Sturles Rd
Ivey Rd
Sandy Rd
Adams Rd
Wood-Lee Rd
Coats Rd
New Hope Rd
White Oak Rd
Stone Creek Rd
Creek Bridge Rd
Joyner Bridge Rd
Shaws Pond Rd
Scout Rd
Bentonville Rd
Bass Rd
Almon Rd
T-Bar Rd
Lee Johnson Rd
Thornton Rd
Devils Racetrack Rd
Hockaday Rd
NC 96 Hwy S
Gilbert Rd
Tarheel Rd
Federal Rd
Raleigh Rd
Gardner Rd
Oliver's Grove Rd
Camelia Rd
Byrdtown Rd
Denning Rd
NC 50 Hwy N
Banner Elk
Old Barbour Rd
Zack's Mill Rd
Chisenhall Rd
Cranlock Rd
I-40
Mallard Rd
Yelverton Grove Rd
Hill Rd
Woods Rd
Creech's Mill Rd
US 70 Hwy E
Pollard Rd
Grabtown Rd
Legend
Johnston County Boundary
Adjacent County Boundary
Roadway
Municipal Boundary
Tree Canopy Cover
Waterbody
CTP Project Type
Intersection Improvements
Intersection Realignment
Construct Roundabout
Grade Seperation
New Location Roadway
Roadway Moderization
Roadway Widening
Add Center Turn Lane
Add Paved Shoulders
Johnston County CTP
Roadway Map - Southwest

Johnston County CTP

Bicycle + Pedestrian Recommendations

Some roadway projects include bicycle and pedestrian improvements such as bike lanes, paved shoulders, greenways, and sidepath.



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Roadway*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

CTP Project Type

- *Greenway/Multi-Use Path*
- *Add Bike Lanes*
- *Add Paved Shoulders*
- *Add Sidepath*

0 2 mi.
Scale: 1" = 2 miles

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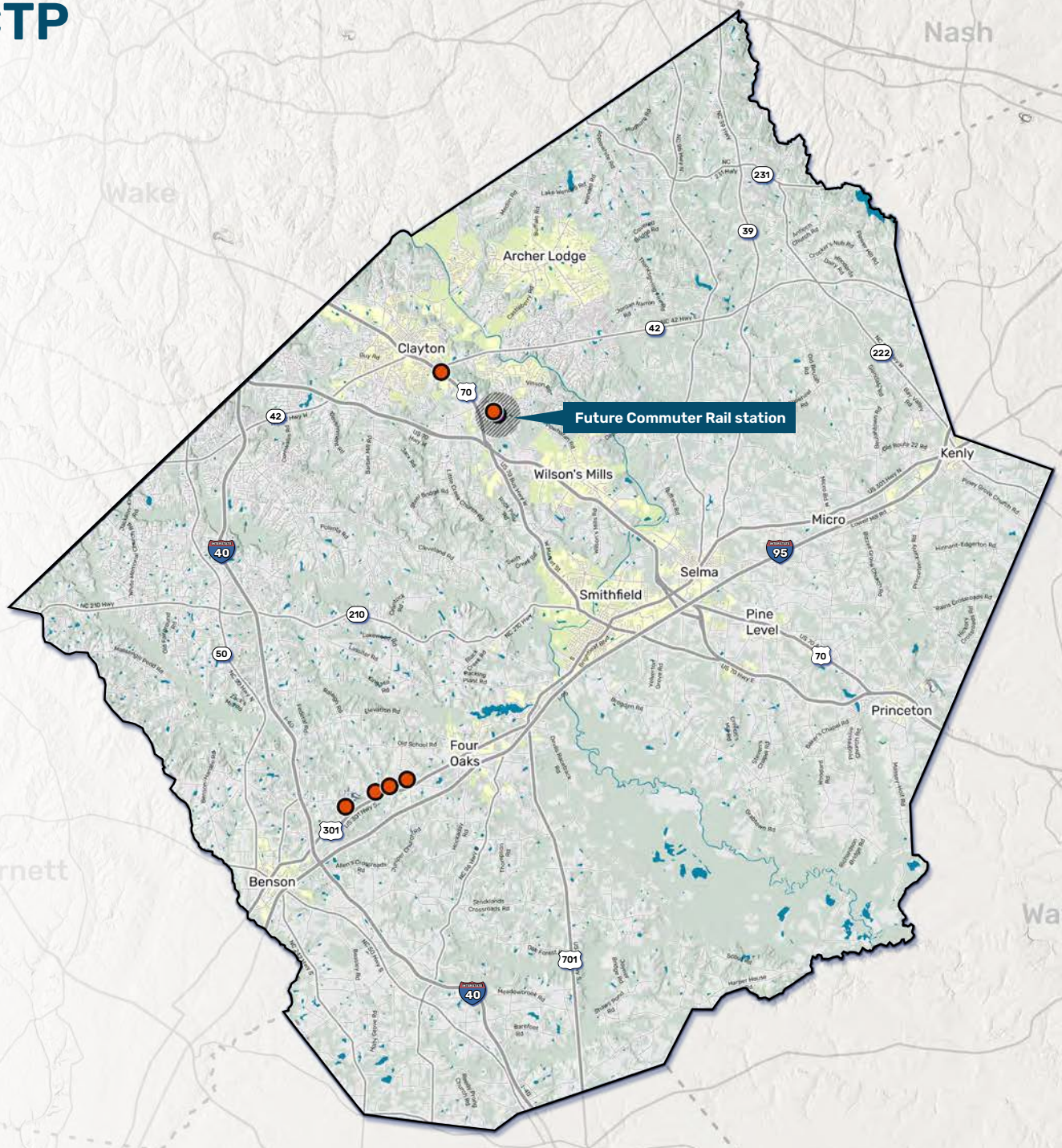
BICYCLE + PEDESTRIAN RECOMMENDATIONS

The following table and corresponding map include bicycle and pedestrian project recommendations. Many roadway projects listed separately also include bicycle and pedestrian facilities. View interactive project map *here*. NCDOT cross-sections on *page 102*

ID	CORRIDOR/LOCATION	FROM	TO	TYPE OF PROJECT	REASON / JUSTIFICATION	RECOMMENDED CROSS-SECTION
B-S1	NC-231	NC-96/Lake Wendell Rd	Nash County	Sidepath	Great Trails State Plan	2M
B-S2	Lake Wendell Rd/Salem Church Rd	NC-96	Wendell Rd	Sidepath	Great Trails State Plan	2M
B-S3	Wendell Rd	Lake Wendell Rd	Archer Lodge	Sidepath	Great Trails State Plan	2M
B-B1	Lake Wendell Rd	Buffalo Rd	Salem Church Rd	Add bike lanes	NCDOT PBIN	2M
B-P1	Thanksgiving Fire Rd/Applewhite Rd	NC-42	NC-231	Add paved shoulders	Development/safety	2A
B-T1	Neuse River Trail	Smithfield	Wilsons Mills	Greenway/ Multi-use path	Neuse River Trail Feasibility Study	N/A
B-T2	Neuse River Trail	Wilsons Mills	Clayton	Greenway/ Multi-use path	Neuse River Trail Feasibility Study	N/A
B-T3	Great Trails State Route 4H	Princeton	Wayne County	Greenway/ Multi-use path	Great Trails State Plan	N/A
B-T4	Great Trails State Route 4H	Pine Level	Princeton	Greenway/ Multi-use path	Great Trails State Plan	N/A
B-T5	Great Trails State Route 4H	Selma	Pine Level	Greenway/ Multi-use path	Great Trails State Plan	N/A
B-T6	Mountains-to-Sea Trail	Four Oaks	Sampson County	Greenway/ Multi-use path	Great Trails State Plan, adopted state trail	N/A
B-T7	Black Creek	Four Oaks	Wake County	Greenway/ Multi-use path	Smithfield-Benson ECG Feasibility Study	N/A
B-T8	East Coast Greenway	Smithfield	Benson	Greenway/ Mult-use path	Smithfield-Benson ECG Feasibility Study	N/A

Johnston County CTP

Rail + Public Transit Recommendations



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Roadway*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

CTP Project Type

- *Grade Separation*
- *Transit Station*

0 2 mi.
Scale: 1" = 2 miles

McAdams

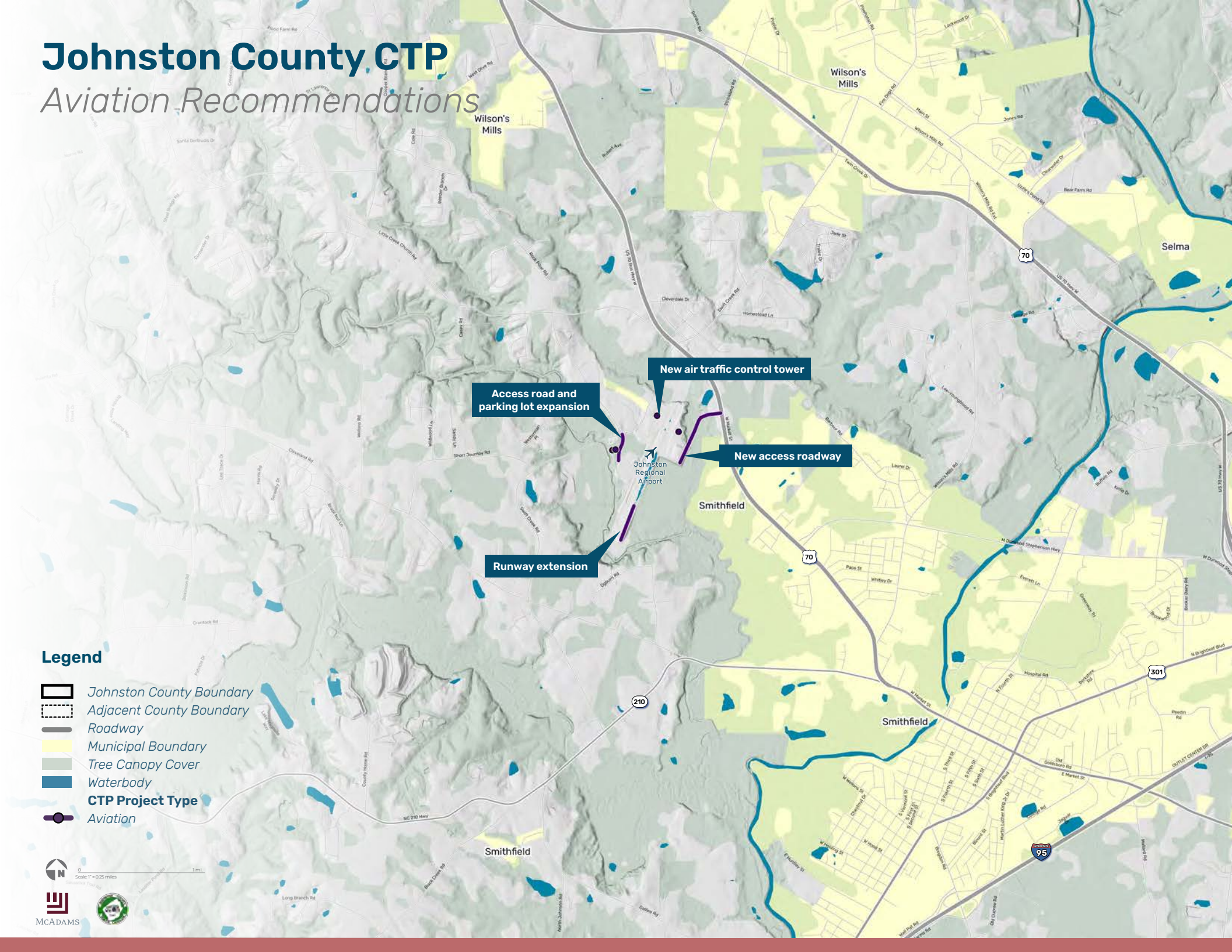
RAIL + PUBLIC TRANSIT RECOMMENDATIONS

The following table and corresponding map include bicycle and pedestrian project recommendations. Some rail projects listed below also incorporate roadway improvements. View interactive project map *here*.

ID	CORRIDOR/LOCATION	AT	TYPE OF PROJECT	REASON / JUSTIFICATION	OTHER
T-G1	Powhatan Rd	CSX Rail, Powhatan	Grade separation	Safety/railroad corridor sealing	SPOT P7
T-G2	NC-42	CSX Rail, Clayton	Grade separation	Safety/railroad corridor sealing	SPOT P7
T-R1	Commuter rail station	CSX Rail, Powhatan	Transit	Commuter rail	SPOT P7
T-G3	Raleigh Rd	CSX Rail, Benson	Grade separation	Safety/railroad corridor sealing	SPOT P7
T-G4	Olivers Grove Rd	CSX Rail, Four Oaks	Grade separation	Safety/railroad corridor sealing	SPOT P7
T-G5	Camelia Rd	CSX Rail, Benson	Grade separation	Safety/railroad corridor sealing	SPOT P7
T-G6	Parkertown Rd	CSX Rail, Four Oaks	Grade separation	Safety/railroad corridor sealing	SPOT P7

Johnston County CTP

Aviation Recommendations



AVIATION RECOMMENDATIONS

The following table and corresponding map include aviation project recommendations at Johnston Regional Airport (JNX). View interactive project map *here*.

ID	PROJECT TYPE	LOCATION	YEAR	ESTIMATED COST (2024)	REASON /JUSTIFICATION
A1	Self-service Fuel Farm - 100LL	North midfield area	2029	$513,000	2022 Johnston Regional Airport Master Plan
A2	New location for airport maintenance facility	TBD	2025	$2,280,000	2022 Johnston Regional Airport Master Plan
A3	Runway extension (Runway 3 end to 6,200 ft)		2032	$29,070,000	2022 Johnston Regional Airport Master Plan
A4	New access road east side of airport	East side of airport	2040	$1,824,000	2022 Johnston Regional Airport Master Plan
A5	Expansion of North parking lots	North building area	2037	$570,000	2022 Johnston Regional Airport Master Plan
A6	Access road and parking lot expansion	South midfield area	2025	$2,297,100	2022 Johnston Regional Airport Master Plan
A7	New facility - Air Traffic Control Tower	TBD	TBD	TBD	2022 Johnston Regional Airport Master Plan

Hot Spots

In addition to developing the master project list, the Project Team identified specific "hot spot" projects through feedback received from the public, Working Group, Steering Committee, and Johnston County staff. The Project Team reviewed these project locations for specific safety and congestion concerns and further addressed them with potential design options.

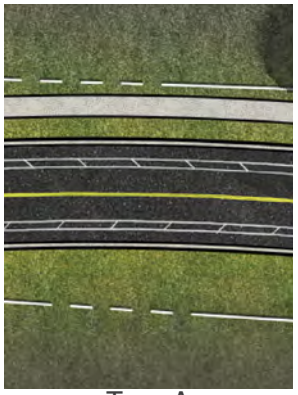
HOT SPOT CUT SHEETS

Holts Pond Rd.

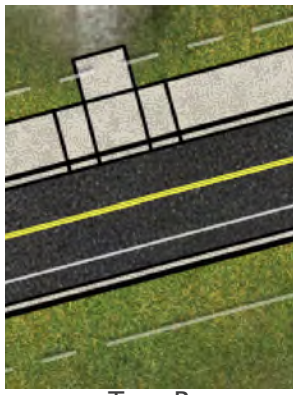
This project aims to improve transportation options for reaching Princeton Elementary School, extending from Martin Livestock Road east to W. 3rd Street in Princeton. The addition of bike lanes, sidewalks, and/or a multi-use path will make walking and biking to school an easier option. The design combines pedestrian and bicycle facilities on Holts Pond Road bridge. Minimal ROW acquisition should be required, but a feasibility study of the corridor is recommended.

Key Features:

- 12’ vehicular Travel Lanes with center left turn lane into the school
- West bound bicycle lane and sidewalk as 12’ shared use path
- Curb and gutter on both sides of the street
- 8’ Planting Strip (North side of Holts Pond Rd)
- 5' On Street Bicycle Lanes with 3' Buffers each side of the street
- 8' Sidewalk (north side of Holts Pond Rd)



Type A



Type B

Bakers Chapel Rd. & Stevens Chapel Rd.

Concerns regarding the proximity of Bakers Chapel Road to Stevens Chapel Road, along with the potential for queuing issues in both directions initiated the need for project improvements along Brogden Road. The project stretches from Brogden School Road to just east of Bakers Chapel Road and adds a center turn lane to reduce the likelihood of roadway queuing and rear-end collisions. This location was the site of a fatal accident in 2018.

Key Features:

- 12' Vehicular Travel Lanes
- 12’ Center Turn Lane added for the length of the project

NC 50 & Zack's Mill Rd.

Alignment concerns with Zack's Mill Road at NC 50 led to the redesign and realignment of this intersection. Realignment of Zack's Mill Road occurs on the eastern side of NC 50 and requires property acquisition from two parcels. While a high frequency of accidents has not occurred, the location was the site of a fatal accident in 2022.

Key Features:

- 12' Vehicular Travel Lanes
- 2-Way Stop Condition
- Improved Intersection Sight Lines

Cleveland Rd & Swift Creek Rd.

This project addresses the challenging sight lines that the existing non-perpendicular intersection creates, along with the vision impairment caused by trees on north Cleveland Road. A minor realignment of Swift Creek Road to tie in with Cleveland Road at a roundabout reduces safety problems through a reduction in conflict points and improved visibility. This location was the site of 28 accidents between 2019-2023. A further feasibility study to understand grading site constraints is recommended.

Key Features:

- Single Lane Roundabout at Swift Creek Road and Cleveland Road intersection
- Realignment of Swift Creek Road
- 12' Vehicular Travel Lanes

Buffalo Rd, Fire Department Rd, and Little Divine Rd

A roundabout at this location addresses a stretch of roadway where three roads converge within 450 feet of each other. The roundabout design reduces queuing on Little Divine and Buffalo Roads and minimizes conflict points, addressing the 45 accidents that occurred between 2019 and 2023. A feasibility analysis is suggested to understand grading needs and property impacts more effectively.

Key Features:

- 12' Vehicular Travel Lanes
- Curb and Gutter
- One Lane Central Roundabout with truck apron
- Concrete median islands and landscaping

Applewhite Road & Mudham Road at NC 231 (SR 1720)

Mudham Road converges with Applewhite Road approximately 126 feet from NC 231. Additionally, the angled intersection of Mudham presents sight line problems for travelers turning left onto Applewhite. The Project Team developed two options to address the sight line problems and the potential queuing concerns on Applewhite Road that block Mudham.

LONG TERM OPTION:

Slightly realign all three roadways into a central single lane roundabout, eliminating the need for two intersections and any left turn movements. This option presents the safer and potentially more efficient flow of traffic but is also the more expensive and intrusive option.

Key Features:

- 12' Vehicular Travel Lanes
- One Lane Central Roundabout with truck apron
- Concrete median islands and landscaping
- Elimination of one intersection
- Major reduction in potential conflict points

SHORT TERM OPTION:

The realignment of Mudham Road further north, creates a new T-intersection closer to 525 feet from NC 231, reducing the likelihood of queuing on Applewhite Road and creating a safer turning movement from Mudham Road onto Applewhite Road.

