



**North
Falls Lake**
AREA STUDY



June 2026

North Falls Lake Area Study

**Shaping sustainable growth through integrated
land use, environmental planning, and multi-modal
transportation strategies**



Real People. Real Solutions.

Page left intentionally blank.

Acknowledgments

The Project Team appreciates all groups and organizations that gave their time to give feedback and improve the plan.

Town of Butner
City of Creedmoor
Town of Franklinton
Town of Oxford
Town of Stem
Franklin County
Wake County
Triangle West Transportation Planning Organization
Kerr-Tar Regional Council of Governments



AARP
Area Congregations in Ministry - Granville County
Boys and Girls Club of North Central NC
Go Triangle
Granville County Schools
Granville County Chamber of Commerce
Granville Health System
Granville / Vance Public Health
Kerr Area Transportation Authority
Mothers Against Drunk Driving
North Carolina Department of Environmental Quality
North Carolina Department of Transportation
North Carolina Parks
North Carolina State University
Sierra Club
South Granville Water and Sewer Authority
Tar River Conservancy
Upper Neuse River Basin Association
Vance Granville County College



Table of Contents

1. Introduction	1
2. Engagement	9
3. Environmental and Utility Considerations.....	28
4. Land Use.....	52
5. Transportation	72

Appendix A.1: Fall 2025 Engagement Materials

Appendix A.2: Spring 2026 Engagement Materials

Appendix A.3: Core Technical Team Meeting Materials

Appendix A.4: Elected Official Team Meeting Materials

Appendix A.5: Stakeholder Team Meeting Materials

Appendix B: Environmental and Utility Considerations

Appendix C: Land Use

Appendix D: Previous Plan Review

Appendix E.1: Corridor Studies

Appendix E.2: Corridor Study Interview Summaries

Appendix E.3: Corridor Recommendations

Appendix F: Road Safety Audit

Appendix G: Linear Roadway Projects by Tier

Appendix H: Intersection Roadway Projects by Tier

Appendix I: Bicycle and Pedestrian Projects by Tier

Appendix J: Prioritization Metrics Methodology

Appendix K: Concept Designs

Table of Figures

Chapter 1 - Introduction

Figure 1.1 - Project Schedule

Figure 1.2 - Project Area Map

Figure 1.3 - Housing Units and Population

Figure 1.4 - Population by Race and by Ethnicity

Figure 1.5 - Household Income

Figure 1.6 - Population by Age

Figure 1.7 - Households by Size

Chapter 2 - Engagement

Figure 2.1 - Residential Placetypes Presented During Engagement

Figure 2.2 - Non-Residential Placetypes Presented During Engagement

Figure 2.3 - Residential and Non-Residential Placetype Preferences

Figure 2.4 - Residential and Non-Residential Placetype Preferences

Figure 2.5 - Land Use Scenario Preference

Figure 2.6 - Virtual Land Use Map Results

Figure 2.7 - Land Use Priorities Survey Summary

Figure 2.8 - Transportation Improvement Priorities

Figure 2.9 - Virtual Transportation Map Results

Figure 2.10 - Transportation Priorities Survey Summary

Chapter 3 - Environmental

Figure 3.1 - Watersheds

Figure 3.2 - Floodplains

Figure 3.3 - Soils

Figure 3.4 - Public Water Supply Sources

Figure 3.5 - NPDES Wastewater Discharge Permits

Figure 3.6 - Wells, Aquifers, and Production Capacity

Chapter 4 - Land Use

Figure 4.1 - Housing and Population Growth

Figure 4.2 - Scenario Planning Process

Figure 4.3 - Alternative Business as Usual Scenario

Figure 4.4 - Alternative Economic Growth Scenario

Figure 4.5 - Alternative Strong Towns Scenario

Figure 4.6 - Alternative Watershed Protection Scenario

Figure 4.7 - Preferred Scenario Placetypes

Figure 4.8 - Preferred Scenario

Table of Figures

Chapter 5 - Transportation

Figure 5.1 - Commuters Out

Figure 5.2 - Commuters In

Figure 5.3 - Transportation Planning Products

Figure 5.4 - Preferred Scenario Traffic Volumes

Figure 5.5 - NC 56 Corridor Recommendations

Figure 5.6 - Brogden Road Corridor
Recommendations

Figure 5.7 - Roadway Project
Recommendations

Figure 5.8 - Existing Bicycle and Pedestrian
Infrastructure

Figure 5.9 - Bicycle and Pedestrian Project
Recommendations

Figure 5.10 - Transit Supportive Suitability

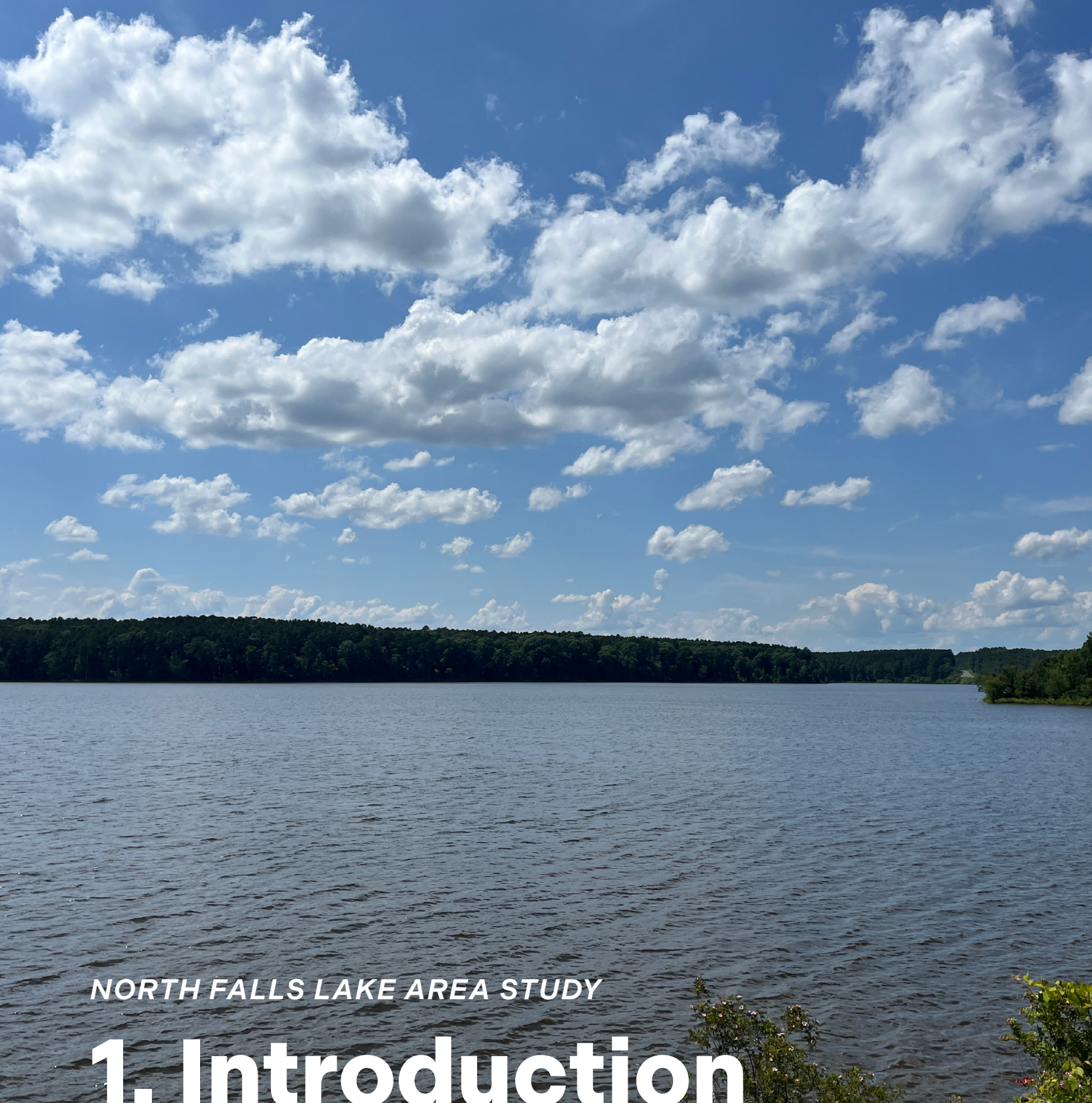
Figure 5.11 - Transit Project Recommendations

Figure 5.12 - What is a Mobility Hub?

Figure 5.13 - Roadway Prioritization Scores

Figure 5.14 - Intersection Prioritization Scores

Figure 5.15 - Bicycle and Pedestrian
Prioritization Scores



NORTH FALLS LAKE AREA STUDY

1. Introduction

On March 26, 2025, the Capital Area Metropolitan Planning Organization (CAMPO) initiated the North Falls Lake Area Study (NFLAS) to understand the area's water and sewer capabilities, define the area's land use strategy, and accommodate existing and future travel needs.

Background

An area study allows a deep dive into the local road network, multimodal plans, and opportunities in a smaller study area of the broader region. There are three existing area studies: the Northeast Area Study, the Southwest Area Study, and the Southeast Area Study. The North Falls Lake Area Study (NFLAS) will be the fourth such area study completed by CAMPO.

This study is being led by CAMPO in partnership with Granville County. Both organizations are working closely with the Kerr-Tar Rural Planning Organization.

The recommendations from this document identify priority projects to be considered in the 2060 Metropolitan Transportation Plan (MTP), the financially constrained, long-range transportation plan for the region. These recommendations are also intended to be used as a basis for ongoing planning and policy work in local member jurisdictions.

Process

The process began in 2025 by assessing environmental and utility constraints in the region, including watershed regulations, water and sewer service availability, and groundwater resources. These factors established where and how growth can occur.

Next, a coordinated regional land use vision was developed by reviewing local comprehensive and future land use plans, collecting community input, and revising various land use scenarios based on stakeholder guidance and feedback. Once clear priorities were set, the land use scenarios were further refined to accommodate future development patterns and transportation needs.

Finally, the transportation study was updated to align with the new land use vision. This included roadway and intersection improvements, evaluating new road projects, and enhancing walking, biking, and transit options to support regional mobility.

Plan Expectations

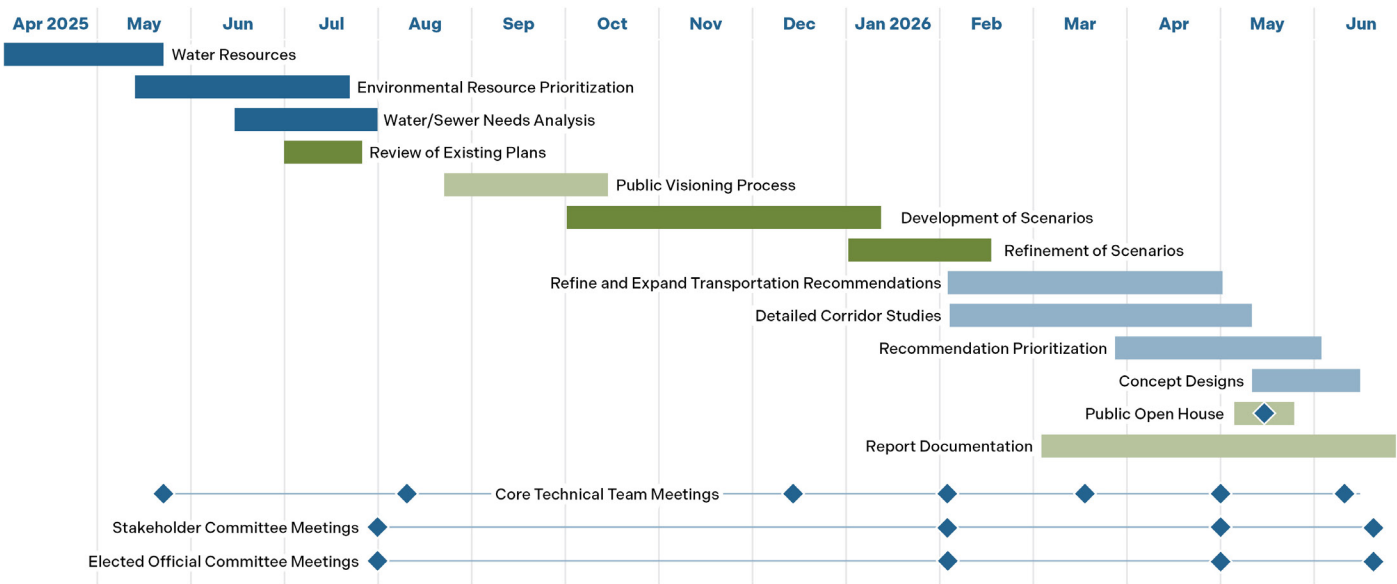
The plan is expected to:

- Develop a cross-border, quantified land-use vision for the entire region
- Consider limitations from a utilities and environmental standpoint
- Revise existing and create new transportation recommendations for the area

The plan is **not** expected to:

- Replace individual jurisdictions' comprehensive or future land use plans
- Compel or restrict certain developments in certain locations; that authority remains with local governments

Figure 1.1 Project Schedule



Who Was Involved?

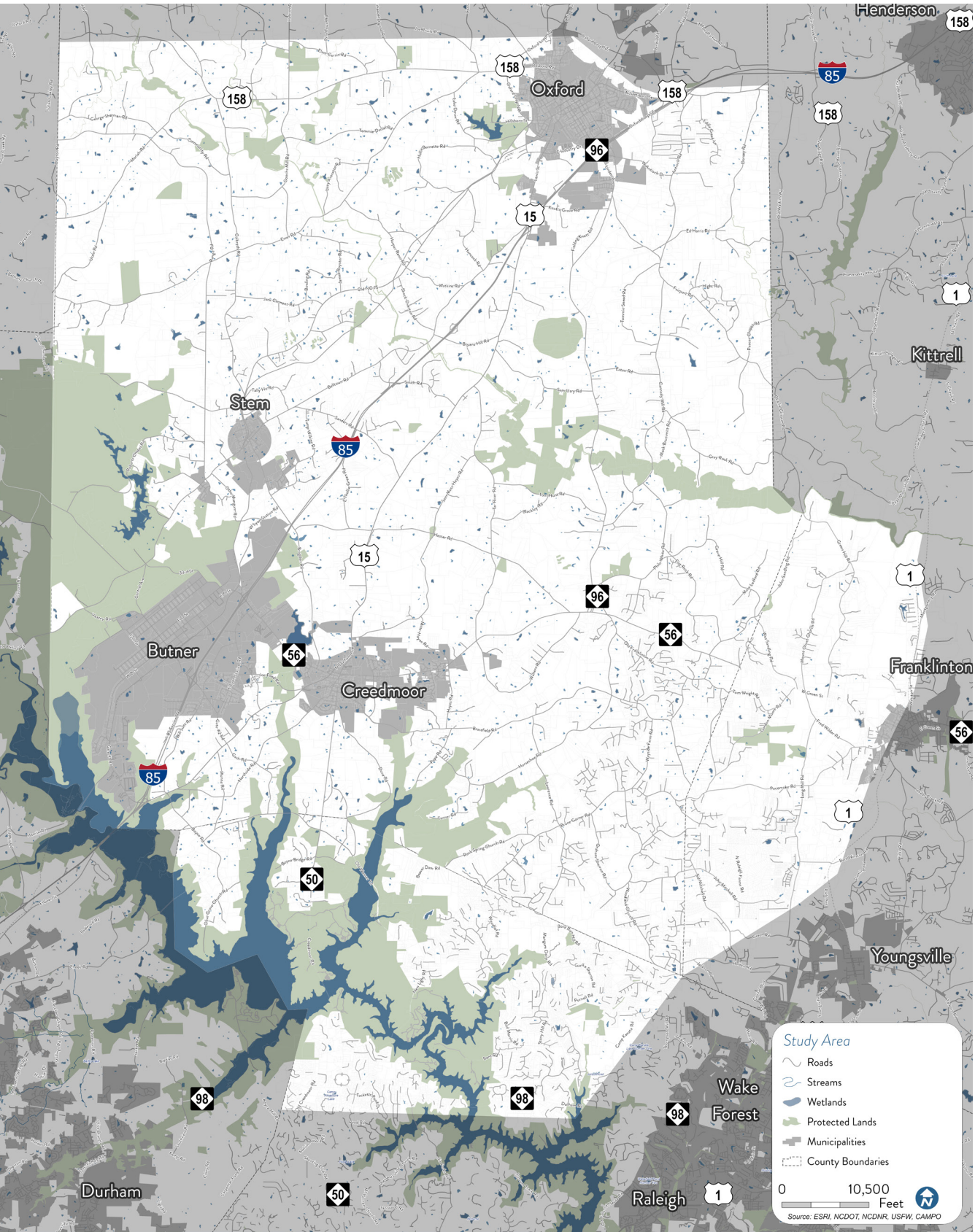
Core Technical Team Planning and related staff from major jurisdictions CAMPO Staff TWTPO and Ker-Tarr RPO	Elected Officials Elected officials from all jurisdictions in the study area
Stakeholder Committee Implementation Partners (NCDOT, KARTS, SGWASA, and others) Community Organizations (schools, land conservancies, chambers of commerce, other organizations)	Public All members of the community at large