Key Features:

- 12' Vehicular Travel Lanes
- Improved Sight Lines
- Improved Distance Between Intersections

ORDINANCE RECOMMENDATIONS

The Project Team developed multiple scenarios regarding right of way (ROW) reservation, dedication, and/or facility construction of recommendations included in the Johnston County CTP. Three scenarios can form the basis for ordinances.

- 1. A development with roadway frontage along a roadway that is recommended for improvement in the CTP
- 2. A development where a new roadway is shown in the CTP running through the parcel(s)
- 3. A development where a new greenway is shown in the CTP running through the parcel(s)

SCENARIO 1: A DEVELOPMENT WITH ROADWAY FRONTAGE ALONG A ROADWAY THAT IS RECOMMENDED FOR IMPROVEMENT IN THE CTP.

The Project Team presents three options to the County relative to this scenario. Among these, the following option is recommended:

The County/NCDOT will dedicate the ROW for one half of the CTP recommended typical section along the roadway frontage and construct any additional improvements required.

Pros

- The project ensures that private development improvements are appropriately set back beyond the future right-of-way.
- Ensures appropriate future buffers for structures
- Limits future project ROW costs

Cons

- Would require NCDOT concurrence with dedication
- NCDOT maintenance of ROW may not be as timely as desired, would assume that developer or adjacent owner would likely maintain

SCENARIO 2: A DEVELOPMENT WHERE A NEW ROADWAY IS SHOWN IN THE CTP RUNNING THROUGH THE PARCEL(S).

There are multiple scenarios related to this:

SCENARIO 2A: THE PROPOSED DEVELOPMENT IS AT THE TERMINUS OF A ROADWAY RECOMMENDATION

The Project Team suggests that the applicant work with the County to define the future alignment, cross section, and other design criteria through the property and construct the portion of the roadway within the development.

SCENARIO 2B: A PORTION OF THE RECOMMENDED ROADWAY ADJOINING OR IN REASONABLE PROXIMITY TO THE PROPOSED DEVELOPMENT HAS ALREADY BEEN CONSTRUCTED

The Project Team suggests that the applicant work with the County to define the future alignment, cross section, and other design criteria through the property and construct the portion of the roadway within the development.

SCENARIO 2C: THE ROADWAY OR A PORTION OF THE ROADWAY ADJOINING OR IN REASONABLE PROXIMITY TO THE PROPOSED DEVELOPMENT IS FUNDED FOR CONSTRUCTION OR PRELIMINARY ENGINEERING, PRESUMABLY THROUGH NCDOT STIP OR OTHER FUNDING MECHANISM.

The Project Team suggests that the applicant work with the County to define the future alignment, cross section, and other design criteria through the property and construct the portion of the roadway within the development.

SCENARIO 2D: ROADWAY IS NOT FUNDED FOR CONSTRUCTION AND NO PORTION OF THE ROADWAY WITHIN REASONABLE PROXIMITY OF THE PROPOSED DEVELOPMENT HAS BEEN CONSTRUCTED.

The Project Team presents three options to the County relative to this scenario. Among these, the following option is recommended:

The applicant works with the County to define the future alignment, cross section, and other design criteria through the property and reserves the ROW for the portion of the roadway within the development

Pros

- Ensures private development improvements set back beyond future ROW, lowering future ROW costs
- Ensures appropriate future buffers from structures

- Developer or owner (such as an HOA) maintains liability for any activities that occur within the ROW.
- ROW would still need to be purchased in the future

Cons

- ROW must still be purchased in the future, increasing future project costs
- Developer or owner (such as an HOA) would have to maintain ROW
- Internal infrastructure elements such as roadways may need to be modified upon future roadway construction

SCENARIO 3: A DEVELOPMENT WHERE A NEW GREENWAY IS SHOWN IN THE CTP RUNNING THROUGH THE PARCEL(S)

There are several scenarios related to this:

SCENARIO 3A: THE PROPOSED DEVELOPMENT IS AT THE TERMINUS OF A GREENWAY RECOMMENDATION

The Project Team recommends that the applicant work with the County to define the future alignment, cross section, and other design criteria through the property and construct the portion of the greenway within the development.

SCENARIO 3B: A PORTION OF THE RECOMMENDED GREENWAY IN REASONABLE PROXIMITY TO THE PROPOSED DEVELOPMENT HAS ALREADY BEEN CONSTRUCTED

The Project Team recommends that the applicant work with the County to define the future alignment, cross section, and other design criteria through the property and construct the portion of the greenway within the development.

SCENARIO 3C: THE GREENWAY IS FUNDED FOR PRELIMINARY ENGINEERING OR CONSTRUCTION.

The Project Team recommends that the applicant work with the County to define the future alignment, cross section, and other design criteria through the property and construct the portion of the greenway within the development.

SCENARIO 3D: THE GREENWAY IS NOT FUNDED FOR PRELIMINARY ENGINEERING OR CONSTRUCTION AND NO PORTION OF THE GREENWAY WITHIN REASONABLE PROXIMITY OF THE PROPOSED DEVELOPMENT HAS BEEN CONSTRUCTED.

The Project Team presents three options to the County relative to this scenario. Among these, the following option is recommended:

The applicant works with the County to define the future alignment, cross section, and other design criteria through the property and dedicates the ROW to the County for the portion of the greenway within the development

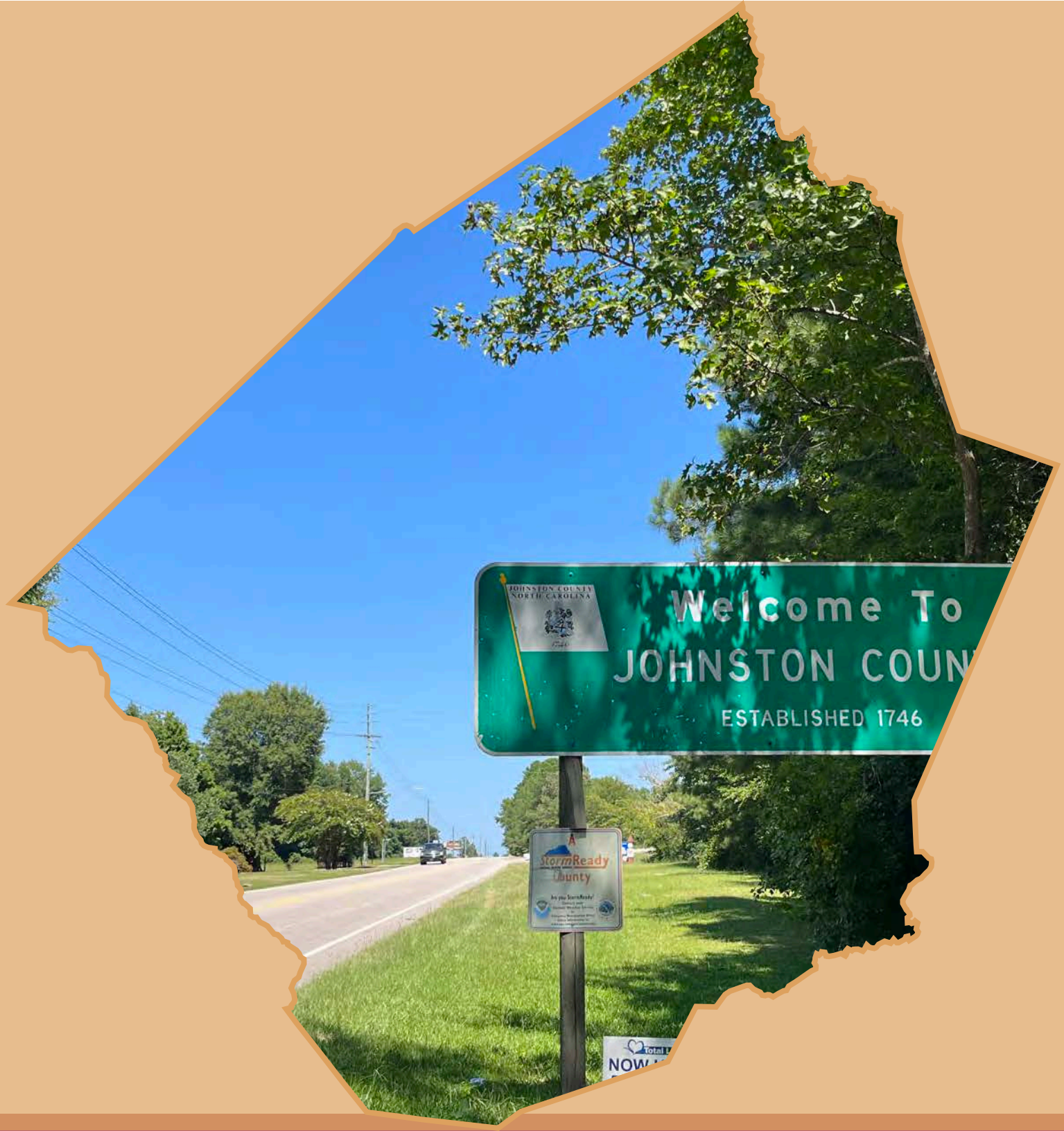
Pros

- Ensures that private development improvements are appropriately set back beyond future ROW
- Ensures that appropriate future buffers from structures
- Limits future project ROW costs

Cons

- The county would assume liability for any activities that occur within the ROW
- The county would have to maintain the ROW or assume that adjacent property owners or HOA would maintain the property
- Internal infrastructure elements such as roadways may need to be modified upon future greenway construction

While not required under this scenario, the County may choose to reserve the ROW, or the developer can choose to construct improvements.


JOHNSTON COUNTY
NORTH CAROLINA
Welcome To
JOHNSTON COUN
ESTABLISHED 1746
StormReady
County

APPENDICES

CHAPTER OVERVIEW

The analysis of existing conditions and future travel patterns identified current and projected deficiencies in the transportation network as part of the Johnston County CTP. The study incorporated key socioeconomic factors, including population trends and projections, land use, employment trends, and growth rate methodology. A variety of data sources supported the evaluation of the transportation system across all modes. This appendix includes documentation of methodologies and maps used in the analysis for each transportation mode.

Chapter Contents:

- Socioeconomic Data and Forecasting Methodology
- Transportation Planning Assessment
- Multimodal Analysis
- NCDOT Cross Sections

SOCIOECONOMIC DATA AND FORECASTING METHODOLOGY

In the development of the Johnston County Comprehensive Transportation Plan (CTP), existing and anticipated deficiencies were determined through an analysis of the transportation system looking at both current and future travel patterns. The following socioeconomic factors were integral to establishing planning assumptions for the study: Population Trend and Projection; Land Use; Employment Trend and Projection; and Growth Rate Methodology.

The Triangle Regional Demand Model (TDRM) projected travel demand from 2020 to 2050.

POPULATION

The Office of State Budget and Management (OSBM) used data to estimate population trends, and data from the U.S. Census Bureau provided historical population data as well as the 2022 5-Year American Community Survey data. Overall, as depicted in the table below, Johnston County has experienced population growth in recent years.

YEAR	POPULATION
1990	81,306
2000	121,900
2010	168,878
2015	185,945
2020	215,999
2022	233,616
2030	287,852 (NC OSBM projection)
2040	337,223 (NC OSBM projection)
2050	385,056 (NC OSBM projection)

CURRENT LAND USE

G.S. 136-66.2 requires that local areas have a current (less than five years old) land development plan prior to the adoption of a CTP. The Johnston County Comprehensive Plan was adopted in August 2023 and meets this requirement.

Land use refers to the physical patterns of activities and functions within an area. Traffic demand in a given area is, in part, attributed to land use. For example, a large shopping center typically generates higher traffic volumes than a residential area. The spatial distribution of different types of land uses is a predominant determinant of when, where, and to what extent traffic congestion occurs. The travel demand between different land uses and the resulting impact on traffic conditions varies depending on size, type, intensity, and spatial separation of development. Additionally, traffic volumes have different peaks based on the time of day and day of the week. Land use can be divided into the following categories:

RESIDENTIAL

People devote land to housing, excluding hotels and motels, which are considered commercial.

COMMERCIAL

Retail trade, including consumer and business services and their offices, devotes land that may be further stratified into retail and special retail classifications. High traffic establishments, such as fast food restaurants and service stations, would include special retail, while all other commercial establishments would be considered retail.

INDUSTRIAL

Land devoted to the manufacturing, storage, warehousing, and transportation of products.

PUBLIC

Land devoted to social, religious, educational, cultural, and political activities. This includes offices and service employment establishments.

AGRICULTURAL

Land devoted to the use of buildings or structures for the raising of non-domestic animals and/or growing of plants for food and other production.

MIXED USE

Land devoted to a combination of any of the categories above.

Locations and types of expected growth within the planning area may influence the location and type of proposed transportation improvements. The highest density of commercial and residential activity is found near the Wake County line, within the county and outside town centers.Of additional note are a slew of planned employment centers, regional mixed-use centers, neighborhood centers, and rural crossroads within the future land use plan. They largely locate along and/or parallel to the I-40, I-42/US-70, and I-95 corridors. These classifications (regional mixed-use center) are located along I-40 at NC-42 and NC-210. Along NC-42 are also 3 planned neighborhood centers.

FUTURE LAND USE

The future land use plan prominently features open spaces and conservation areas along streams and waterways, especially near the Neuse River south of US-70 and I-95, and east of Rt. 701 all designated open space/conservation.

Looking from a bird's eye view at the Future Land Use Map in Johnston County, a consistent trend can be observed in terms of land use intensity. The Northwest of the county hosts the highest densities (low density/medium density residential) and the majority of activity centers. The Northwest of the county hosts the highest densities (low density/medium density residential) and the majority of activity centers. As you move southeast through the county, there is a consistent de-escalation of land use intensity going from rural living to agricultural area, to large clusters of open space and conservation. The large majority of land south of I-95 is open space and conservation/agricultural area, with minimal clusters of rural living and no higher intensity areas. Given these broad trends, future growth/density is expected to be concentrated near Clayton/Wake County, and transportation improvements should focus on these areas. Transportation projects will focus more on safety improvements rather than capacity management, as little growth or densification is expected outside town limits south of I-95.

ACTIVITY CENTER DISTRIBUTIONS

Within the Johnston County Future Land Use map are several “activity centers,” labeled as: employment centers, regional mixed-use centers, neighborhood centers, and rural crossroads. These are one of the most significant components of the future land use plan when analyzing transportation needs, as they will represent some of the most significant generators/destinations of trips in the county.

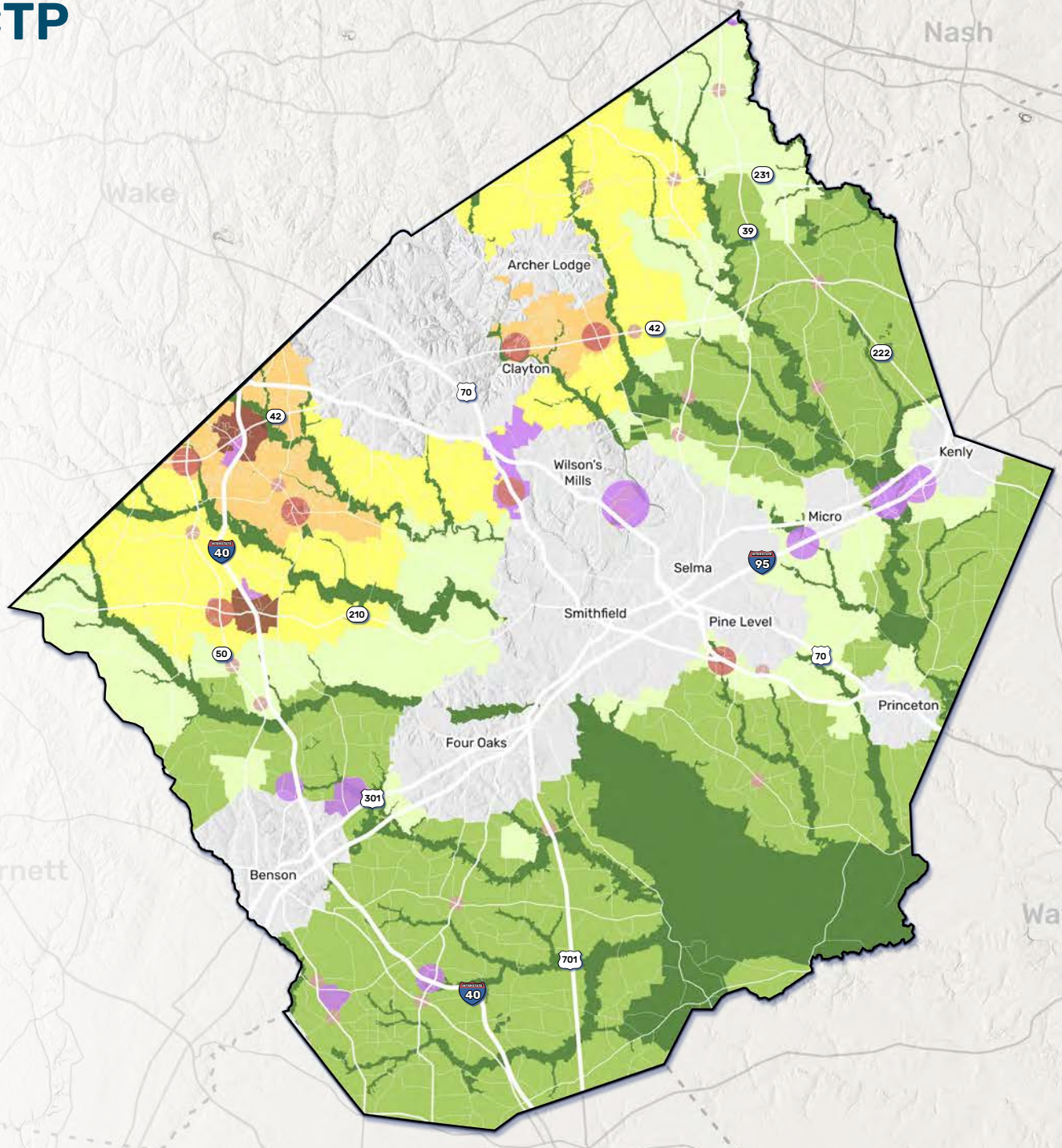
Employment Center

Employment centers are common on the map and represent both a local and regional destination, potentially generating trips from outside the county. These locations are in four clusters within Johnston County

- Micro-Kenly: Between the two towns along I-95 are three clusters of employment centers. Given proximity to a central transportation corridor, these may be ideal locations for both employment centers that draw from the regional employment pool and require proximity to I-95/rail for shipping/other reasons.
- Wilson’s Mill: To the southeast and northwest of Wilson’s Mill are two clusters of employment centers. Located along US-70/I-42, these locations are within proximity to Wake County and near an already existing cluster of existing and proposed industrial facilities in and around Clayton. There is also rail running through these two clusters.
- I-40 corridor: near the intersections of I-40 and NC-42 and NC-210 are two employment center designations. These lack a rail connection but are located closest to Wake County and the southern suburbs of Raleigh.