What is the Study Area?

The study area includes the southern half of Granville County, Wake County north of Falls Lake / NC Highway 98, and Franklin County west of US Highway 1. This area includes the municipalities of Oxford, Stem, Butner, and Creedmoor.



Figure 1.2 Project Area Map



Who Lives in the Study Area?

This section provides an overview of the people who live within the study area that shape local needs, priorities, and travel behaviors. This section summarizes key demographic, socioeconomic, and household information to better understand who may be affected by transportation decisions and how different populations experience the study area.

Figure 1.3. Housing Units and Population

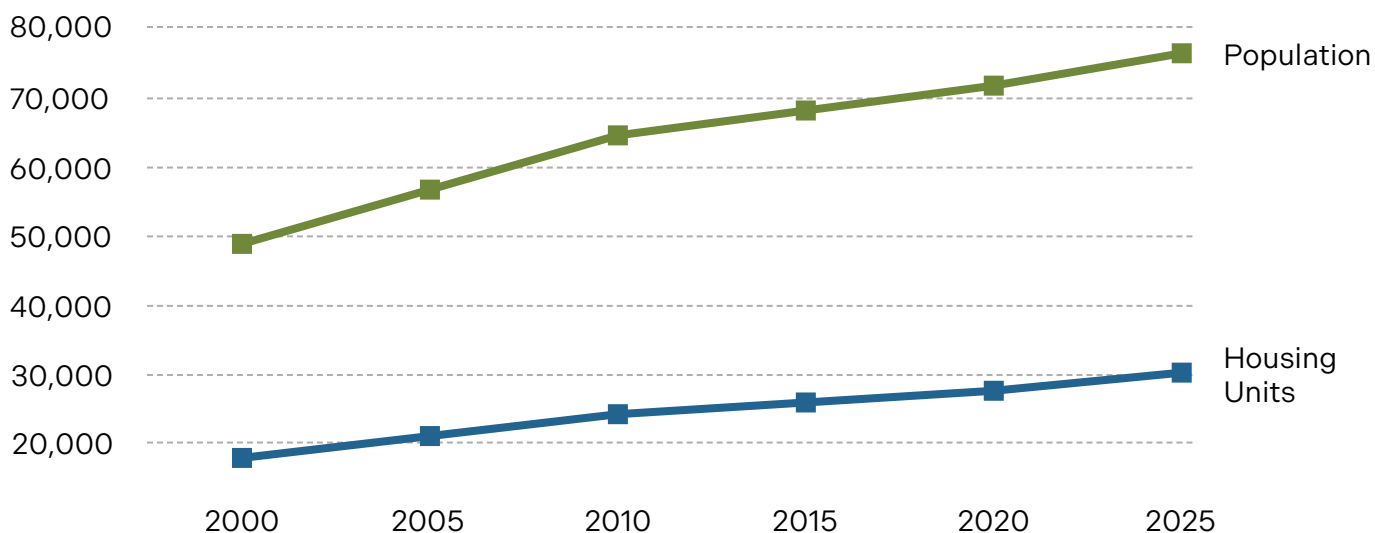


Figure 1.4. Population by Race and by Ethnicity

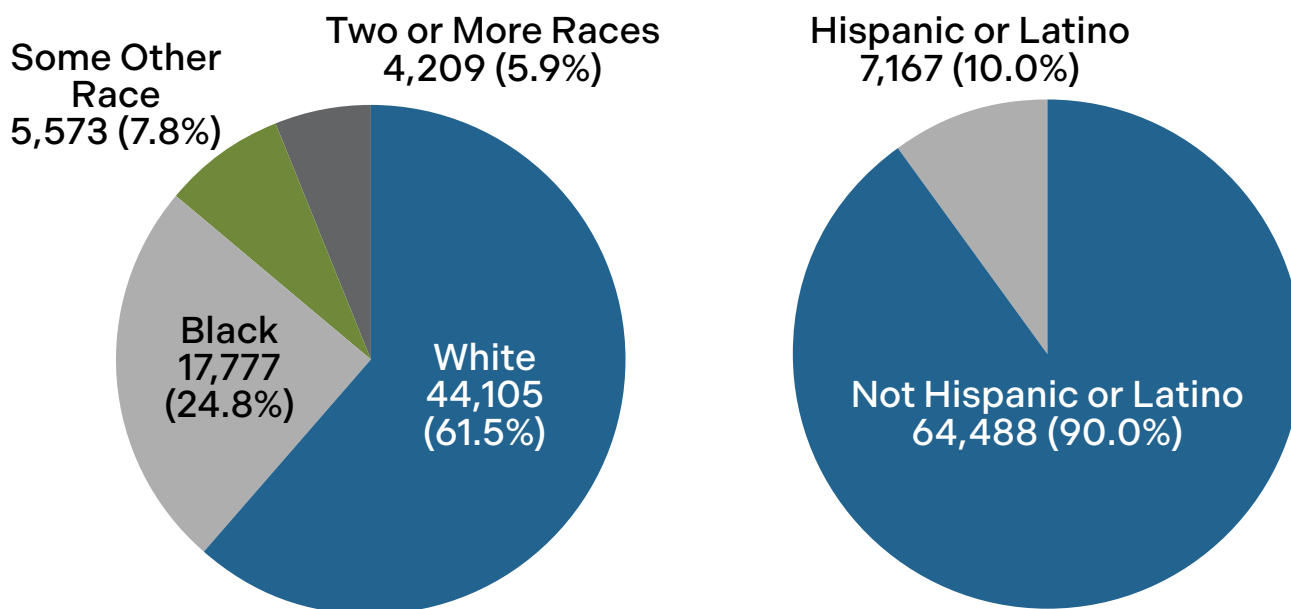
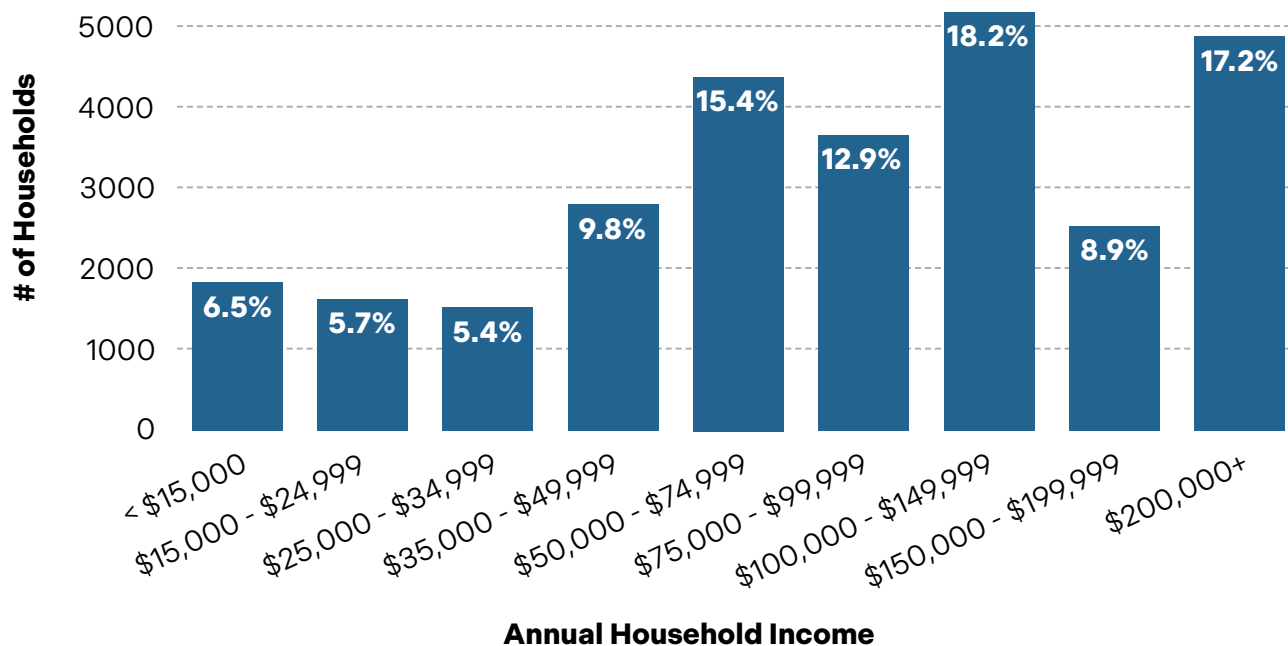
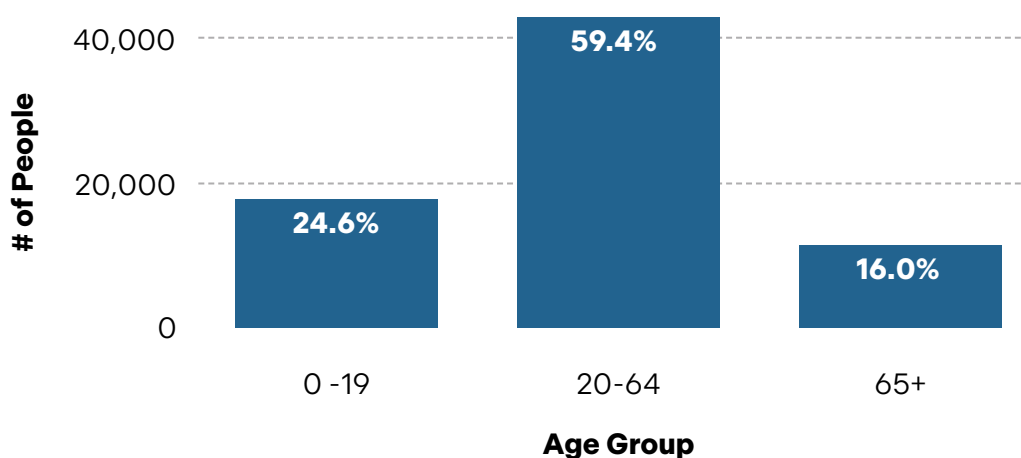
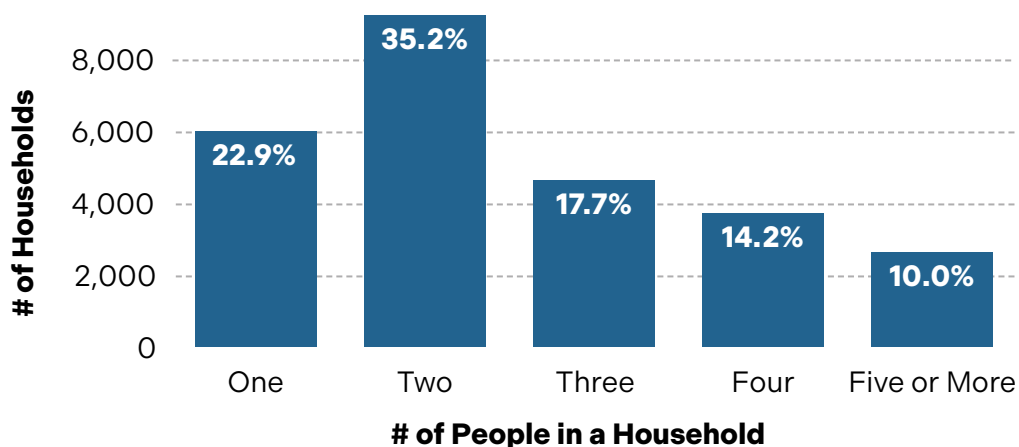


Figure 1.5. Household Income**Figure 1.6. Population by Age****Figure 1.7. Households by Size**

Plan Organization

The North Falls Lake Area Study document is organized into five chapters that present a cohesive narrative of the study. Following the Executive Summary and Introduction, Chapter Two covers community and stakeholder engagement. Chapter Three addresses environmental and utility considerations, while Chapter Four examines existing land use and outlines a vision for future development. The document concludes with Chapter Five, which analyzes the transportation network and provides recommendations to improve mobility across all modes.

Chapter 2 Engagement

Engagement for the North Falls Lake Area Study occurred in two phases. Phase 1 focused on in-person community pop-ups, supported by a virtual map and survey to gather input from those unable to attend. Phase 2 presented recommendations developed from analysis and feedback through an open house and online survey.

Chapter 3 Environmental and Utility Considerations

This chapter examines the environmental, regulatory, and infrastructure factors shaping future growth north of Falls Lake across the Neuse and Tar River basins.

Chapter 4 Land Use

The Land Use chapter analyzes existing conditions and explores future development through scenario planning. Four scenarios were evaluated, leading to an updated Business as Usual and a Preferred scenario shaped by public and stakeholder input.

Chapter 5 Transportation

The Transportation chapter builds on prior plans and community input and outlines a coordinated strategy to improve safety, reliability, and mobility in line with the Preferred Scenario.



NORTH FALLS LAKE AREA STUDY

2. Engagement

This chapter details all of the engagement activities conducted over the life of the project. This includes in-person and virtual community engagement, meetings with stakeholders and elected officials, and the plan adoption process.

Introduction

Project engagement began at the beginning of the project and continued throughout the life of the project. Engagement included in-person and virtual activities with community members and study area residents. Engagement was also conducted via small group meetings of specific stakeholders which included elected officials, technical staff, and other stakeholders (implementation partners and community organizations). All feedback gathered throughout the project informed the decision-making process and has been summarized in the following pages.

For in-person engagement, two phases were identified at the beginning of the project. The first phase would be the “Listening” phase and the second phase would be the “Showing and Input” phase. This allowed the project team to hear the community’s concerns in the beginning and incorporate the comments into the project as it moved forward. The second phase allowed the project team to show recommendations related to land use and transportation and hear any feedback that the public had about them.

Virtual tools, such as the project website, were utilized throughout the life of the project and updated as new material was ready. By mid-June 2026, the website had over 13,000 views and the email distribution list had over 16,000 contacts subscribed that were in or associated with the study area.

How Feedback Was Used

Public and stakeholder engagement was central to the planning process, directly shaping priorities, analysis, and final recommendations. From the outset, early community conversations and Phase 1 engagement provided key insights into the values and concerns of residents, businesses, and stakeholders. This input helped guide the Project Team toward several priority areas, including preserving natural resources and open space, expanding housing options, improving roadway safety, and increasing recreational opportunities, particularly trails that support both leisure and access without a personal vehicle.