Johnston County CTP

Future Land Use



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Road*

Future Land Use Placetype:

- *Employment Center*
- *Regional Mixed-Use Center*
- *Neighborhood Center*
- *Rural Crossroads*
- *Open Space and Conservation*
- *Medium Density Residential*
- *Low Density Residential*
- *Rural Living*
- *Agricultural Area*

0 2 mi.
Scale: 1" = 2 miles

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- Benson: To the south and north of Benson are several clusters that are a product of both the I-40 and I-95 corridors, as well as nearby rail. The southern cluster is located near Harnett and Sampson counties, representing likely destinations or origins of commuting trips.

Other Activity Centers

The two regional mixed use centers are located adjacent to the employment hubs along I-40 and represent planned mixed use destinations with likely draw from both Johnston and Wake County. These may produce transportation needs that could be addressed with roadway capacity planning and multimodal connections to nearby neighborhoods. The intersections of more minor roads locate the neighborhood centers and rural crossroads, which are designed to appeal more to local service. Like regional mixed use centers, multimodal efforts should focus on the roads where these centers are located, as well as on the routes to and from nearby residential communities.

Inside Town Limits

Each municipality can plan land use within its boundaries, but growth will likely occur near downtowns and transportation corridors, necessitating analysis of connections between residents and nearby town centers. Communities number their local corridors, but the main corridors connecting them run from Benson to Kenly along I-95/Rt. 301 and from Princeton to Clayton along I-42/US-70. The city should prioritize bike, pedestrian, and transit connections within and towards these communities from both inside and outside the ETJ/town limits.

EMPLOYMENT

Data from the Bureau of Labor Statistics (BLS) was used to estimate future employment conditions. The base year employment conditions agreed with other sources such as the N.C. Department of Commerce County Profile and Assess NC (Johnston County Profile for March 2024) and the Envision Johnston 2040: Comprehensive Plan. The 2050 employment totals were based on an employment-population ratio of 0.44 which aligns with recent trends.

YEAR	POPULATION	EMPLOYMENT [2]	EMPLOYMENT/POPULATION RATIO
1990	81,306	42,816	0.53
2000	121,900	62,223	0.51
2010	168,878	73,951	0.44
2015	185,945	83,524	0.45
2020	215,999	91,245	0.42
2021	227,302	97,112	0.43
2022	233,616	105,673	0.45
2023	241,955	107,369	0.44
2050	437,575 [1]	192,613 [3]	0.44

[1] Data comes from *https://d4.nccommerce.com/LausSelection.aspx*

[2] Calculated based on projected growth rate in Envision Johnston 2040: Comprehensive Land Use Plan.

[3] Extrapolated based on Employment/Population Ratio.

The map below shows the distribution of the major employers in Johnston County in 2024. This facet of analysis informed the prioritization of projects identified in the CTP Core document due to the impact that the location of major employers has on travel demand and traffic volumes.

GROWTH RATE METHODOLOGY

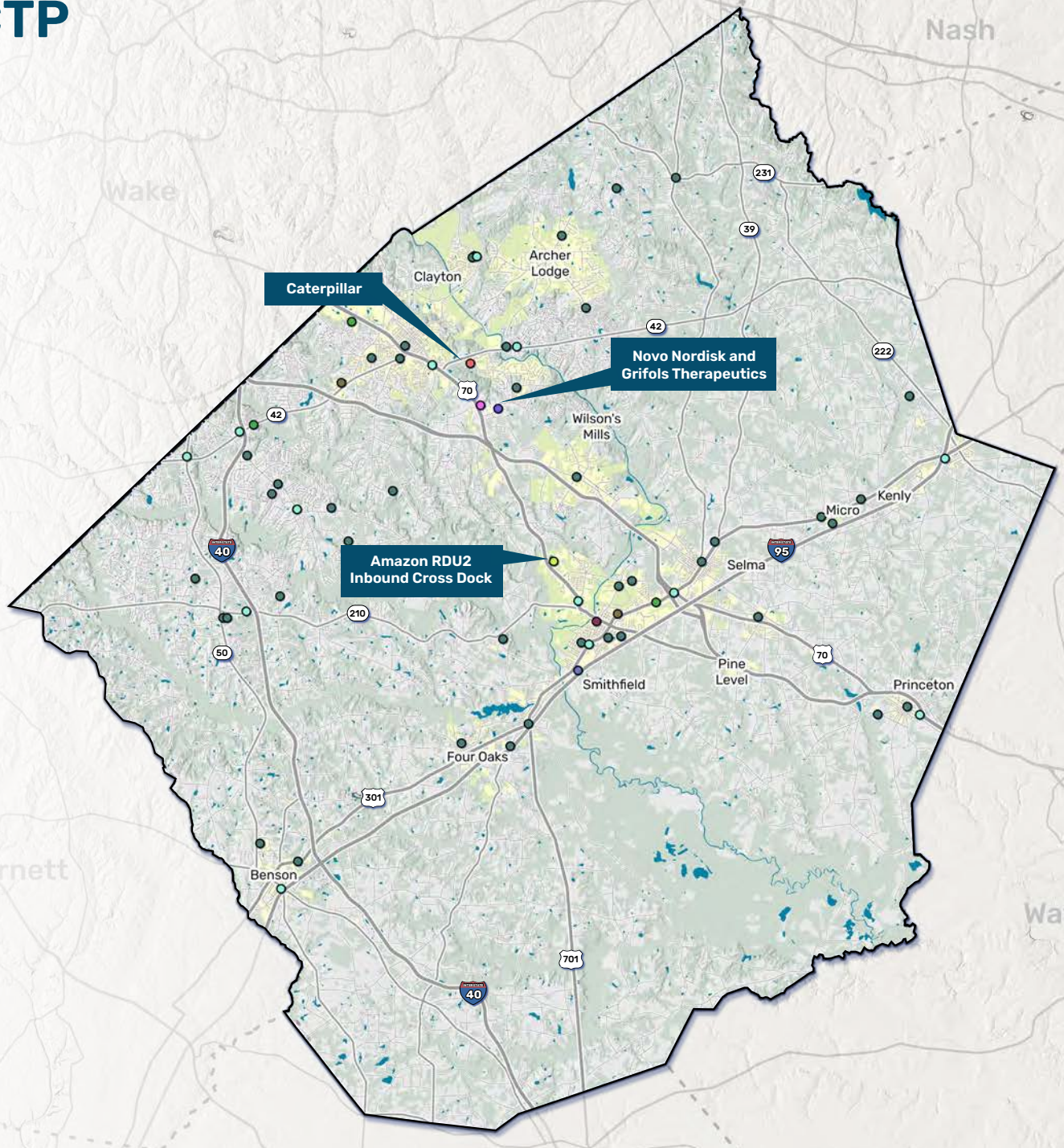
Historic traffic trends will be analyzed and used to project 2050 volumes linearly. The CTP steering committee will use population and employment trends to establish a low, medium, and high growth rate that will inform projected 2050 traffic volumes outside of CAMPO's Travel Demand Model boundaries, namely in the easternmost portion of Johnston County. Areas of negative or zero growth will be considered for minimal growth based on the established low growth rate. Areas with anticipated development will consider the high growth rate for projected growth.

CTP ESTIMATES	2023	2050
Population	241,955	437, 757
Employment	107,369	192,613

GROWTH	% LINEAR ANNUAL GROWTH RATE
Low	2%
Medium	2.4%
High	2.8%

Johnston County CTP

Major Employers



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Interstate*
- *US Route*
- *NC Route*
- *SR - State Route*
- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

Major Employer:

- *Novo Nordisk*
- *Grifols*
- *Johnston County Public Schools (multiple locations)*
- *Johnston/UNC Health (multiple locations)*
- *Johnston County Government*
- *Food Lion (multiple locations)*
- *Walmart (multiple locations)*
- *Amazon*
- *AAF Flanders*
- *Caterpillar*

0 2 mi.
Scale: 1" = 2 miles

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TRANSPORTATION PLANNING ANALYSIS DATA

Various pieces of information were used to help analyze the existing transportation system. This section covers some of the data used and maps associated with it which includes:

- Bridge Deficiency Assessment
- Traffic Crash Analysis
- Consideration of Natural and Environmental Features
- Existing Freight/Truck Data
- Resiliency

BRIDGE DEFICIENCY ASSESSMENT

Bridges are a vital component of the roadway network. They represent the highest unit investment of all elements in the system, and any inadequacy in a bridge reduces the value of the total investment. A bridge presents the greatest opportunity of all potential highway failures for disruption of community welfare. As such, it is imperative that bridges be constructed to the same design standards as the system of which they are a part.

The NCDOT Structures Management Unit inspects all bridges in North Carolina at least once every two years. Bridges having the highest priority are replaced as federal and state funds become available. Forty-eight (48) deficient bridges were identified on roads in Johnston County evaluated as part of the CTP and are illustrated in the following map. Of these, six (6) are scheduled for replacement in 2026[4]. Additionally, 12 occur along roadways recommended for improvement in the CTP. As deficient bridges are replaced, every consideration should be given to proposed CTP recommendations and cross sections associated with the recommendations.

The Structures Management Unit analyzes bridges within the Division and shares this information with the Division Bridge Program Manager to assist in determining the prioritization of the bridge projects. The structures unit utilizes various metrics such as condition, structural adequacy, safety, serviceability, and functional capability during this analysis. Once the Division and Structures Management Unit agree upon the bridge replacement priority, the bridges with the highest priority are replaced as Federal and State funds become available.

A bridge is considered deficient if it is either structurally deficient or functionally obsolete. Structurally deficient means there are elements of the bridge that need to be monitored and/or repaired. The fact that a bridge is structurally deficient does not imply that it is likely to collapse or that it is unsafe. It means the bridge must be monitored, inspected, and repaired/replaced at an appropriate time to maintain its structural integrity. A functionally obsolete bridge is one that was built to standards that are not used today. These bridges are not automatically rated as structurally

[4] 500118 and 500119 (over CSX railroad on I-95); 500109, 500110, and 500112 (on SR 2137, SR 2339, SR 2137 over I-95); and 500070 (on US301 over Neuse River).

deficient, nor are they inherently unsafe. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demand or to meet the current geometric standards. These bridges also may be occasionally flooded.

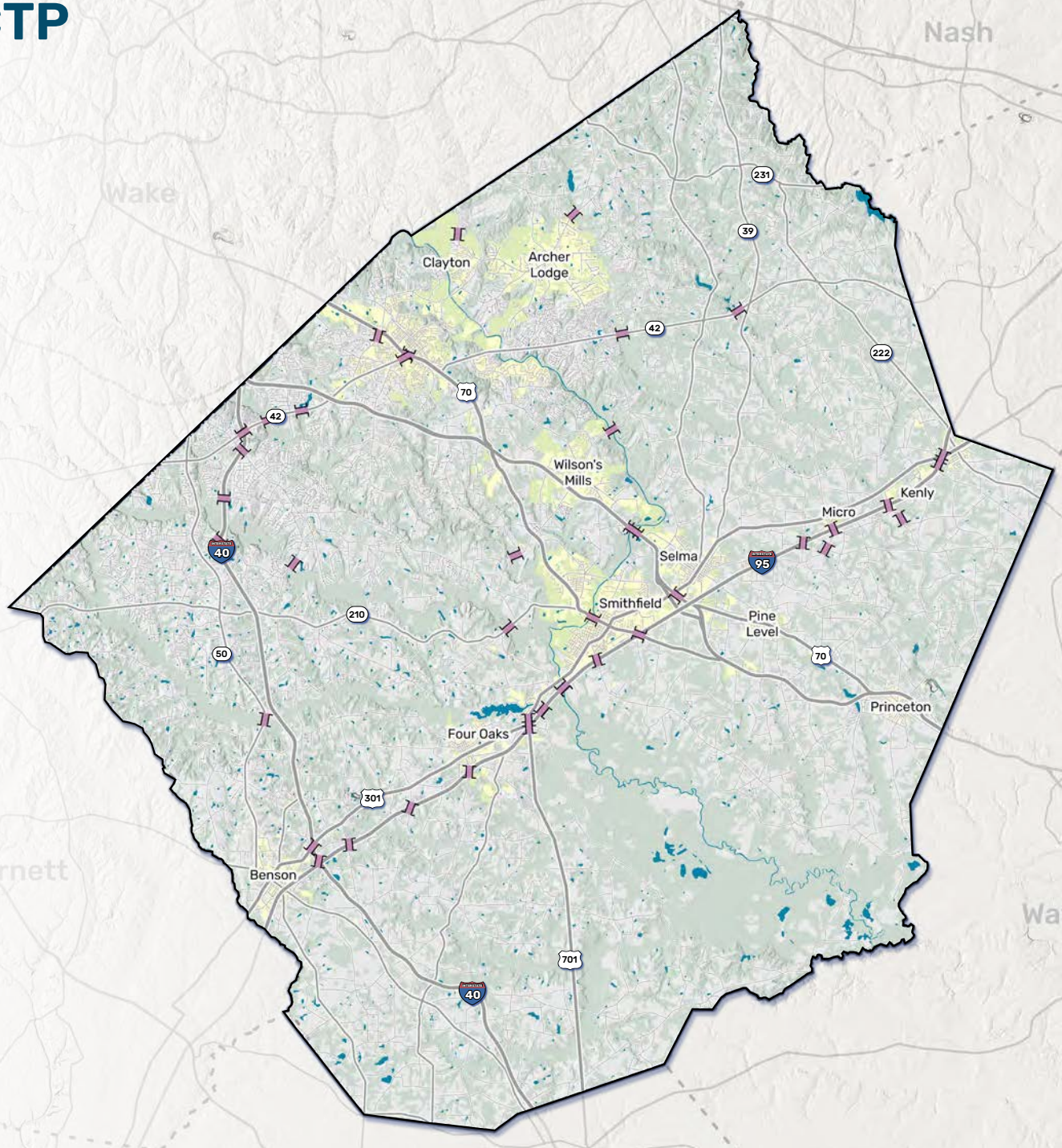
The table below and the map on the following page show deficient bridges on roads in the CTP. For more information on deficient bridges within the planning area, contact the Structures Management Unit using the information in the contacts section of the appendix.

BRIDGE ID	ROUTE	ACROSS	YEAR BUILT	CONDITION	SUFFICIENCY RATING	CTP PROJECT
002	US-70 W	Neuse River	1960	FO	72.91	
005	US-70 W	Neuse River Overflow	1960	FO	75.96	
010	US-70 E	NC-42	1966	FO	62.74	
012	US-70 W	NC-42	1966	FO	64	
017	US-70 A	SCL Railroad	1970	FO	66.17	
021	NC-42	Swift Creek	1947	SD	33.86	
023	NC-231	Little River	1997	SD	70.81	
027	SR 1171	I-95	1958	FO	78.38	
037	US-301, NC-96	CSX Railroad	1926	FO	35.35	
040	US-70 B	Neuse River	2013	FO	66	
045	NC-42	White Oak Creek	1947	SD	46.27	
050	NC-210	Middle Creek	1934	SD	43.45	
053	SR 1166	I-95	1957	FO	57	
058	NC-42	Little Creek	1967	FO	62.57	
062	SR 1162	I-95	1955	FO	81.09	
066	US-70 BUS	I-95	1955	SD	41.7	
067	US-701	I-95	1957	FO	66.95	
074	NC-50	Black Creek	2013	FO	86.1	
082	I-95 N	Black Creek	1958	FO	76.71	
085	I-95 S	Black Creek	1955	SD	48.28	
093	NC-42	Buffalo Creek	1939	FO	69.5	
100	I-95 N	Neuse River	1957	FO	65.13	

BRIDGE ID	ROUTE	ACROSS	YEAR BUILT	CONDITION	SUFFICIENCY RATING	CTP PROJECT
101	I-95 S	Neuse River	1955	FO	54	
104	NC-42	Little River	1939	FO	77.42	
105	SR 1007	I-95	1955	SD	39.08	
109	SR 2137	I-95	1956	FO	69.69	
110	SR 2130	I-95	1956	FO	65.3	
112	SR 2339	I-95	1956	FO	67.68	
118	I-95 N	CSX Railroad	1956	FO	63.91	
119	I-95 S	CSX Railroad	1956	FO	63.91	
122	I-95	US-301	1977	FO	91.47	
124	SR 1330	Middle Creek	2000	FO	73.14	
145	SR 1555	Swift Creek	1955	FO	17.34	
169	SR 1701	Buffalo Creek	1941	FO	47.78	
173	SR 1700	Buffalo Creek	1977	SD	60.37	
176	SR 1714	Mark's Creek	1988	FO	77.04	
177	SR 1700	Neuse River	1981	SD	55.42	
182	SR 1908	Neuse River	1991	FO	77.69	
200	SR 1501	Swift Creek	1985	FO	77.96	
219	SR 1001	Little Creek	1982	FO	80.35	
226	SR 2339	Little River	1961	FO	76.39	
310	SR 1553	Little Creek	1986	FO	79.84	
484	US-301	I-40	1988	FO	77.69	
486	I-40 W Ramp	I-40	1988	FO	96	
496	SR 1517	I-40	1987	FO	79.74	
499	SR 1525	I-40	1987	FO	74.89	
500	SR 1010	I-40	2021	FO	80.88	
501	NC-42 W	I-40	2023	FO	94.72	

Johnston County CTP

Bridge Deficiencies



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Interstate*
- *US Route*
- *NC Route*
- *SR - State Route*
- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*
- *Functionally Obsolete Bridge*

0 2 mi.
Scale: 1" = 2 miles

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TRAFFIC CRASH ANALYSIS

Traffic crashes can serve as an indicator of risk along various roadways. Crash patterns were analyzed using crash data to identify improvements that will reduce the frequency and severity of crashes. Utilizing NCDOT safety data, the Project Team identified key areas of concern during a five-year period (2018-2022). The data represents the locations with 2 or more crashes. The "# of Crashes" column indicates the number of crashes reported within 150-feet of the intersection during the aforementioned time period. The crash frequency table only identifies the top 10 intersections; however, the map below provides a comprehensive list of intersections that had more than 5 crashes between 2018-2022.

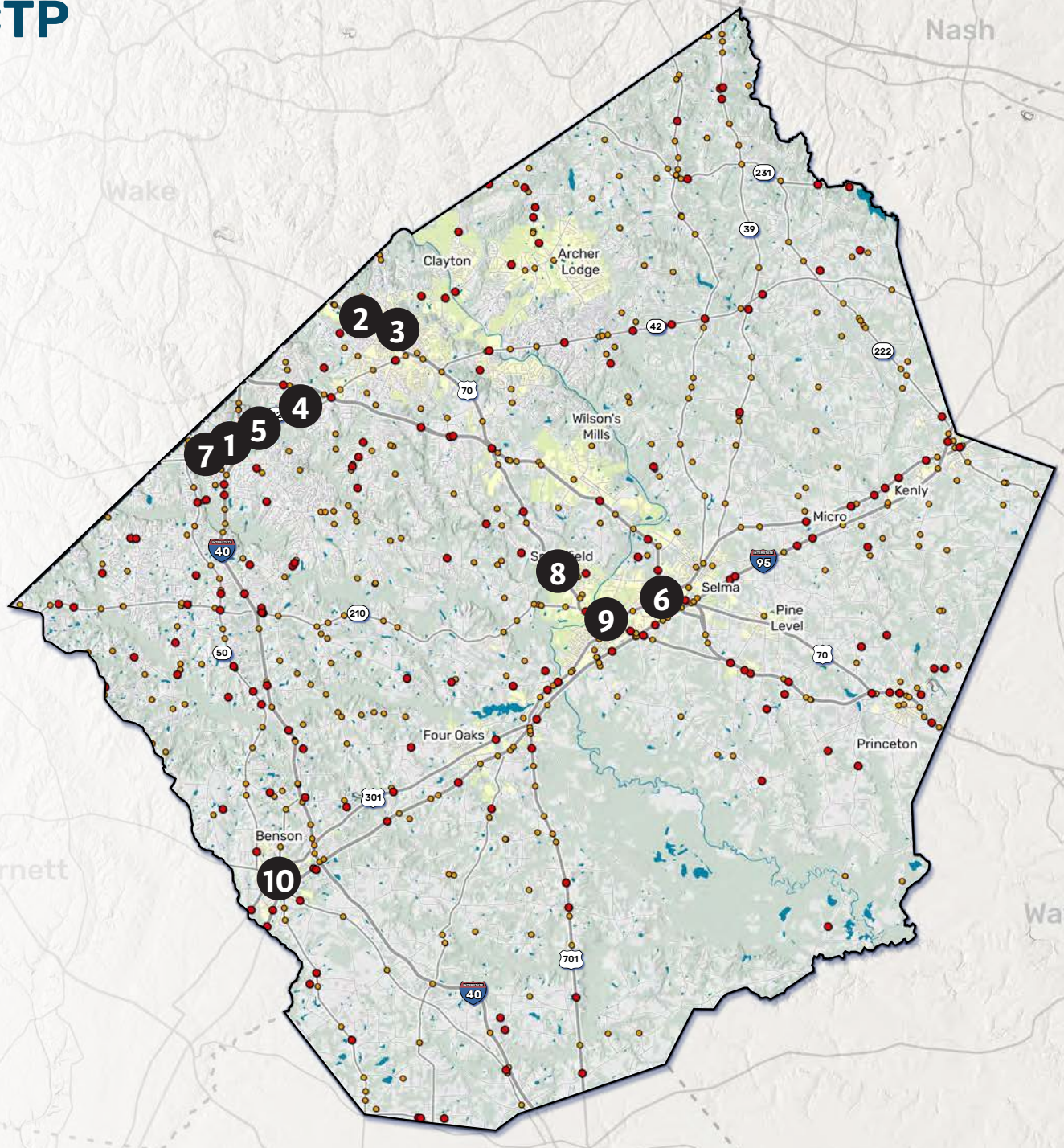
The table below excluded the two interstates that transect Johnston County. Fatal and serious crashes dot Johnston County in a near uniform manner, suggesting there are no hotspots of outstandingly well or poorly functioning roadway. There is a significant concentration of crashes along the major transportation corridors in the region. Along I-40, there were 63 crashes in the 10-year period, 3.2 percent fatal/serious injury, and there were 128 crashes on I-95 in the time period, with 2.3 percent being fatal/serious injury.

When looking at intersection crash frequency a different story emerges, one that suggests the largest problems are in Clayton, along NC-42 towards Wake County and in the Smithfield-Selma area. There is a trend of bike/ped crashes with a cluster in Benson.

MAP INDEX	# OF CRASHES	ROAD A	ROAD B	% SERIOUS OR FATAL CRASHES
1	132	NC-42	SR 1010 (Cleveland Rd)	1.52%
2	129	US-70 Bus	SR 1553 (Shotwell Rd)	0.78%
3	108	US-70 Bus	SR 1552 (Amelia Church Rd)	0%
4	97	NC-42	SR 1525 (Cornwallis Rd)	2.06%
5	94	NC-42	SR 1628 (Cleveland Crossing Dr)	2.13%
6	92	US-301	SR 1923 (M. Durwood Stephenson Hwy)	1.09%
7	82	NC-42	SR 1547 (Glen Rd)	0%
8	78	US-70	SR 1501 (Swift Creek Rd)	0%
9	76	US-70 BUS	2nd St (Smithfield)	0%
10	75	US-301	NC-27	0%

Johnston County CTP

Fatal + Serious Injury Crashes (2018 - 2022)



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- *Waterbody*

Crash Severity:

- *Fatal Crash*
- *Serious Injury Crash*

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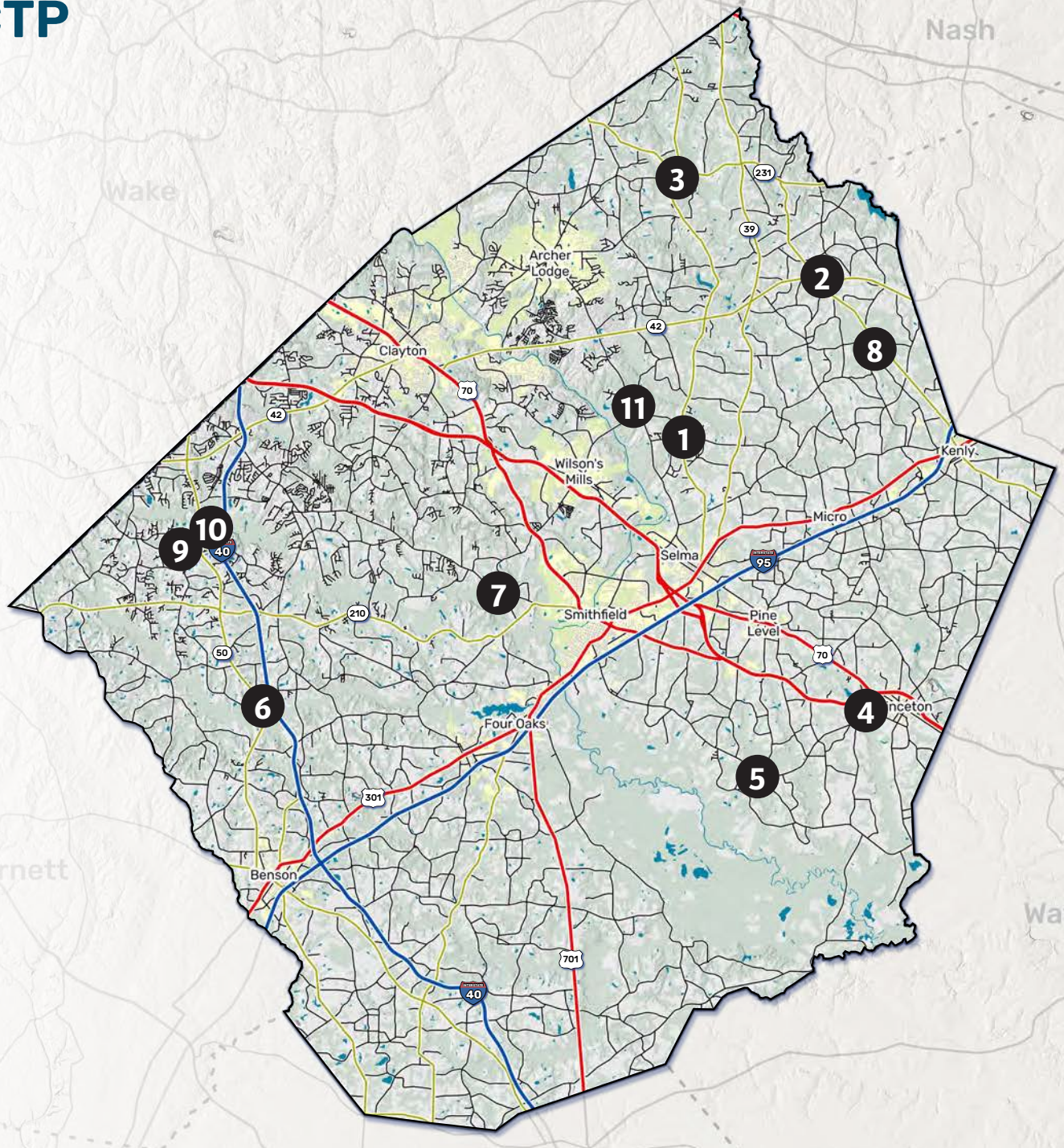
HOTSPOT ANALYSIS

In addition to identifying the ten highest crash locations, other hotspot locations were analyzed based on public input and coordination with stakeholders. These hotspots reflect intersections where engineers observed a crash history and identified substandard design.

MAP INDEX	CORRIDOR/LOCATION	RECOMMENDED PROJECT
1	Live Oak Church Rd/NC-96 from Sullivan Rd to Little Devine Rd	Widening with sidewalks
2	NC-222/NC-42 intersection	Realign
3	Lake Wendell Rd/NC-96/NC-231 intersection	Realign
4	Holts Pond Rd from Martin Livestock Rd to Princeton	Add center turn lane and pedestrian facilities
5	Brogden Rd from Brogden School Rd to Bakers Chapel Rd	Add center turn lane
6	Zack's Mill Rd/NC-50 intersection	Realign
7	Cleveland Rd/Swift Creek Rd intersection	Intersection improvements
8	Old Stancil Rd/NC-222 intersection	Realign
9	Mount Pleasant Rd/Edmondson Rd/Old Fairground Rd intersection	Intersection improvements
10	Mount Pleasant Rd/NC-50/Sanders Rd intersection	Intersection improvements
11	Buffalo Rd/Little Devine Rd/Fire Dept Rd intersection	Realign

Johnston County CTP

Roadway Map



Legend

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- *SR - State Route*
- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

0 2 mi.
Scale: 1" = 2 miles

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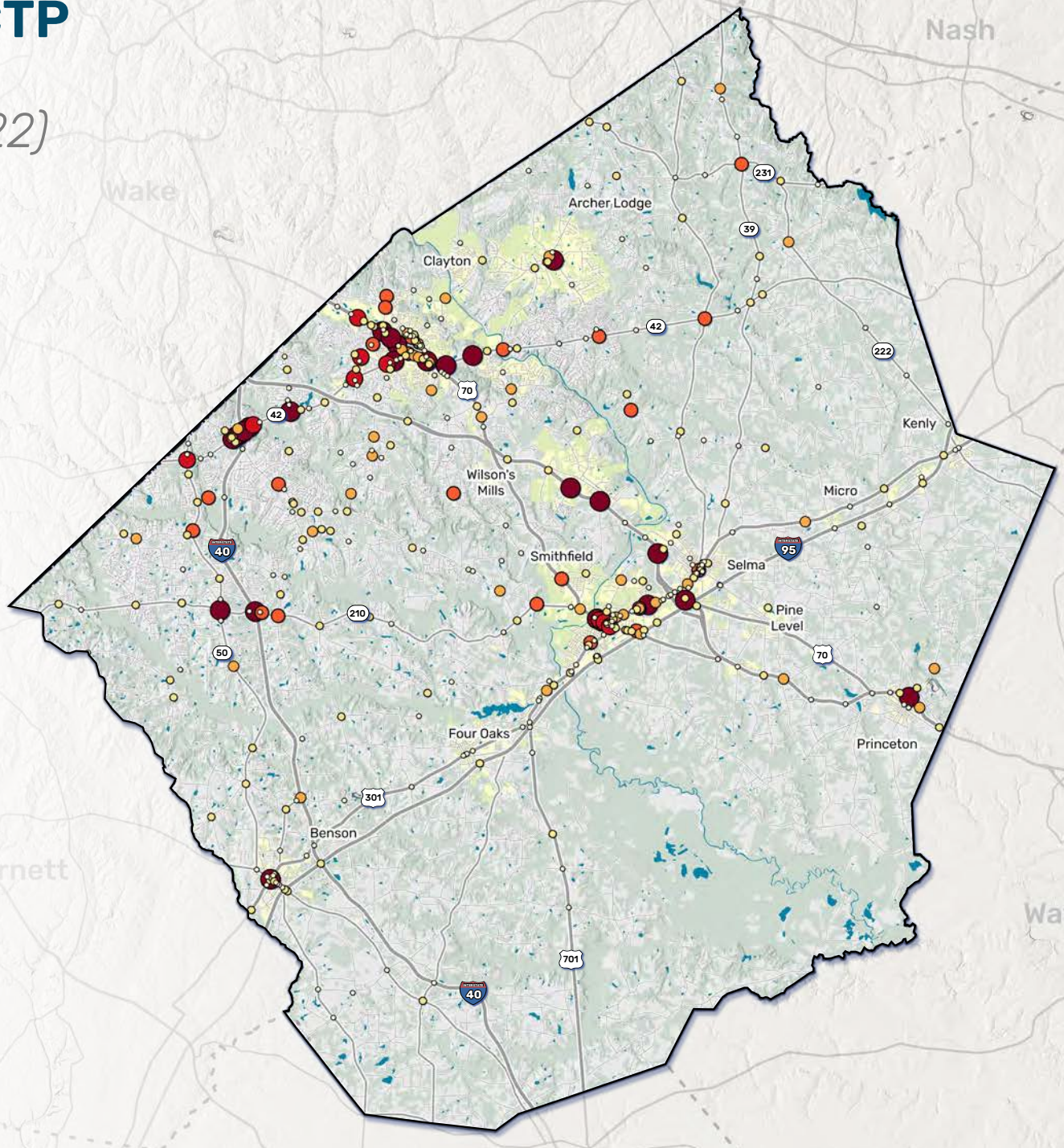
Johnston County CTP

Intersection Crash Frequency (2018 - 2022)



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- *Waterbody*

Total Crashes:

- *5 - 9 Crashes*
- *10 - 19 Crashes*
- *20 - 29 Crashes*
- *30 - 39 Crashes*
- *40 - 49 Crashes*
- *50 or More Crashes*

0 2 mi.
Scale: 1" = 2 miles

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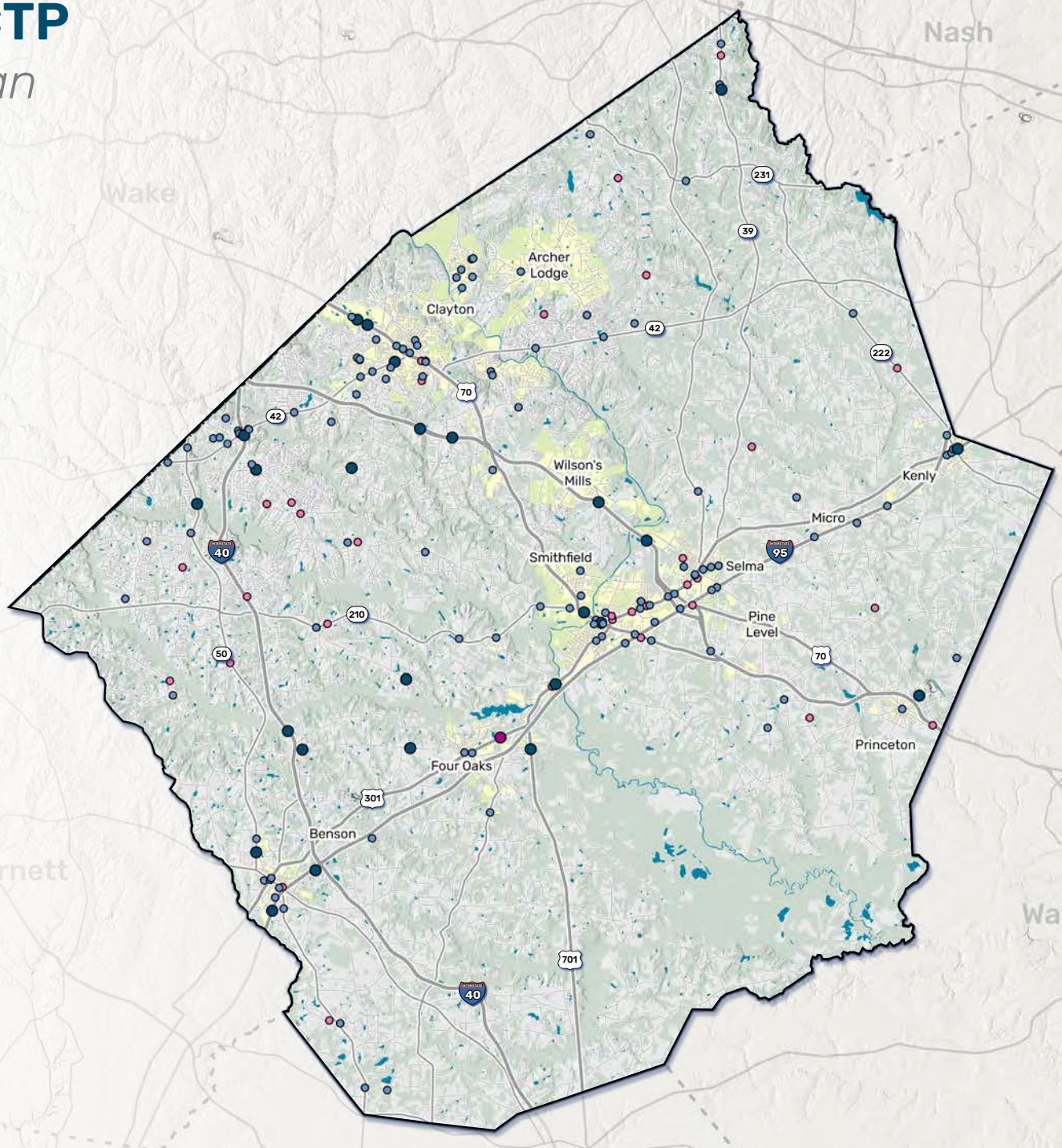
Johnston County CTP

Bicyclist and Pedestrian Crashes (2018 - 2022)



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- *SR - State Route*
- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

Crash Type:

- *Bicyclist Crash*
- *Bicyclist Fatality*
- *Pedestrian Crash*
- *Pedestrian Fatality*

0 2 mi.
Scale: 1" = 2 miles

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CONSIDERATION OF NATURAL AND HUMAN ENVIRONMENT

Environmental features are a key consideration in the transportation planning process. Section 102 of the National Environmental Policy Act (NEPA) requires consideration of impacts on wetlands, wildlife, water quality, historic properties, and public lands. While a full NEPA evaluation was not conducted as part of the CTP, every effort was made to minimize potential impacts to these features using the best available data. The project proposals identified any potential impacts to these resources on the project sheets. Prior to implementing transportation recommendations of the CTP, a more detailed environmental study would need to be completed in cooperation with the appropriate environmental resource agencies.

A full listing of environmental features that are typically examined as a part of a CTP study is shown in the following table. The table below shows environmental features occurring within Johnston County in bold text.