Engagement was an iterative process, with feedback collected and incorporated throughout the study. Input from both phases was documented and shared in full with the Core Technical Team (CTT), Stakeholder Committee, and Elected Officials Committee (EOC), ensuring a consistent understanding of community priorities.

This ongoing feedback loop informed next steps, highlighted areas for further analysis, and refined the study’s direction. As a result, the final recommendations reflect both technical analysis and the community’s lived experiences and goals.

Phase 1 Engagement

Outreach Tactics

Outreach for the North Falls Lake Area Study included a mix of in-person and digital opportunities that included five in-person engagement events and an online project website with interactive components.

Project information was shared through printed bookmarks and flyers distributed at community locations and events, providing easy-to-reference details and ways to participate in both English and Spanish. Yard signs were placed throughout the study area to build local visibility and paid print media advertising further supported outreach by reaching residents through traditional communication channels.

Social media posts and targeted social media advertising were used to broaden awareness and drive traffic to the project website. An outreach toolkit was also developed for project stakeholders, equipping them with ready-to-use messaging and materials to share within their networks.



In-Person Activities

As part of the Fall 2025 engagement period, the Project Team conducted **five pop-up events** throughout the region to go out to the community instead of the community going to a separate, project-dedicated meeting. The Project Team attended the following events:

- Creedmoor Music Festival (September 20, 2025)
- Granville Senior Center in Oxford Pop-Up (October 6, 2025)
- Butner National Night Out (October 7, 2025)
- Wilton Grill Pop-Up (October 17, 2025)
- Granville Live in Stem (October 18, 2025)

At each of these events, the Project Team set up two display boards. One board presented general project information, a project area map, and had a QR code that linked to the project website and survey.

The other board was interactive and asked participants to place dots on the types of residential and non-residential placetypes (types of development) they would like to see in the future.

Residential placetypes included: Small Lot Residential, Midsized Lot Residential, Urban Neighborhood, Mixed-Density Residential, Rural Living, Conservation Neighborhood, Trail-Oriented Development, Mixed-Use Neighborhood, Other.

Non-residential placetypes included: Highway Commercial, Mixed-Use Neighborhood, Office and Industrial Centers, Town Center, Protected Open Space, and Agriculture and Rural Business.

These options were developed based on placetypes that are currently found in the study area and what could be allowed through the region's various zoning codes. The compiled results are shown on the following pages.