ENVIRONMENTAL FEATURE		
24k Hydro Lines	Fish Nursery Areas	Regional Trails
303D Streams	**Hazard Substance Disposal Sites (points and polygons)**	**Sanitary Sewer Systems - Treatment Plants**
Airport Boundaries	**Hazardous Waste Facilities**	**Schools (Public & Non-Public)**
Anadromous Fish Spawning Areas	High Quality Waters and Outstanding Resource Water Management	**Significant Natural Heritage Areas**
APNEP - Submerged Aquatic Vegetation	Historic Resources - National Register and Determined Eligible (points and polygons)	State Natural and Scenic Rivers
Beach and Waterfront Access	**Healthcare Facility**	State Parks
Benthic Habitat	Hydrography - 1:24,000 scale (polygons)	**Target Local Watersheds - EEP**
Bicycle Routes	**Landscape Habitat Indicator Guilds (LHIGs) Managed Areas**	Trout Streams (DWQ)
Boating Access	**National Wetlands Inventory (polygon)**	Trout Waters WRC (arcs and polygons)
Churches and Cemeteries	Natural Heritage Element Occurrences	**Unique Wetlands**
Colleges and Universities (points)	NC-CREWS: NC Coastal Region Evaluation of Wetland Significance	**Water Distribution Systems - Tanks & Treatment Plants**
Conservation Tax Credit Properties	NCDOT Maintained Mitigation Sites	**Water Supply Watersheds**
Critical Habitat for Threatened and Endangered Species	**Railroads (1:24,000)**	

Johnston County is rich with regions of environmental importance. The defining feature of the county is the Neuse River, which meanders through and adjacent to several of the towns along a Northwest-Southeast path. The large presence of streams (largely running northwest-southeast) throughout the county, with adjacent continuous wetlands, presents an opportunity for linear parks/greenway corridors that should be analyzed and considered in bike/ped planning. These also serve as corridors where minimizing environmental impacts will be a factor in roadway projects.

Many hazardous waste sites, wastewater discharge permits, and impaired waters are found along the Neuse River and Little Creek and in/around Clayton.

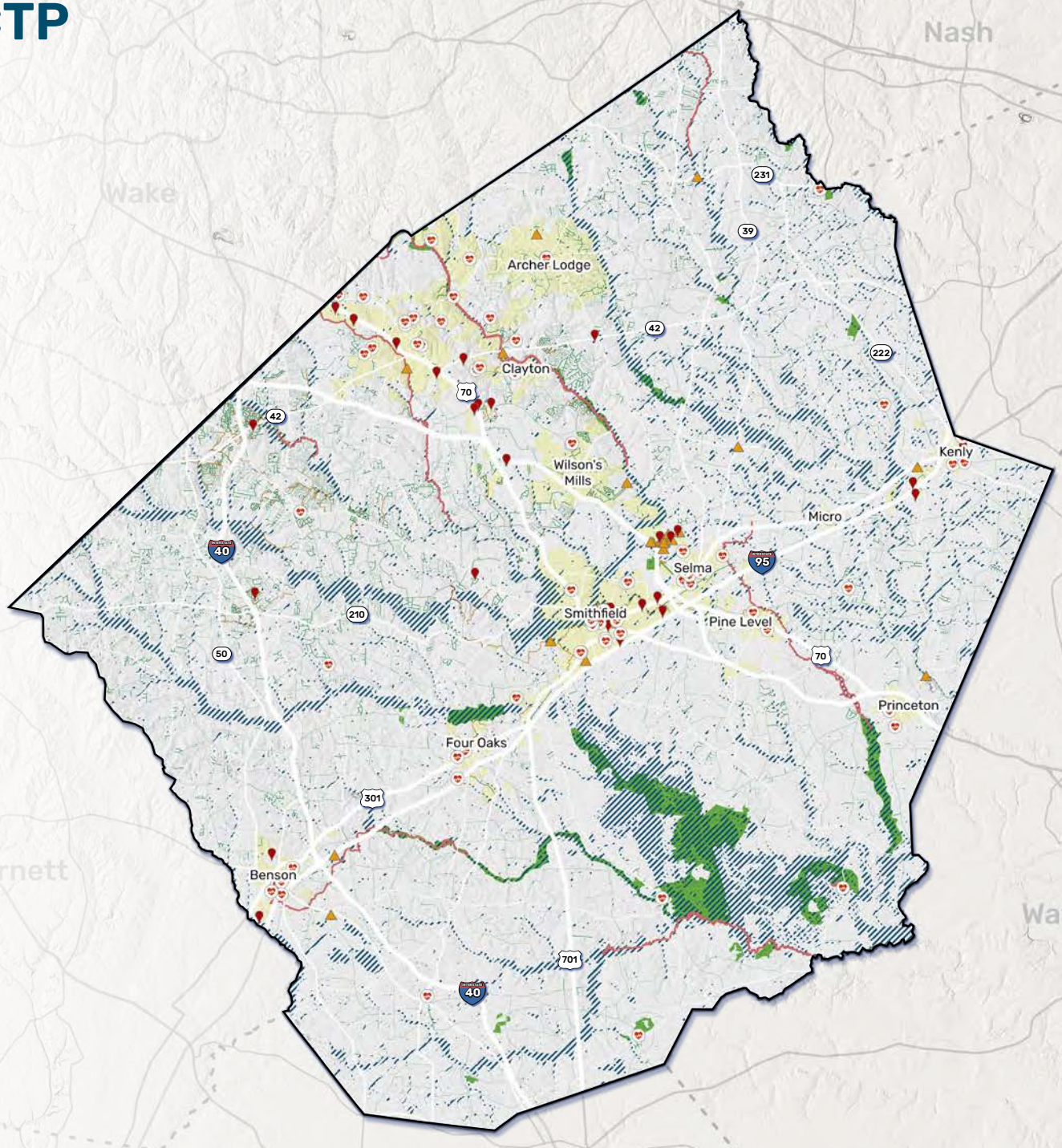
RESILIENCY

NCDOT's Risk and Resiliency Plan includes a Vulnerability and Risk assessment for all the Strategic Transportation Corridors (STCs). This plan aims to meet Governor Cooper's EO 80 objectives and create actionable pathways to manage weather and climate risks for a more resilient and sustainable network. Multiple environmental factors were considered during the CTP process for Johnston County.

A large majority of land within the county is part of a target local watershed, with two water supply watersheds along the Neuse River near Princeton and Wilson's Mill/Clayton. The county uniformly locates wetlands following stream beds. The largest managed natural area is near the Wayne County line in south Johnston County.

Johnston County CTP

Environmental Map



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Road*
- *Municipal Boundary*
- *Healthcare Facility*
- *Hazardous Waste Site*
- *Wastewater Discharge Permit*
- *Water Line*
- *Sewer Line*
- *Impaired Water*
- *Wetland*
- *Natural Area*

0 2 mi.
Scale: 1" = 2 miles

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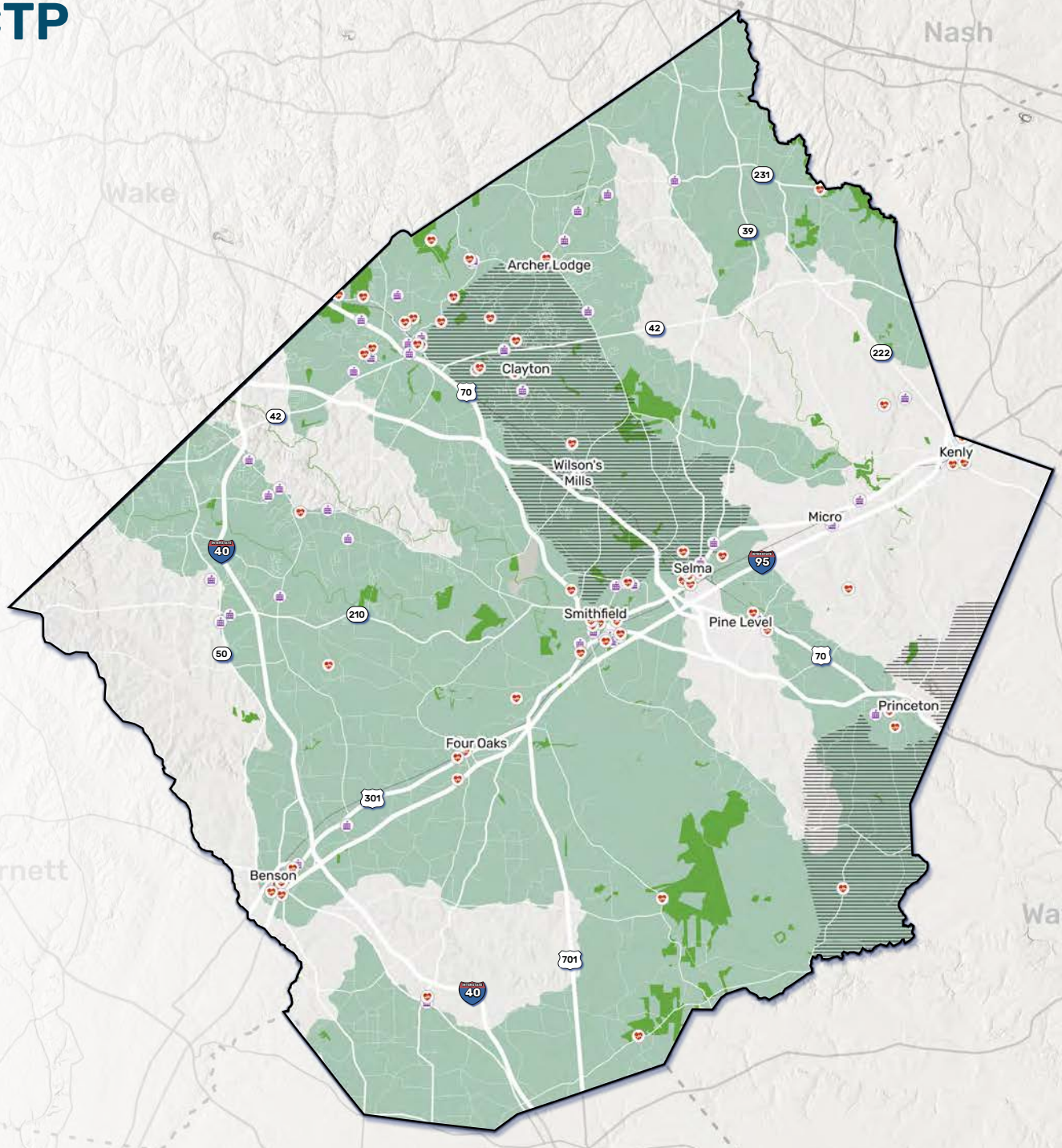
Johnston County CTP

Environmental Map



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Road*
- *Railroad*
- *Healthcare Facility*
- *School*
- *Water Supply Watershed*
- *Managed Area*
- *Johnston Regional Airport*
- *Target Local Watershed*

0 2 mi.
Scale: 1" = 2 miles

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FREIGHT

The NCDOT wants an effective and actionable Statewide Freight Plan within CTPs that:

- Sets specific multimodal transportation goals, strategies and actions that will contribute to increased North Carolina jobs, improved economic competitiveness and enhanced quality of life
- Provides clear, compelling freight-specific recommendations that support the 25-year vision, strategic corridors and address the criteria in the Strategic Transportation Investments prioritization process
- Offers strategies for helping elected officials, taxpayers and voters, and the public better understand the value of freight transportation investments

Three main corridors should constitute the focus of freight planning efforts within the county for roadway, rail, and aviation modes, as they contain heavy freight movement and a concentration of industrial activity.

- I-95: The 1-95 corridor is a significant freight movement corridor both within Johnston County and the entire US continental east coast. This network runs adjacent to the Benson-Kenly corridor of municipalities, as well as freight rail that also runs parallel.
- I-40: The I-40 corridor connects Johnston County to Raleigh and, amongst other movements, is a key freight connection between Raleigh and coastal communities in and around the Wilmington area, where there is a significant amount of maritime freight moving onto land.
- I-42: The I-42 corridor, like I-95, runs parallel to rail and connects a major corridor of municipalities. There is a large amount of industrial growth in Clayton near this corridor as well.

The three highways as well as two rail corridors represent both opportunities and constraints. The opportunities are to improve movement and use these proximities as an asset for the community to continue attracting industrial growth, but the constraints need equal consideration. These corridors create barriers to both roadway and bike/ped movements, as limited connections exist along the access-managed highway, and it is vital to limit at-grade crossings at rail and consider the safety impacts on bike/ped. The impact of these assets on multimodal networks should be considered from both a planning and safety mitigation perspective.

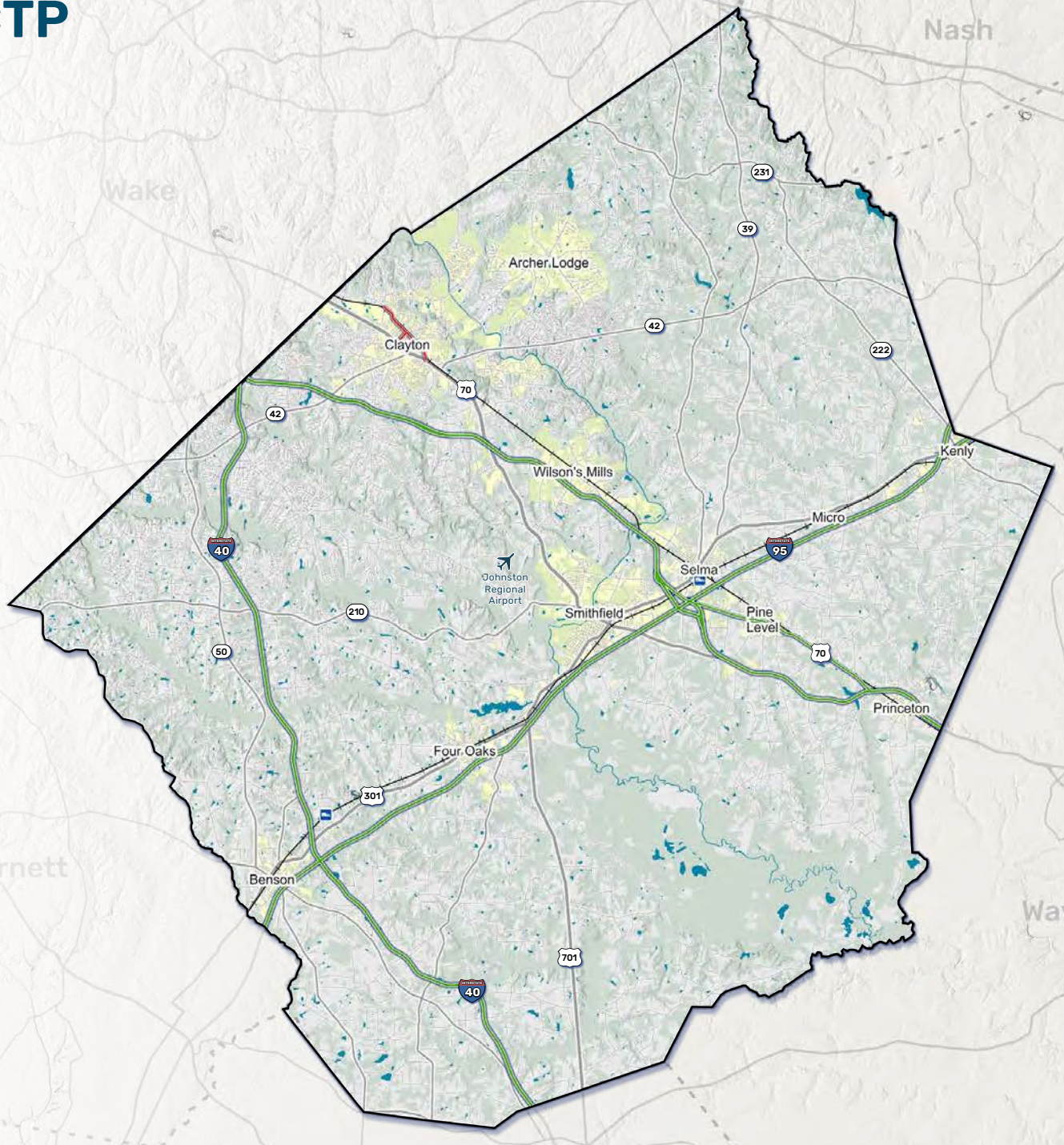
Two intermodal facilities are located along the rail running parallel to I-95, representing significant freight movement facilities that warrant focus in planning efforts.

Since all municipalities in Johnston County are close to freight networks, towns should consider freight micromobility hubs as a supplemental addition to the network.

Both the Airport and Amazon facility are located in close proximity to each other along US-70 to the Northwest of Smithfield. While these are not designated as priority freight networks, they should be considered in freight planning efforts given these two facilities.

Johnston County CTP

Freight Network



Legend

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- *Interstate*
- *US Route*
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- *SR - State Route*
- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*
- *Intermodal Freight Station*
- *Railroad*

North Carolina Truck Network:

- *Unrestricted Route*
- *Restricted Route*

0 2 mi.
Scale: 1" = 2 miles

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MULTIMODAL ANALYSIS

This appendix section provides documentation for the methodologies used for each mode of transportation. This section provides maps used in the analysis process for each mode.

This section provides the following information:

Highway

- Highway Analysis
- Implementation of analysis
- Base Year Volume and Capacity Maps
- Future Year (Existing and Committed Projects) Volume and Capacity Maps

Bicycle and Pedestrian

- Bicycle and Pedestrian Analysis
- Destination and Connectivity Analysis
- Map of Bicycle and Pedestrian Recommendations from Local Plans

Public Transportation

- Existing Public Transportation Services
- Transit Analysis
    - Background on Johnston County/JCATS
    - Market Assessment
    - Transit Need Assessment
- Recommended Transit Services

HIGHWAY

ANALYSIS OF EXISTING AND FUTURE TRANSPORTATION SYSTEMS

In the development of this CTP, the following were considered:

- Analysis of the transportation system, including local, regional, and statewide initiatives
- Impacts to natural and human environment, including natural resources, historic resources, homes, and businesses
- Public input, including community vision and goals and objectives

Analysis Methodology and Data Requirements

Forecasts of future travel patterns must be estimated to analyze the ability of the transportation system to meet future travel demand. These forecasts depend on careful analysis of the character and intensity of existing and future land use and travel patterns.

An analysis of the transportation system looks at both current and future travel patterns and identifies existing and anticipated deficiencies. A capacity deficiency analysis, a traffic crash analysis, and a system deficiency analysis usually accomplish this. This information, along with population growth, economic development potential, and land use trends, is used to determine the potential impacts on the future transportation system.

Roadway System Analysis

In the development of a CTP, it is important to understand the transportation system's ability to serve the area's travel demand. Emphasis is placed on detecting the existing deficiencies and understanding the causes of the deficiencies. Roadway deficiencies may arise from inadequacies in pavement widths, intersection geometry, or intersection control. Missing travel links, bypass routes, or needed improvements can result in system deficiencies, including the Strategic Transportation Corridors (STC) adopted by the NCDOT Board of Transportation in 2015.