Figure 2.1 Residential Placetypes Presented During Engagement



Figure 2.1 Residential Placetypes Presented During Engagement Continued

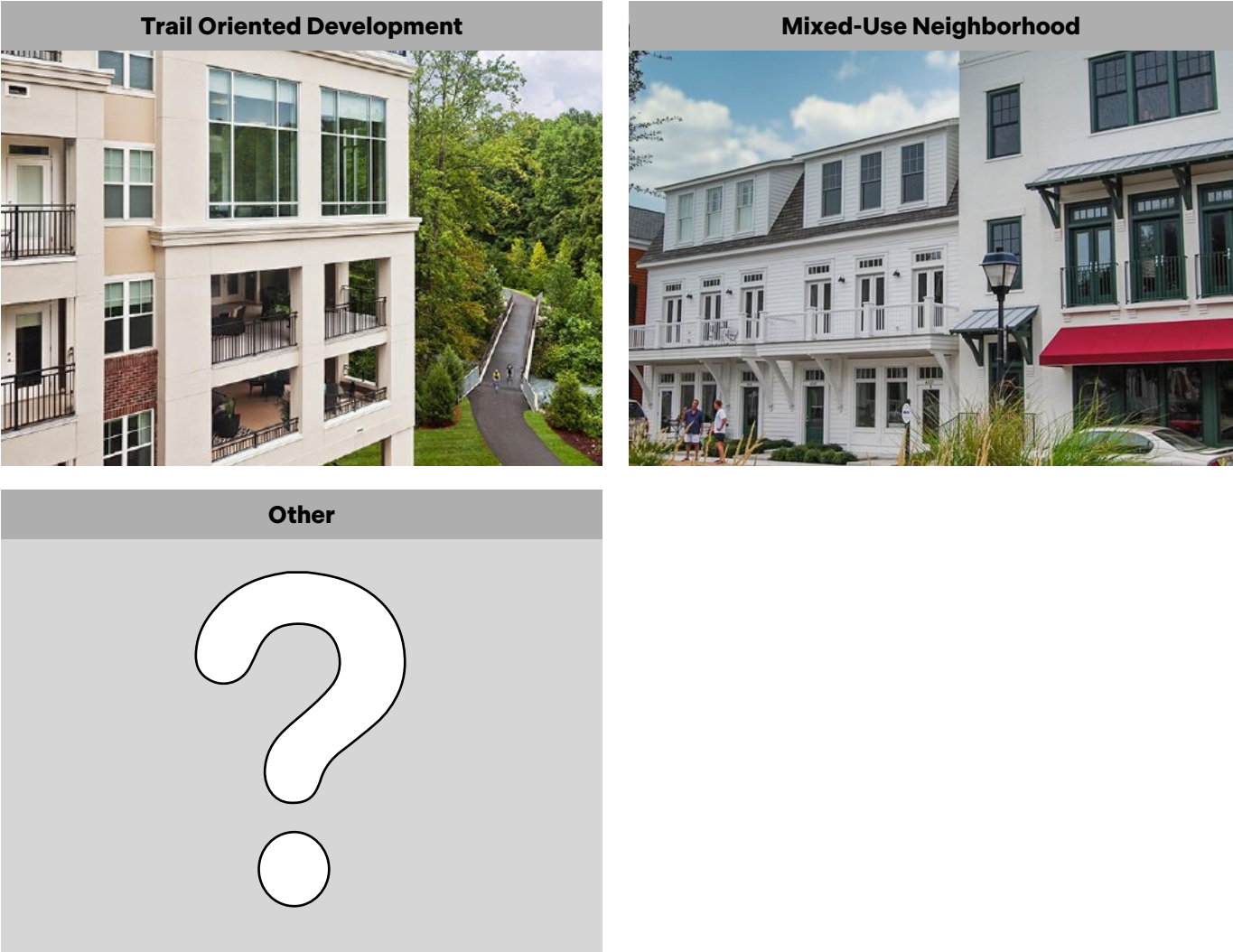


Figure 2.2 Non-Residential Placetypes Presented During Engagement

Highway Commercial



Mixed-Use Neighborhood



Office and Industrial Centers



Town Center



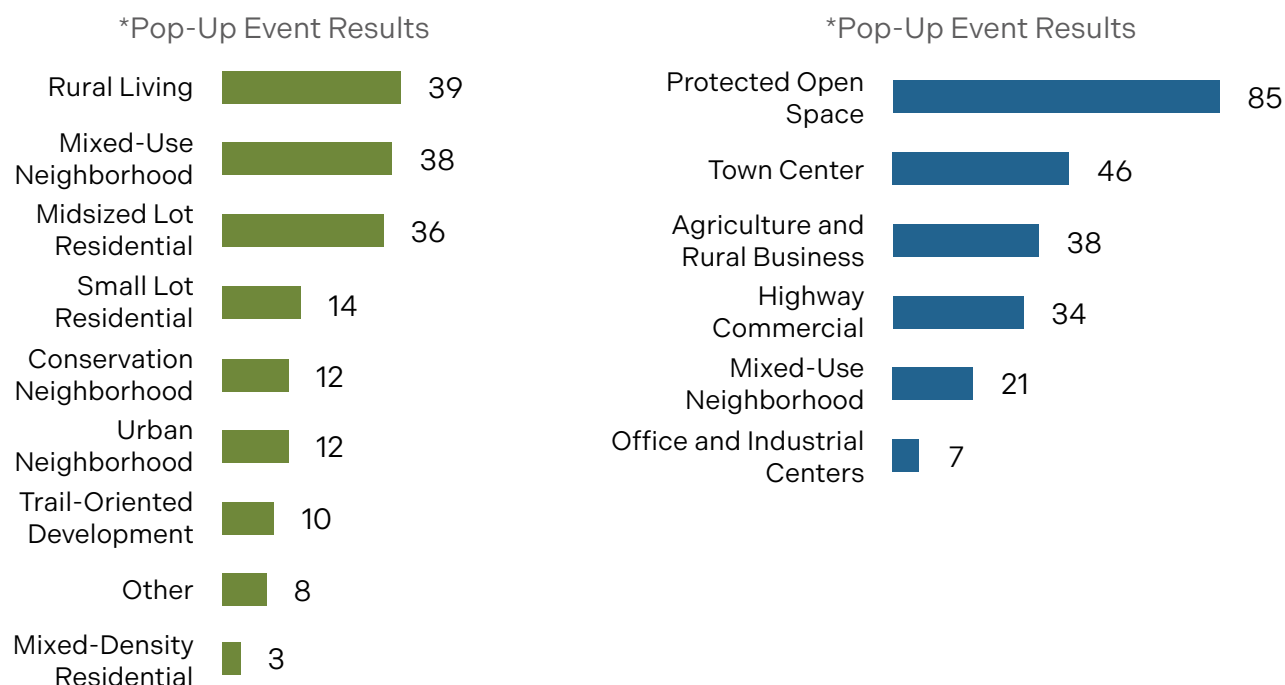
Protected Open Space



Agriculture and Rural Business



Figure 2.3 Residential and Non-Residential Placetype Preferences



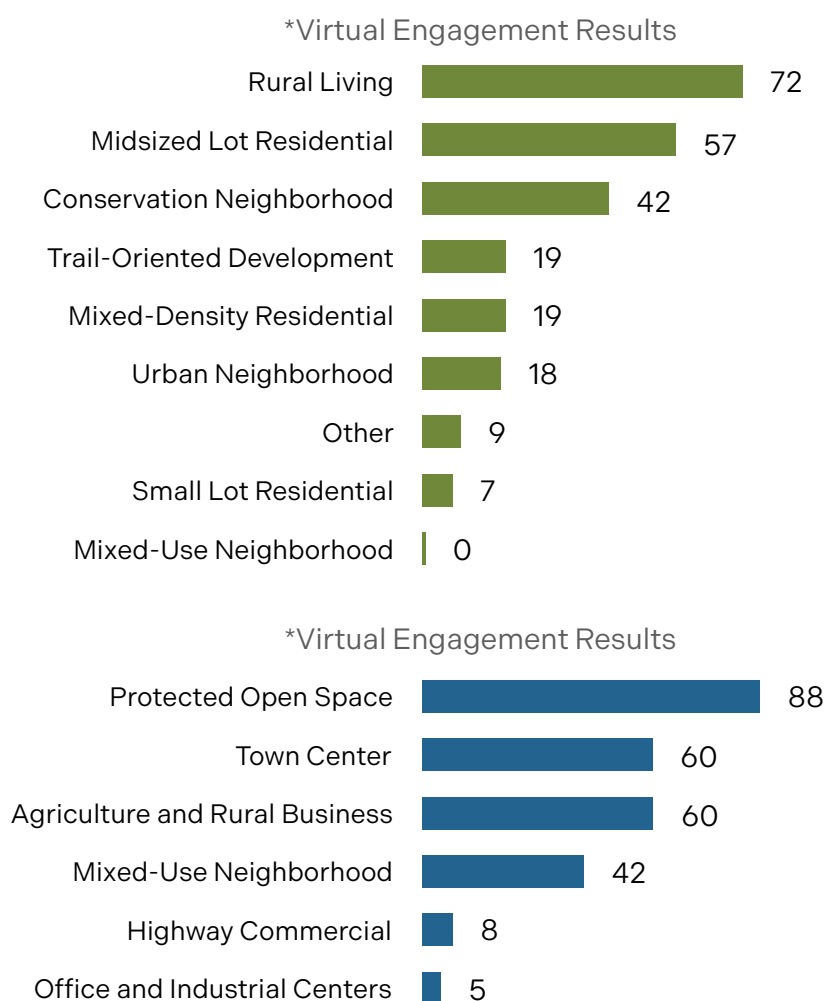
What We Heard from Participants

- Concerns with the **availability of water** throughout the region and the **quality** of the current water supply
- Open space should be **protected**
- Concerns with the ability of the current infrastructure to handle more people moving to the region, many people voiced concerns that the **current infrastructure is not adequately** supporting the number of people who live in the region now
- Residents want to **preserve the small-town feel** while having **more amenities** than they currently do today (they do not want to leave the area for goods, services, and jobs)
- Concerns about not being able to **age in place** due to rising costs and/or not having housing types that support older residents
- Desire for **public transportation** into and out of the study area to destinations in Durham and Raleigh

Virtual Activities

Throughout the life of the project, a **project website with an interactive map** was available for people to learn more about the study and provide feedback through a survey. Over 500 people participated, either through the survey, interactive map, or both. From late September to late October 2025, a **project survey** was available on the website. This survey included questions about people's vision and priorities for the study area for the next thirty years. Like the in-person activity, survey respondents could select up to three residential placetypes and up to three non-residential placetypes they would like to see in the future. The results of the survey can be seen below.

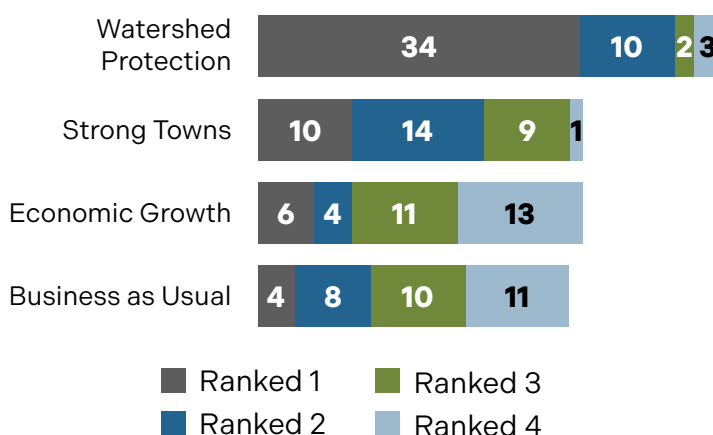
Figure 2.4 Residential and Non-Residential Placetype Preferences



The survey also asked respondents to rank their preferred land use scenario. There were four scenarios in total, and the results of this question can be seen below. The **Watershed Protection scenario was ranked as the #1 most important** followed by Strong Towns, Business as Usual, and Economic Growth.

- **Business as Usual:** Plans and trends scenario that reflects current land use plans or zoning. Some concentration of residential and commercial uses near Towns. New dispersed subdivisions in South Granville County. Increased transportation needs related to roadway modernization and intersection improvements.
- **Economic Growth:** Emphasis on commercial, mixed-use and industrial growth along major corridors. New employment centers, including industrial, office, and distribution uses along I-85 and near the interchange at Hester Road. New commercial and mixed-use centers to serve county areas and the East Coast Greenway completed with trail-oriented development.
- **Strong Towns:** Emphasis on reinforcing and creating walkable downtowns and neighborhoods. Two to three story buildings with a mix of uses. Residential infill including small homes and missing middle housing (duplexes, triplexes, and quadplexes). Targeted transportation improvements (i.e. Creedmoor Southern Connector and new collector streets).
- **Watershed Protection:** Open space, agriculture, and natural resources protection in the Falls Lake Watershed, Triassic Basin east of Creedmoor and along the Tar River Corridor. Very low-density residential development only in the Falls Lake Watershed in county jurisdiction (reduction in currently allowable density in Granville County). Conservation subdivisions are emphasized in other areas with sensitive natural resources (i.e. Tar River Corridor). Growth in towns and along highway corridors outside of sensitive watersheds.

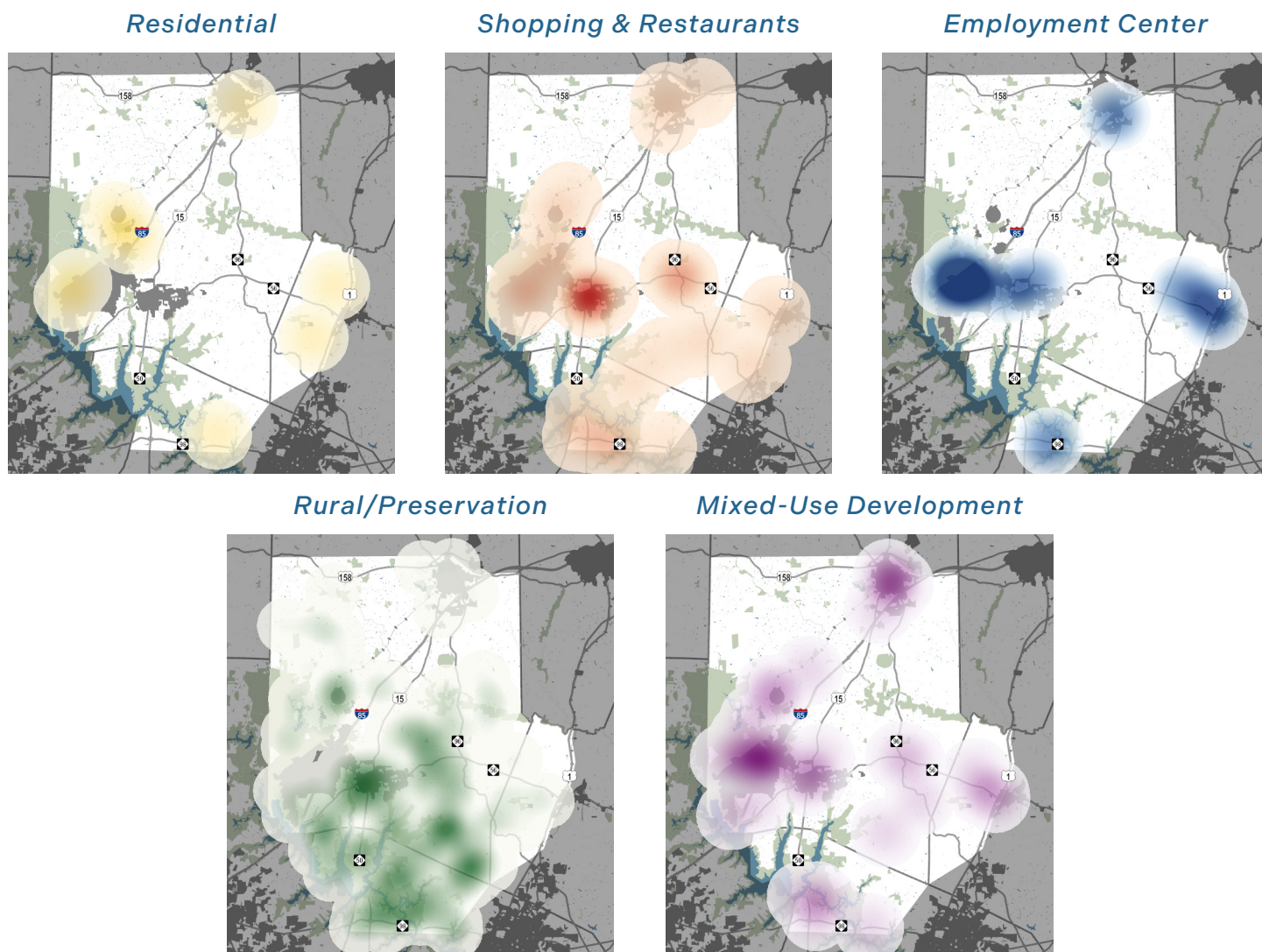
Figure 2.5 Land Use Scenario Preference



Virtual Map Activity Results - Land Use

Respondents were also able to place points on an **interactive web map** to show **where they would prefer specific land uses**. They could choose from the following options: Residential, Shopping & Restaurants, Employment Center, Rural/Preservation, and Mixed-Use Development. The following maps show responses in a heatmap format. Areas where the color is darker mean more respondents placed a pin there and areas where the color is lighter mean fewer respondents placed a pin in that area. The map on the following page shows a summary of all responses.

Figure 2.6 Virtual Land Use Map Results



Legend



Dense

Sparse



Protected Lands



Waterbodies



Municipalities



County Boundaries

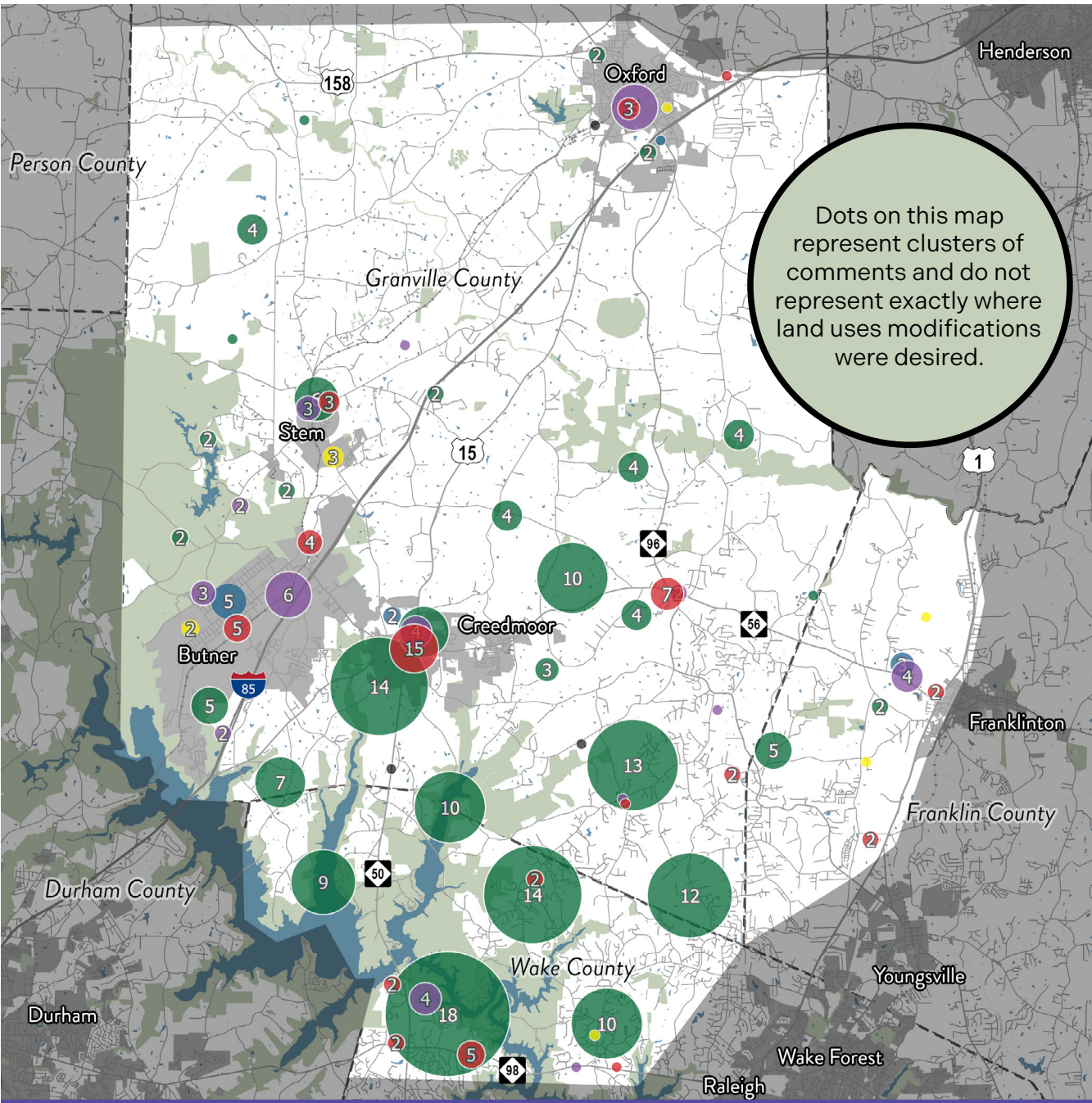


0

11

Miles

Figure 2.7 Land Use Priorities Survey Summary



Land Use Survey Summary

Response Types

- Shopping and Restaurants
- Residential
- Mixed Use Development
- Employment Center
- Rural Preservation
- Other Land Use