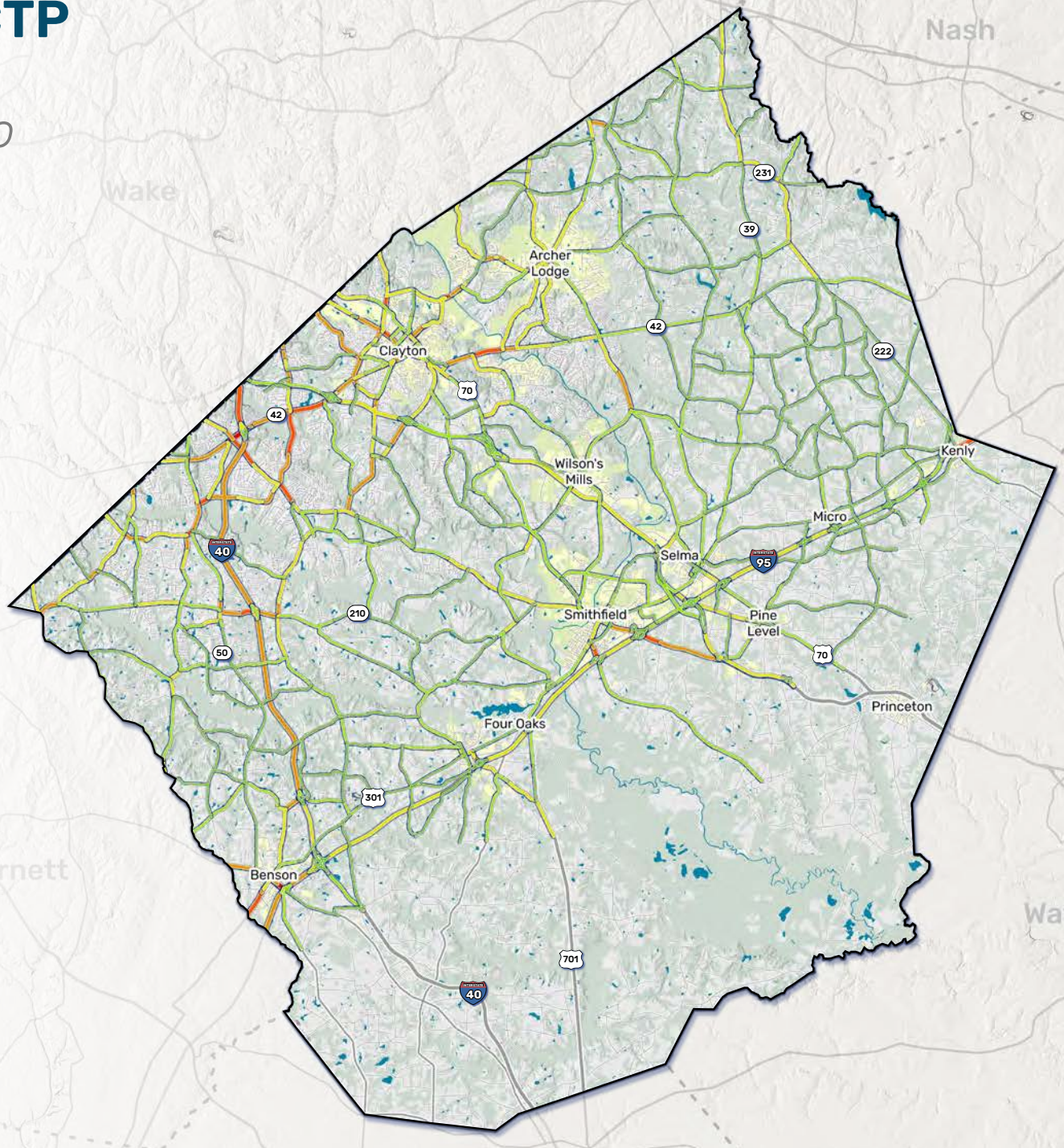
The STC identified a network of critical multimodal transportation corridors that comprise the backbone of the state's transportation system. The 25 corridors identified move most of North Carolina's freight and people, link critical centers of economic activity to international air and seaports, and support interstate commerce. Three of the major corridors identified in the STC— I-40, I-95, and I-42/US-70—transect Johnston County.

Existing and future travel demand is compared to existing roadway capacities. Capacity deficiencies occur when the traffic volume of a roadway exceeds the roadway's capacity. Traffic volume reaches near capacity on roadways when it is at least 80 percent of the capacity. See the maps on the following page for a comparison of existing (2020 volumes) and projected (2050) volume/capacity ratios for roads in Johnston County.

Johnston County CTP

Current Roadway Volume/Capacity Ratio (2020)

Data from Triangle Regional Model for Capital Area Metropolitan Planning Organization



Legend

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- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

Roadway Capacity:

- *Less than 20% Capacity*
- *20% - 39.9% Capacity*
- *40% - 59.9% Capacity*
- *60% - 79.9% Capacity*
- *80% - 99.9% Capacity*
- *Over Capacity*

0 2 mi.
Scale: 1" = 2 miles

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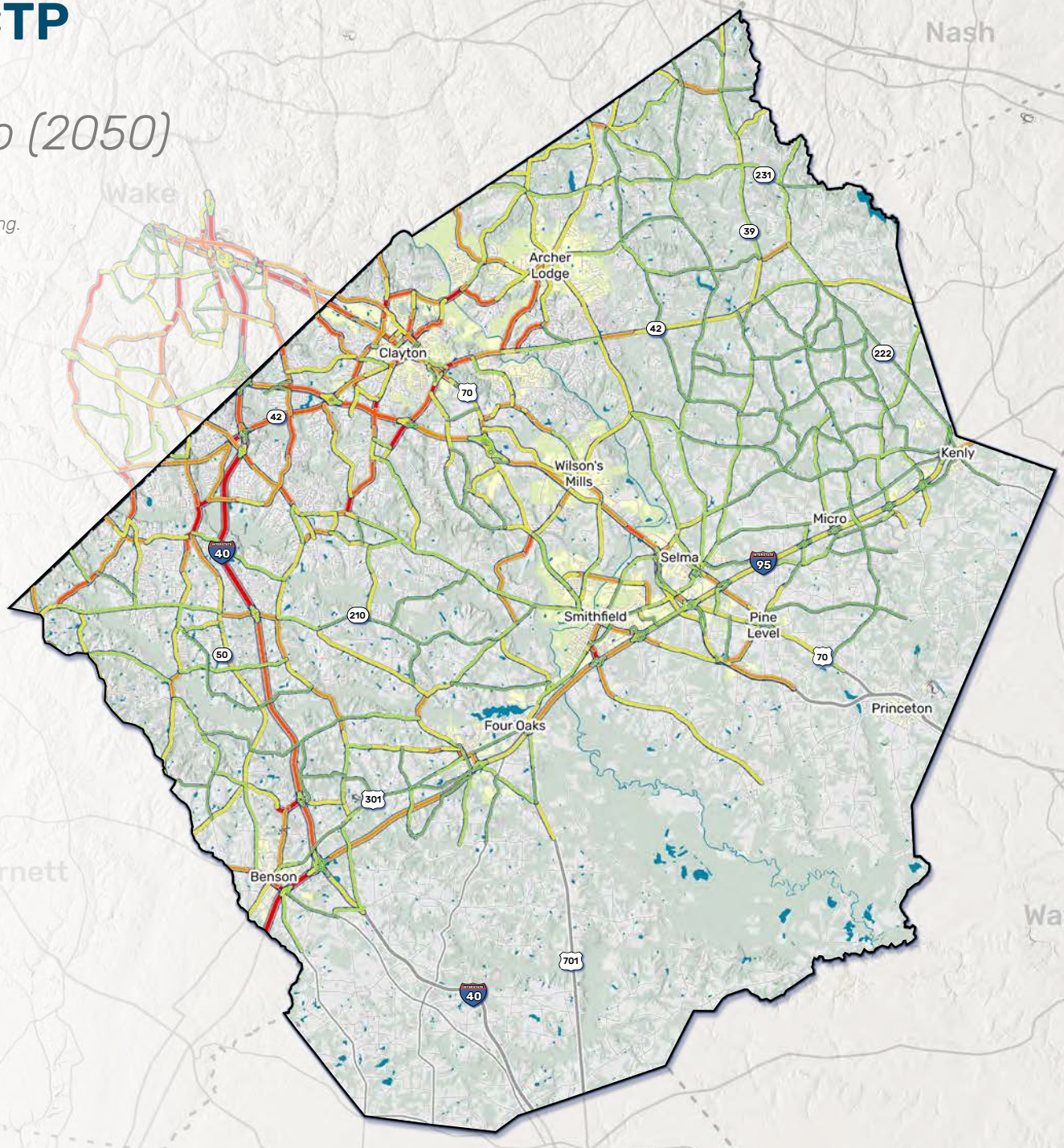
Johnston County CTP

Projected Roadway Volume/Capacity Ratio (2050)

Data from Triangle Regional Model for Capital Area Metropolitan Planning Organization. Assumes only the completion of transportation projects with committed funding.



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Projected Roadway Capacity:

- *Less than 20% Capacity*
- *20% - 39.9% Capacity*
- *40% - 59.9% Capacity*
- *60% - 79.9% Capacity*
- *80% - 99.9% Capacity*
- *Over Capacity*

0 2 mi.
Scale: 1" = 2 miles

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VOLUME/CAPACITY

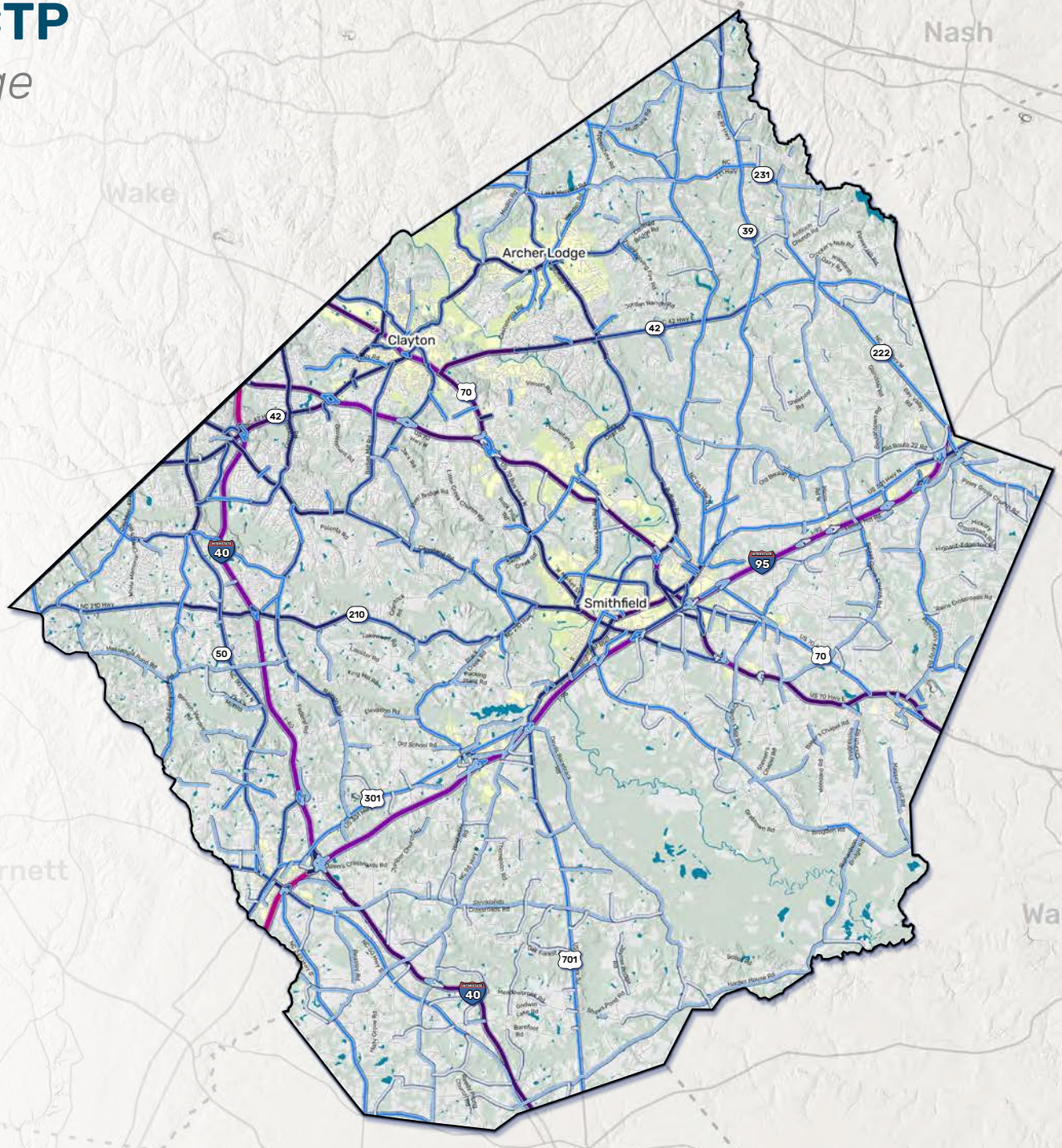
Capacity is the maximum number of vehicles with a “reasonable expectation” of passing over a given section of roadway, during a given time period under prevailing roadway and traffic conditions. Many factors contribute to the capacity of a roadway including the:

- Geometry of the road (including number of lanes), horizontal and vertical alignment, and proximity of perceived obstructions to safe travel along the road;
- Typical users of the road, such as commuters, recreational travelers, and truck traffic;
- Access control, including streets and driveways, or lack thereof, along the roadway;
- Development along the road, including residential, commercial, agricultural, and industrial developments;
- Number of traffic signals along the route;
- Peaking characteristics of the traffic on the road;
- Characteristics of side-roads feeding into the road; and
- Directional split of traffic or the percentages of vehicles traveling in each direction along a road at any given time

Johnston County CTP

Current Annual Average Daily Traffic (AADT)

Latest available data from NCDOT for year 2022.



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Annual Average Daily Traffic (AADT):

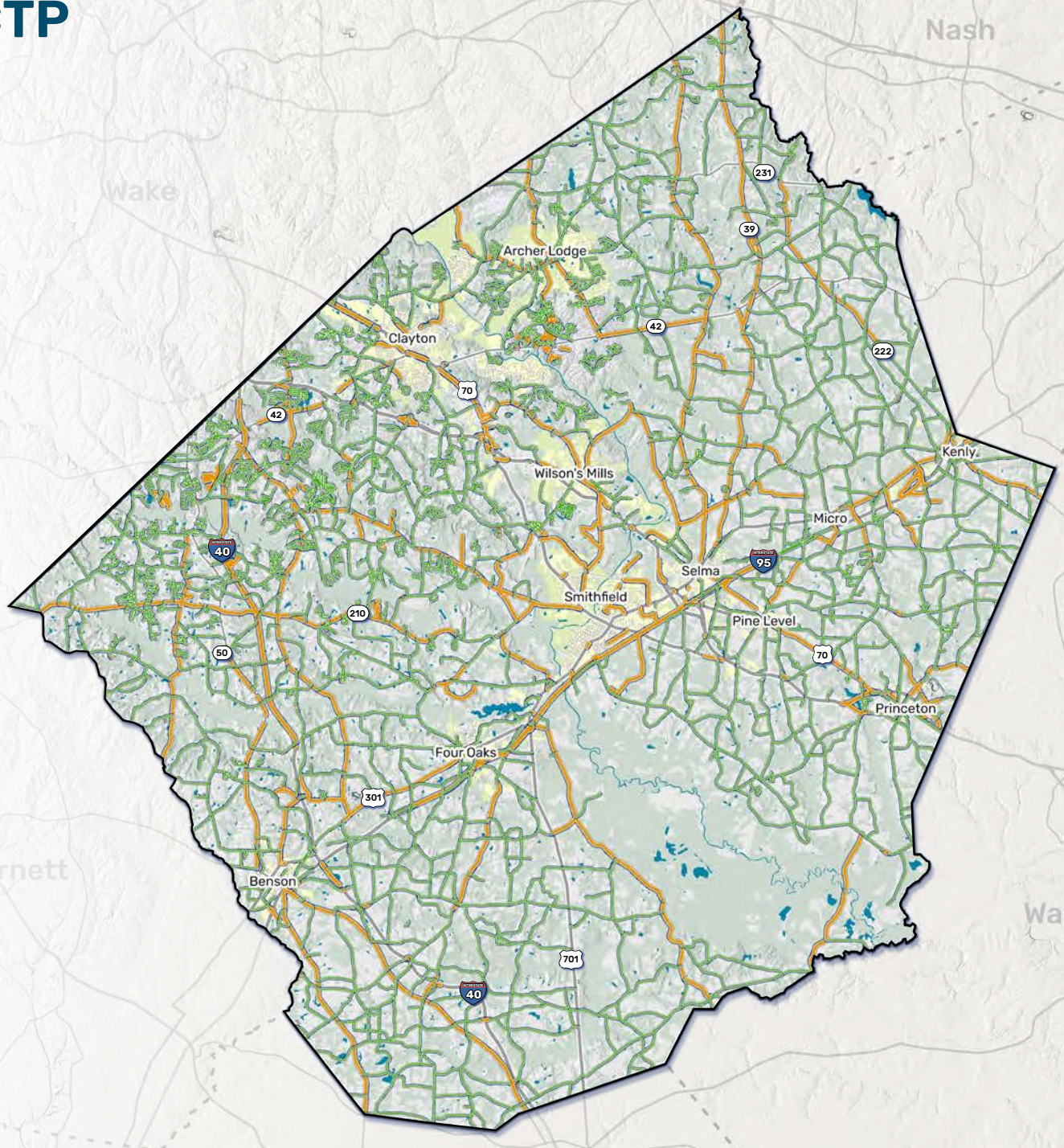
- *499 or Less AADT*
- *500 - 1,999 AADT*
- *2,000 - 4,999 AADT*
- *5,000 - 9,999 AADT*
- *10,000 - 19,999 AADT*
- *20,000 - 34,999 AADT*
- *35,000 - 54,999 AADT*
- *55,000 or More AADT*

0 2 mi.
Scale: 1" = 2 miles

McAdams

Johnston County CTP

Roadway Width
24 ft or Less



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Roadway Width:

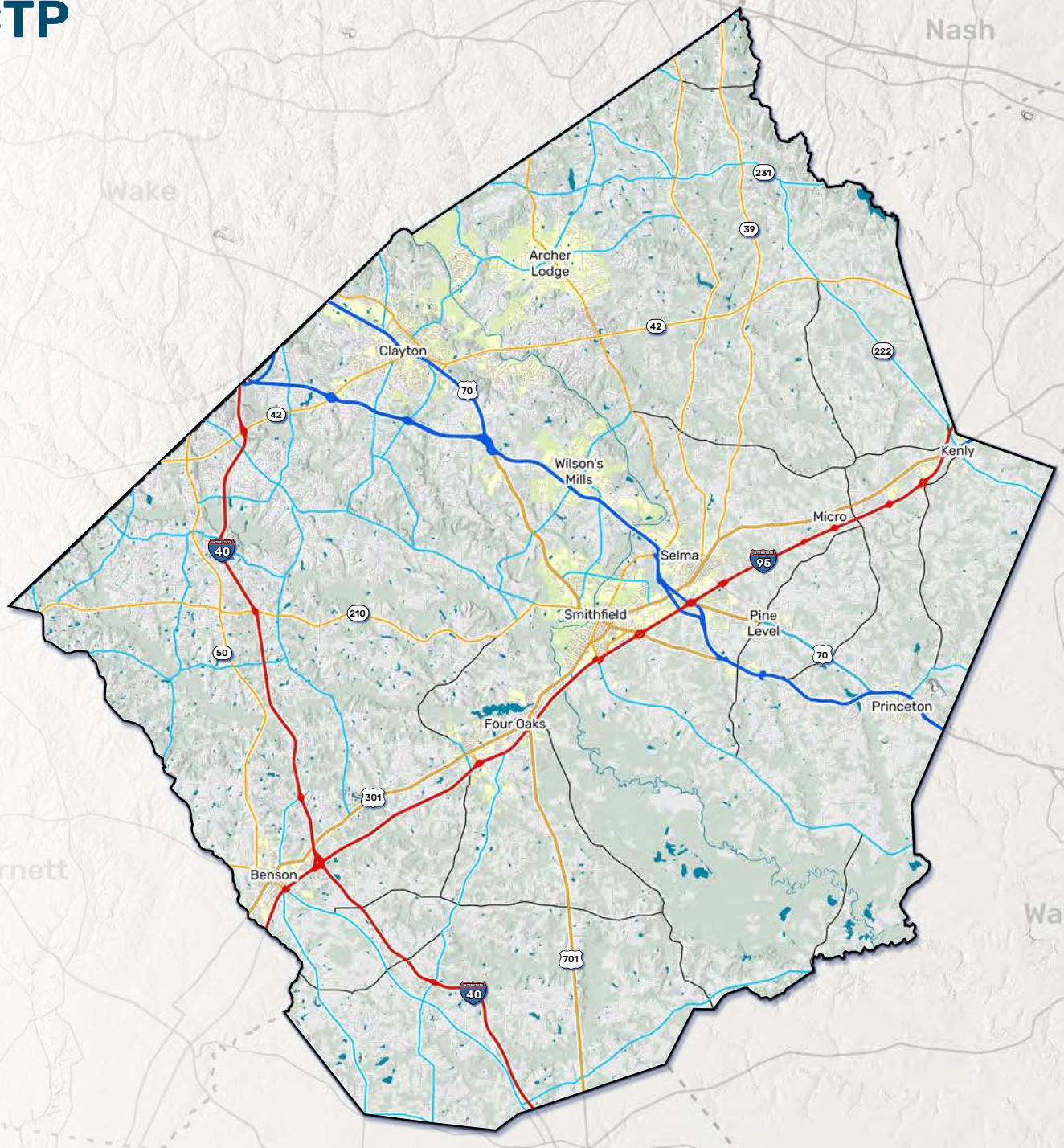
- *20 ft or Less*
- *21 - 24 ft*

0 2 mi.
Scale: 1" = 2 miles

McAdams

Johnston County CTP

Roadway Functional Classification



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Roadway Functional Classification:

- *Interstate*
- *Principal Arterial*
- *Minor Arterial*
- *Major Collector*
- *Minor Collector*
- *Local*

0 2 mi.
Scale: 1" = 2 miles

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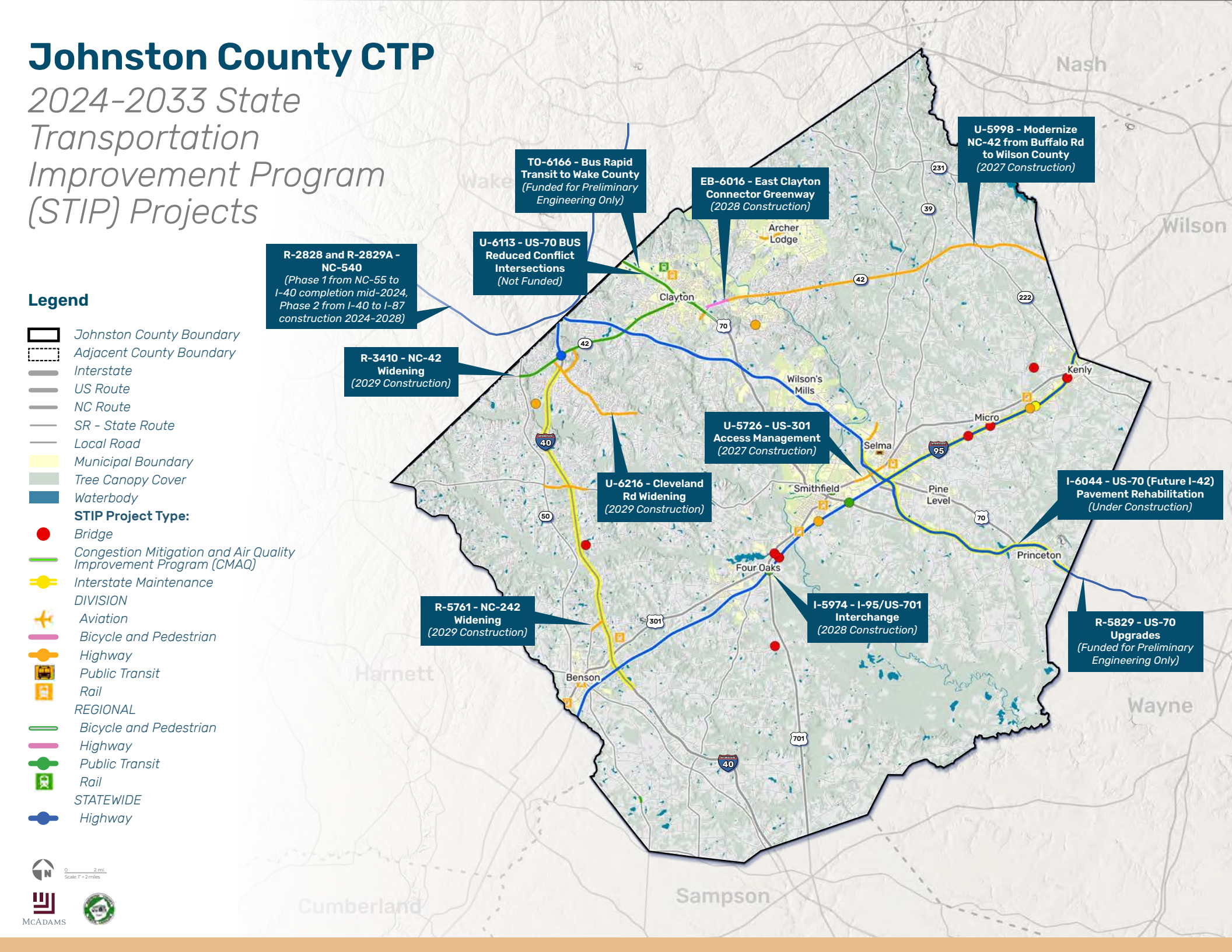
Johnston County CTP

2024-2033 State Transportation Improvement Program (STIP) Projects



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- *Waterbody*

STIP Project Type:

- *Bridge*
- *Congestion Mitigation and Air Quality Improvement Program (CMAQ)*
- *Interstate Maintenance*
- *DIVISION*
  - *Aviation*
  - *Bicycle and Pedestrian*
  - *Highway*
  - *Public Transit*
  - *Rail*
- *REGIONAL*
  - *Bicycle and Pedestrian*
  - *Highway*
  - *Public Transit*
  - *Rail*
- *STATEWIDE*
  - *Highway*

0 2 mi.
Scale: 1" = 2 miles

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BICYCLE AND PEDESTRIAN

Bicyclists and pedestrians play an important role in North Carolina's transportation system. NCDOT commits to providing an efficient, multi-modal transportation network.

There are three (3) concentrations of planned/existing pedestrian facilities within the county: Clayton/Archer's Lodge, Smithfield, and Selma.

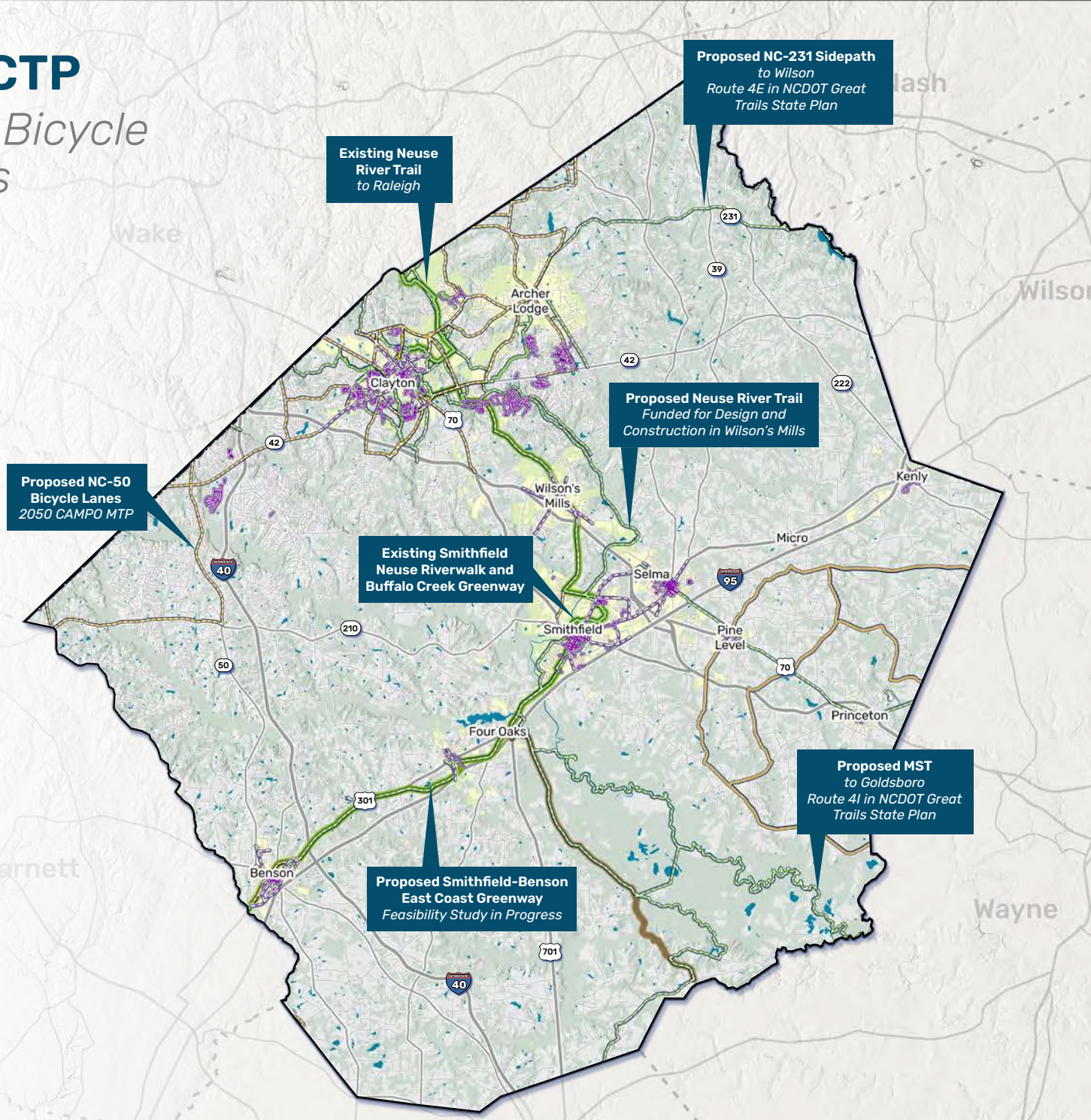
While a more detailed analysis is needed to identify community-level gaps, the proposed East Coast Greenway (ECG) and Neuse River Trail would serve as an essential connection point between communities in the region. A planned shared use facility is set to serve Princeton and Pine Level. This leaves Micro and Kenly without any connection to the greater regional network. Pine Level, Princeton, Micro, Kenly, Four Oaks, and the northwest residential cluster lack planned or existing facilities. Planned bike facilities are concentrated towards the Wake County border, with limited presence south towards the I-95 corridor. Additionally, the proposed Mountains-to-Sea Trail (MST) southeast of Four Oaks and the existing Smithfield Neuse River and Buffalo Creek Greenway will provide upgrades to a broader network that is part of one of 14 North Carolina state trails.

A separate, ongoing plan to study the Johnston County greenway and trails network is underway.

Johnston County CTP

Existing and Planned Bicycle & Pedestrian Facilities

A countywide greenways and trails master plan is currently underway and will recommend additional projects for future development.



Legend

- *Johnston County Boundary*
- *Adjacent County Boundary*
- *Interstate*
- *US Route*
- *NC Route*
- *SR - State Route*
- *Local Road*
- *Municipal Boundary*
- *Tree Canopy Cover*
- *Waterbody*

Existing + Planned Bicycle and Pedestrian Facilities

- *Existing Pedestrian Facility*
- *Planned Pedestrian Facility*
- *Existing Bicycle Facility*
- *Planned Bicycle Facility*
- *Existing Shared Use Facility*
- *Planned Shared Use Facility*
- *Existing East Coast Greenway (ECG)*
- *Existing Mountains-to-Sea Trail (MST)*

0 2 mi.
Scale: 1" = 2 miles

McAdams

PUBLIC TRANSPORTATION

EXISTING CONDITIONS

The Johnston County Area Transit Systems (JCATS), a division of the county's Community and Senior Services, operates public transportation in Johnston County. JCATS provides contracted human services transportation for seniors and Medicaid members and on-demand general public transportation for all Johnston County residents.JCATS expanded its list of services in early 2023 when the agency launched QuickRide, a demand response service for Johnston County residents in the Smithfield and Selma area. Demand response is a service that operates within a designated zone and on demand, rather than on a fixed schedule or route. This transit mode usually comprises passenger cars or vans rather than traditional buses and allows riders to order a ride instead of waiting for a scheduled bus. This type of service is ideal in areas that have low population density or are rural.

JCATS' Demand Response service offers contracted transit for seniors and Medicaid recipients, allowing public ride scheduling within Johnston County and select areas like Chapel Hill, Durham, and Raleigh.

In terms of trip origin/destination concentrations, 74 percent of all trips originated or ended in Smithfield, Selma, or Clayton. Smithfield, Selma, and Clayton also had the highest number of trips for intercity origin/destination pairs. Smithfield had the highest number of intracity origin/destination pairs where roughly 32 percent of all trips in the county originated or ended in the city.

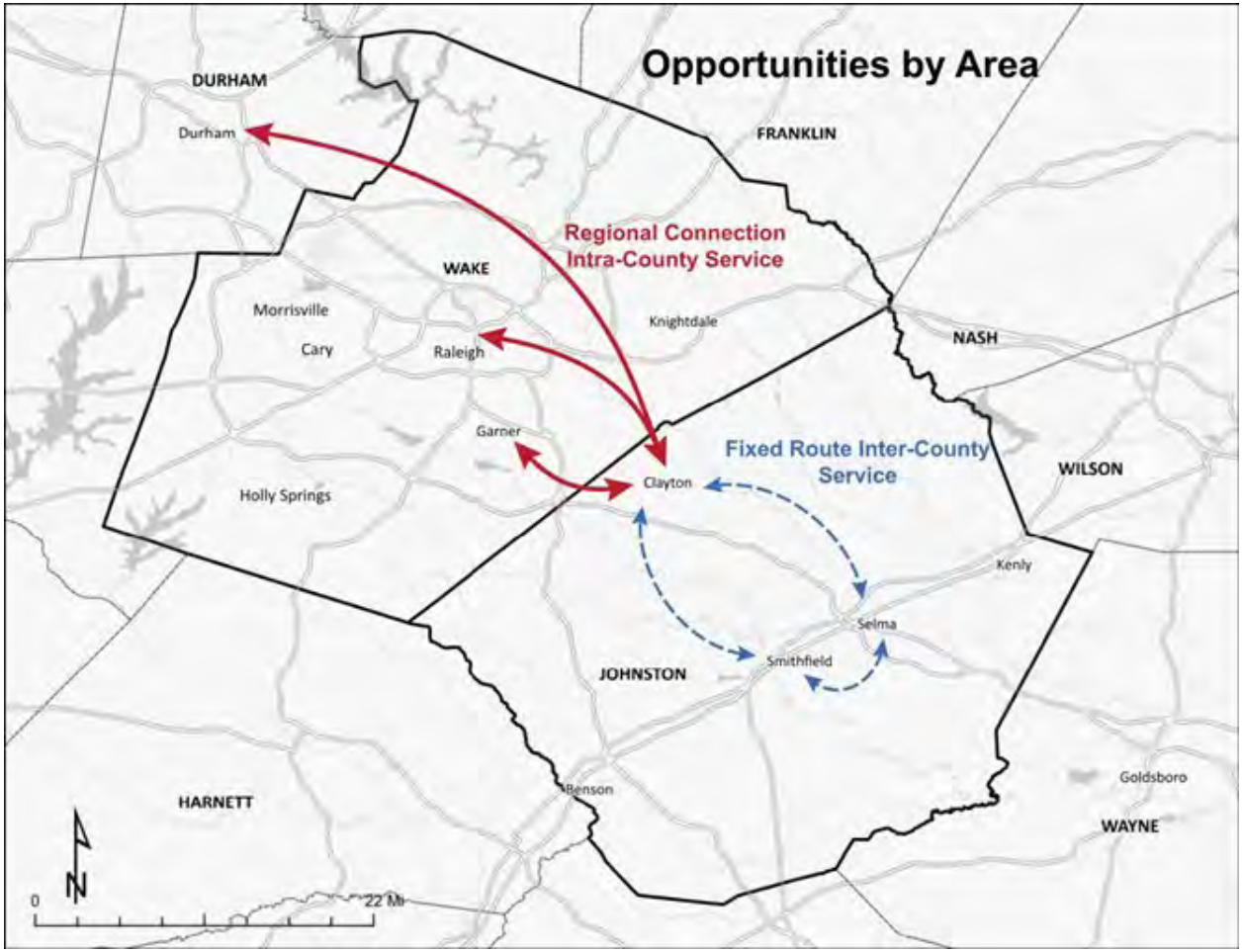
Johnston County Quick Ride

RECOMMENDATIONS

Opportunities by Area: Within Johnston County

The market analysis highlights several areas of opportunity throughout Johnston County that have the potential for transit service. The evaluation of demographic patterns and trip patterns reveals that fixed route transit service is most suited for the urbanized areas of Smithfield, Selma, and Clayton. With a density of roughly 30 trip generators per mile in the form of community resources, there is an opportunity to implement fixed-route or peak-period commuter bus/rail service throughout these areas. However, given the population density and the existing microtransit abilities that JCATS provides, microtransit likely offers a more feasible alternative to fixed route transit, at least in the short term.

Opportunities by Area: For Regional Connections

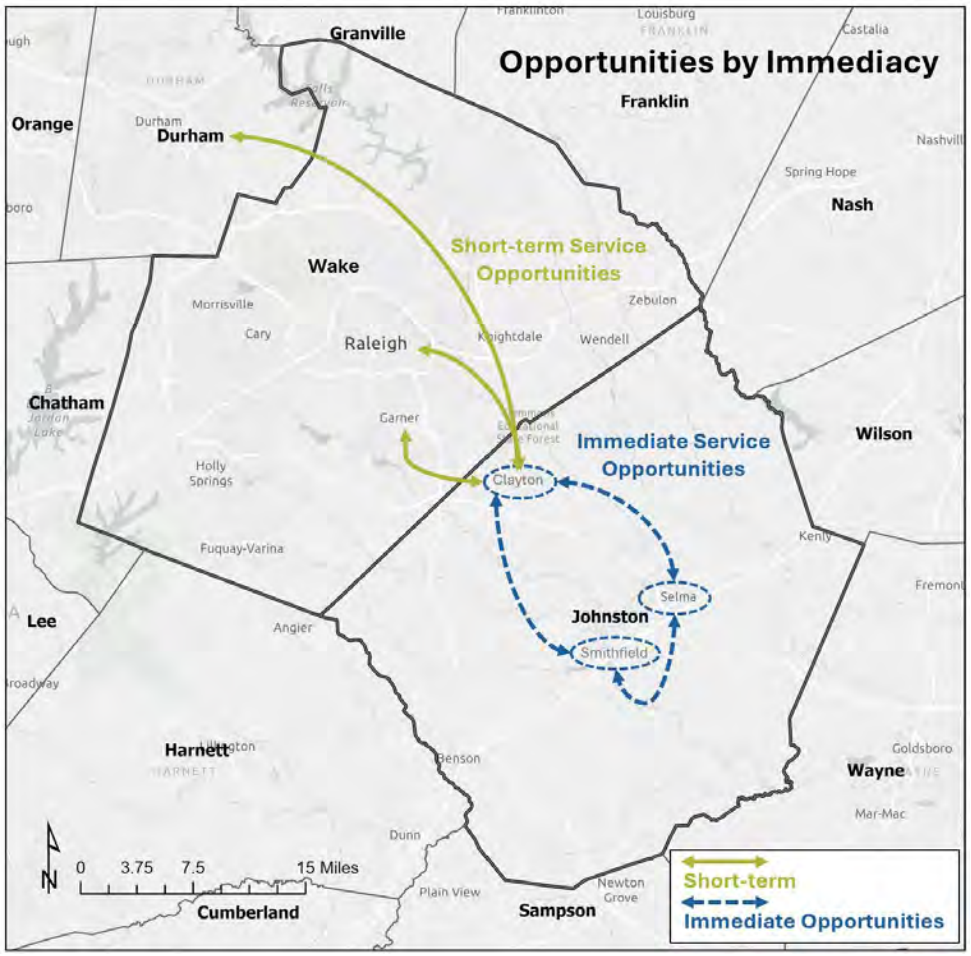


As Johnston County and the surrounding Triangle Region continues to grow and diversify, trips that start in the county and end outside of it may become more common. This presents an opportunity to establish regional transit connections for Johnston County residents and employees. Commuting patterns detailed in the market analysis identify the cities of Raleigh, Cary, and Durham as the largest generators of external trips for workers. With almost 80 percent of workers in Johnston County commuting outside of the county every day for work, implementing a commuter transit service between these major cities could help serve regional mobility needs. Clayton needs a commuter service to connect it to the Triangle Region and the greater CAMPO area due to its growth and lack of transit options. The town of Clayton's Comprehensive Plan grounds this recommendation by identifying strategies to develop and maintain a multimodal transportation system. Additionally, there is an opportunity to improve passenger rail services in the area by implementing an additional station in Clayton that will connect the city with the greater Triangle Region and beyond.

Opportunities by Immediacy: Short-Term Opportunities

While further analysis and coordination will be needed to determine the appropriate prioritization and phasing strategies, short-term opportunities should address more immediate transit needs and have quicker implementation times.

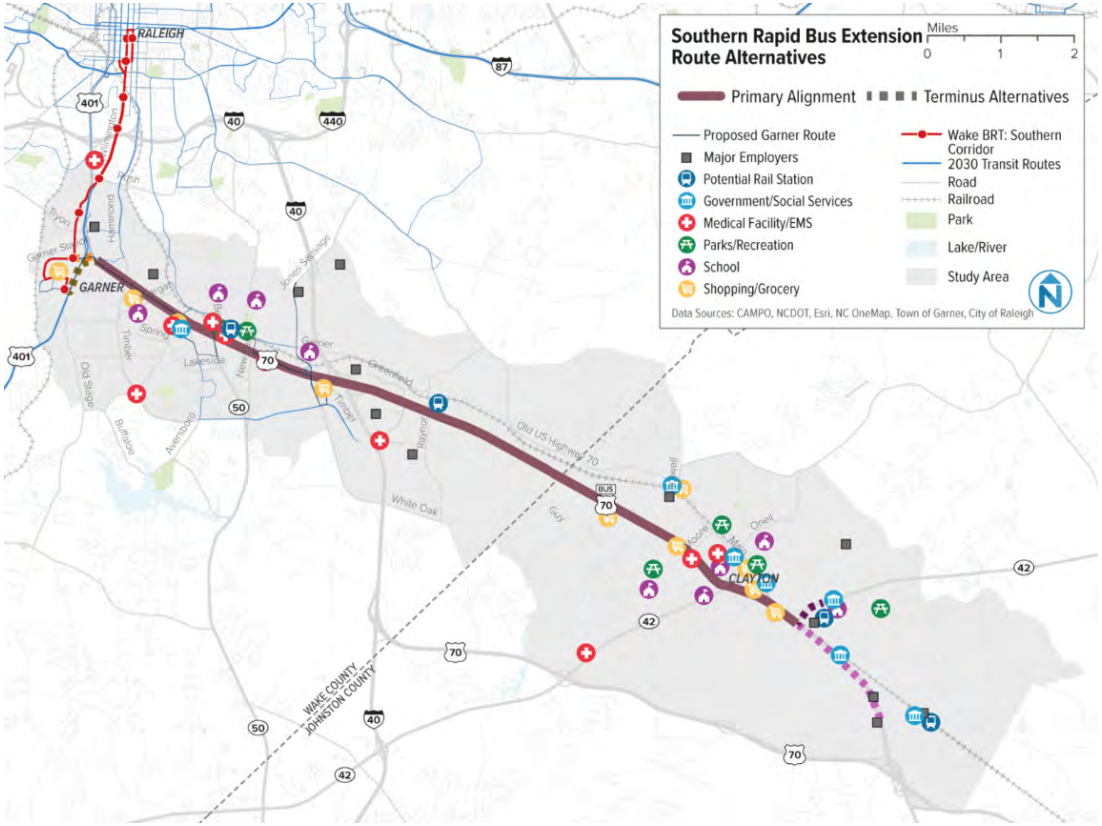
Based on the findings from the Activity Center analysis, establishing a fixed-route transit service or even more likely, expanding on the existing microtransit service, into the Smithfield and Selma area is a viable short-term opportunity for Johnston County. This will enable the two cities time to prepare and implement adequate transportation alternatives as they accommodate the expected population growth. Additionally, creating a circular service that will be able to provide trips between the three municipalities will be key to the long-term success of the microtransit service within the three municipalities. As the town of Clayton updates its Comprehensive Transportation Plan, Johnston County, Clayton, and NCDOT will need to continue coordinating to implement any transit-related recommendations produced from the plan update.



Opportunities by Immediacy: Long-Term Opportunities

Long-term opportunities can address challenging and capital-intensive needs of the county and are suitable for a more forward-looking vision that considers future growth patterns in the area. Based on identified transit opportunities, and discussions with major stakeholders, implementing a commuter transit service to Raleigh and the Triangle Region could be beneficial in the long-term

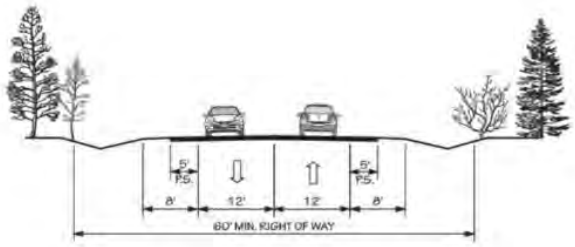
Due to high rail construction costs and funding competition, a commuter bus service between Johnston County and the Triangle Region is a more feasible short-term solution for regional mobility. In fact, in 2022 CAMPO released a potential Bus Rapid Transit (BRT) alignment that connects the Town of Garner, located in Wake County, to Clayton as part of the Wake BRT: Western and Southern Rapid Bus Extensions Study. This potential alignment would alleviate traffic congestion on the region's major roads by providing a high-capacity alternative mode of transportation that residents can take to access employment centers.



NCDOT CROSS SECTIONS

TYPICAL SECTION No. 2A

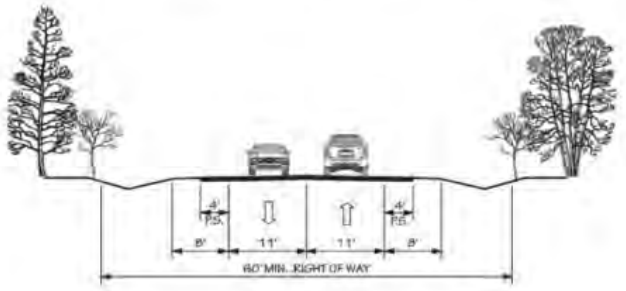
2 LANE UNDIVIDED WITH PAVED SHOULDERS



POSTED SPEED 55 MPH

TYPICAL SECTION No. 2B

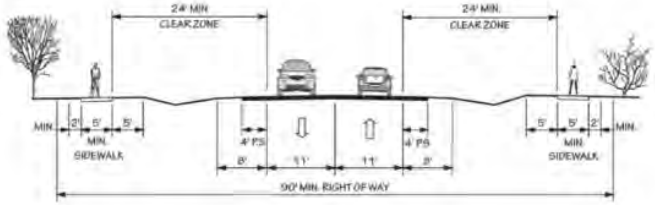
2 LANES UNDIVIDED WITH PAVED SHOULDERS



POSTED SPEED 25-45 MPH

TYPICAL SECTION No. 2D

2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEWALKS



POSTED SPEED 25-45 MPH

TYPICAL SECTION No. 2M

2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEPATH

POSTED SPEED 55 MPH

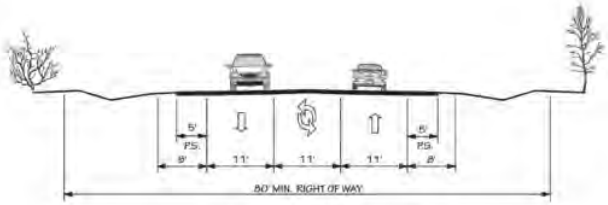
TYPICAL SECTION No. 2N

2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEPATH

POSTED SPEED 25-45 MPH

TYPICAL SECTION No. 3A

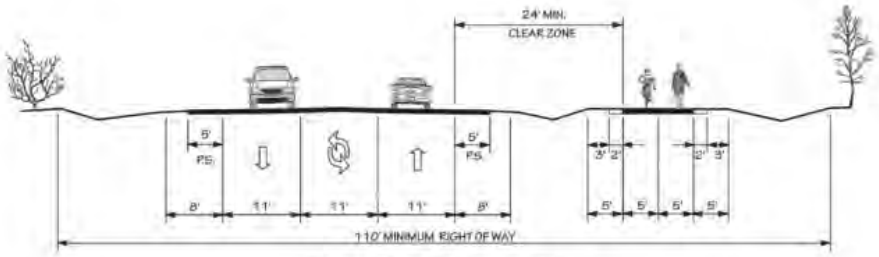
2 LANE WITH TWO WAY LEFT TURN LANE, AND PAVED SHOULDERS



POSTED SPEED 25-55 MPH

TYPICAL SECTION No. 3D

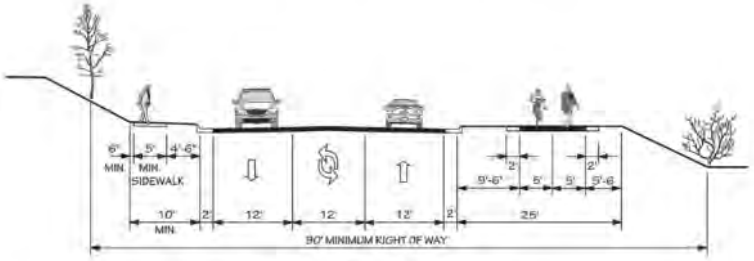
2 LANE WITH TWO WAY LEFT TURN LANE,
PAVED SHOULDERS AND SIDEPATH



POSTED SPEED 25-45 MPH

TYPICAL SECTION No. 3E

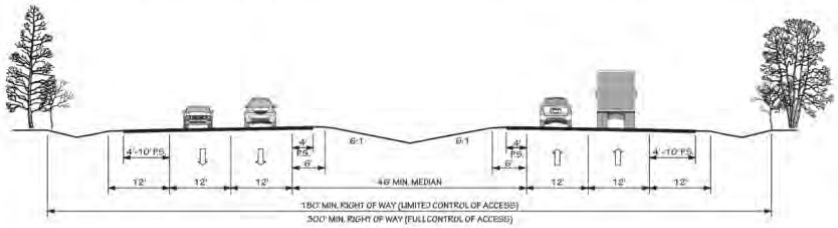
2 LANE WITH TWO WAY LEFT TURN LANE,
CURB & GUTTER, SIDEWALKS, AND SIDEPATH



POSTED SPEED 25-45 MPH

TYPICAL SECTION No. 4A

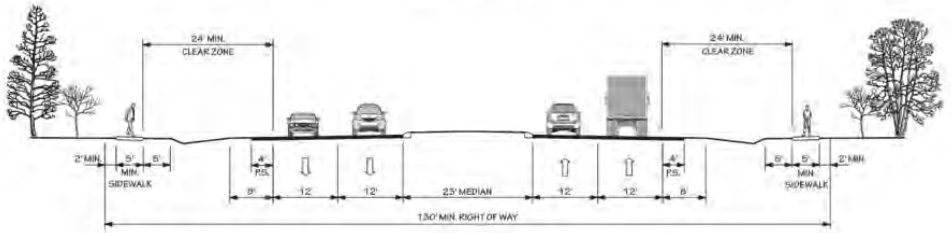
4 LANE DIVIDED (46' DEPRESSED MEDIAN) WITH PAVED SHOULDERS



POSTED SPEED 45-70 MPH

TYPICAL SECTION No. 4B

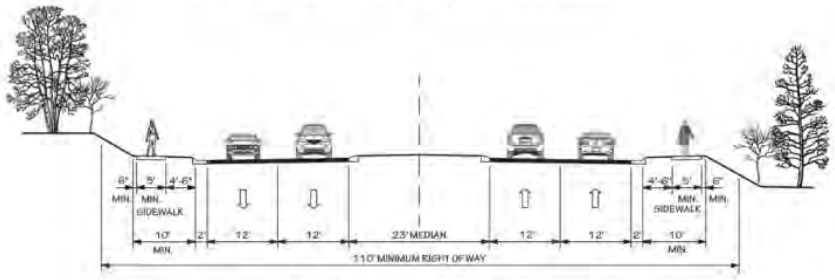
4 LANE DIVIDED (23' RAISED MEDIAN) WITH PAVED SHOULDERS AND SIDEWALKS



POSTED SPEED 35-55 MPH

TYPICAL SECTION No. 4C

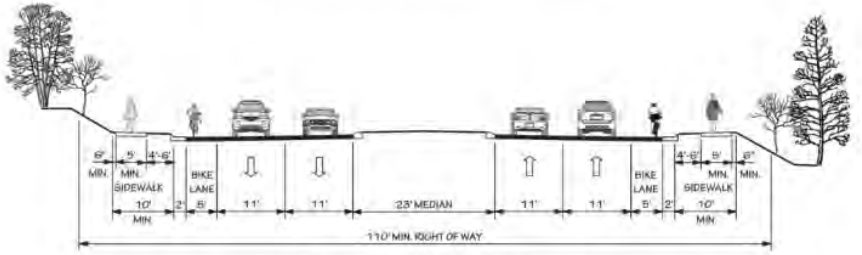
4 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, AND SIDEWALKS



POSTED SPEED 35-45 MPH

TYPICAL SECTION No. 4D

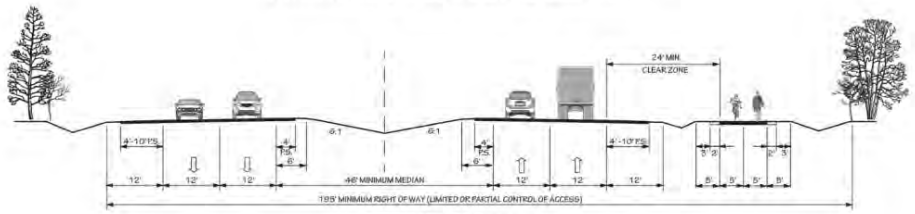
4 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS



POSTED SPEED 35-45 MPH

TYPICAL SECTION No. 4H

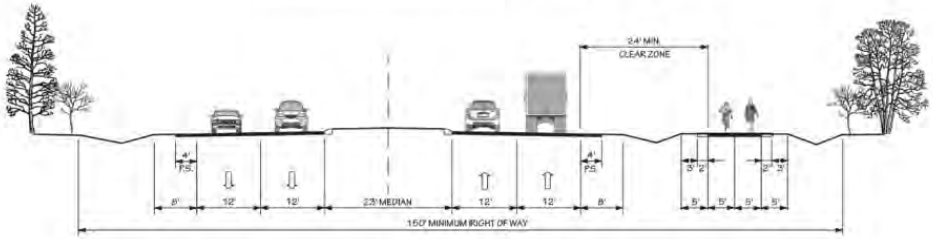
4 LANE DIVIDED (46' DEPRESSED MEDIAN)
WITH PAVED SHOULDERS AND SIDEPATH



POSTED SPEED 45-55 MPH

TYPICAL SECTION No. 4I

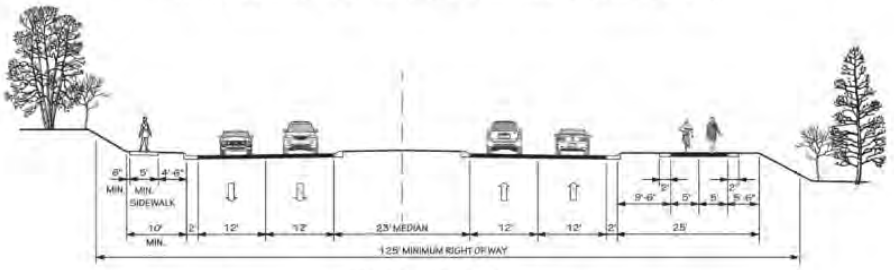
4 LANE DIVIDED (23' RAISED MEDIAN)
WITH PAVED SHOULDERS AND SIDEPATH



POSTED SPEED 35-55 MPH

TYPICAL SECTION No. 4J

4 LANE DIVIDED (23' RAISED MEDIAN)
WITH CURB & GUTTER, SIDEWALKS AND SIDEPATH



POSTED SPEED 35-45 MPH