Number of Responses

- Fewer Responses
-
-
- More Responses

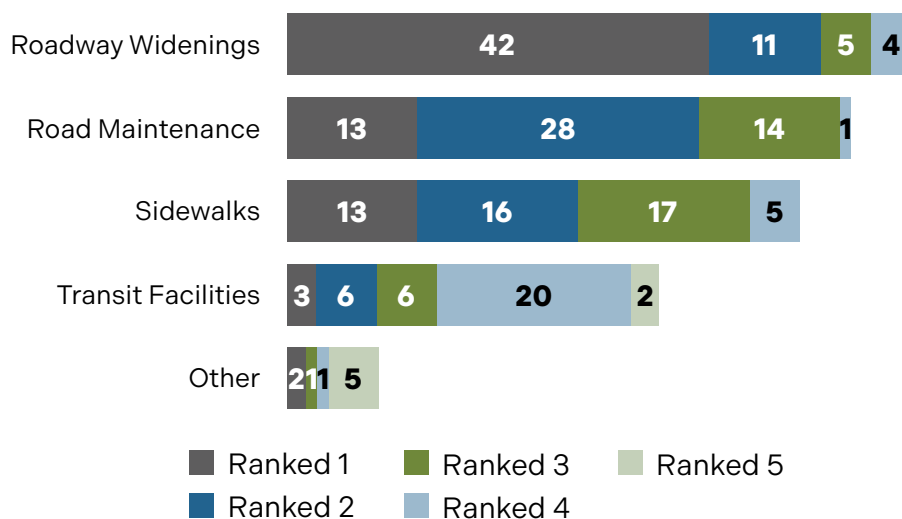
0 3 Miles



- ~ Roads
- - - Railroads
- Waterbodies
- Protected Lands
- Municipalities
- County Boundaries

The last focused question of the survey asked respondents to rank their priorities for future transportation improvements. Four options were available to pick from: Sidewalks and Greenways, Road Maintenance, Roadway Widenings and Intersection Improvements, and Transit Facilities and Service (e.g. bus routes, park and ride lots, etc.). The results of this question are below with **Roadway Widenings ranked #1**.

Figure 2.8 Transportation Improvement Priorities



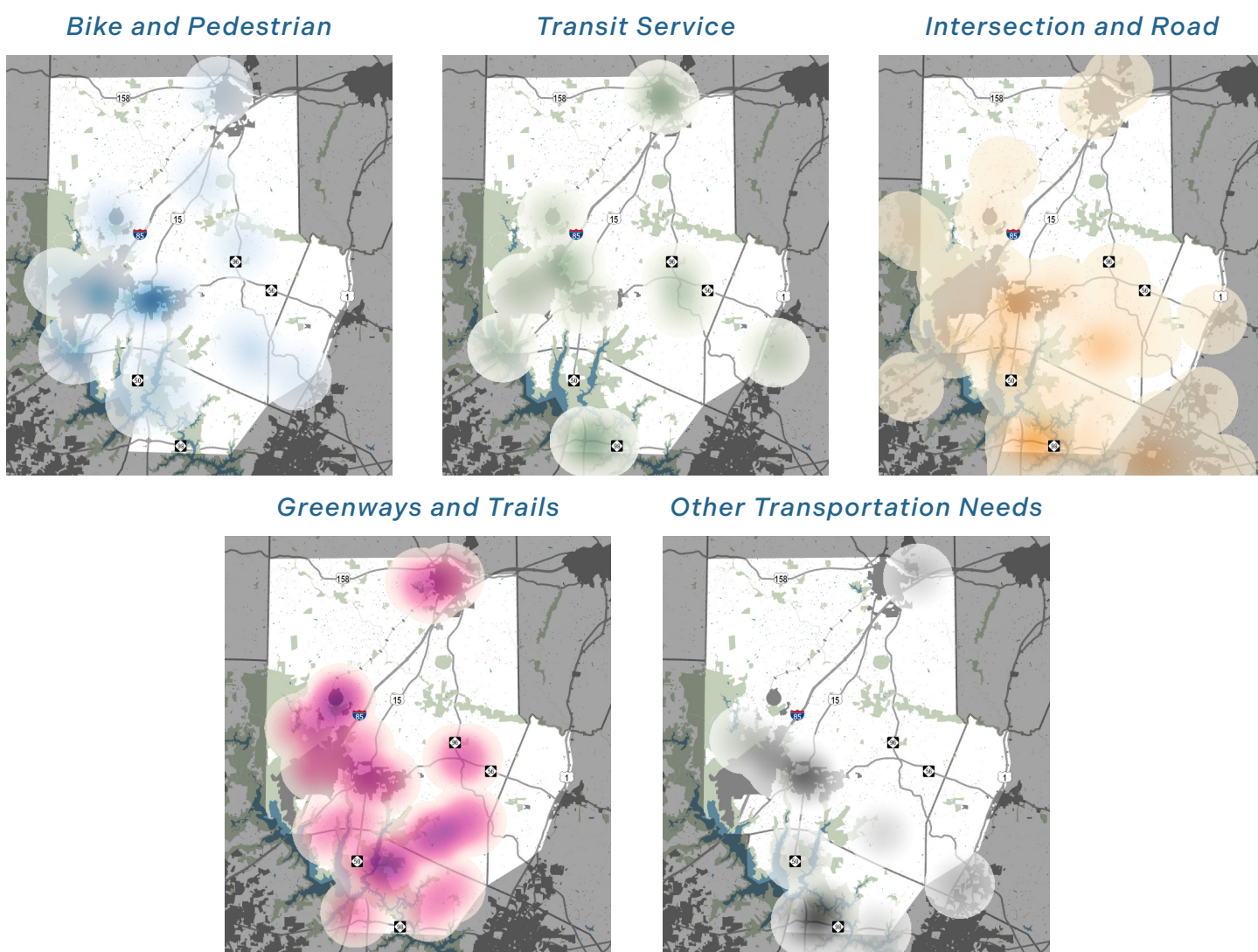
The virtual survey concluded with asking respondents, **“Is there a specific road, intersection, or area that needs transportation improvements?”** This question could be answered by typing a location in the response box or by placing a pin on a virtual map that followed this question. The most frequently mentioned locations include:

- Bruce Garner Road
- Lawrence Road
- Brassfield Road
- Creedmoor Road
- Six Forks Road
- New Light Road
- NC Highway 50
- NC Highway 56
- NC Highway 96
- NC Highway 98
- US Highway 1
- US Highway 15

Virtual Map Activity Results - Transportation

The following maps show the virtual map results, in a heatmap, of “Is there a specific road, intersection, or area that needs transportation improvements?” Respondents could pick from the following categories to place a pin on the map: Intersection or Roadway Improvement, Bicycle and Pedestrian Improvement, Transit Service, Greenways and Trails, and Other. Areas where the color is darker mean more respondents placed a pin there and areas where the color is lighter mean fewer respondents placed a pin in that area. The map on the following page shows a summary of all responses.

Figure 2.9 Virtual Transportation Map Results



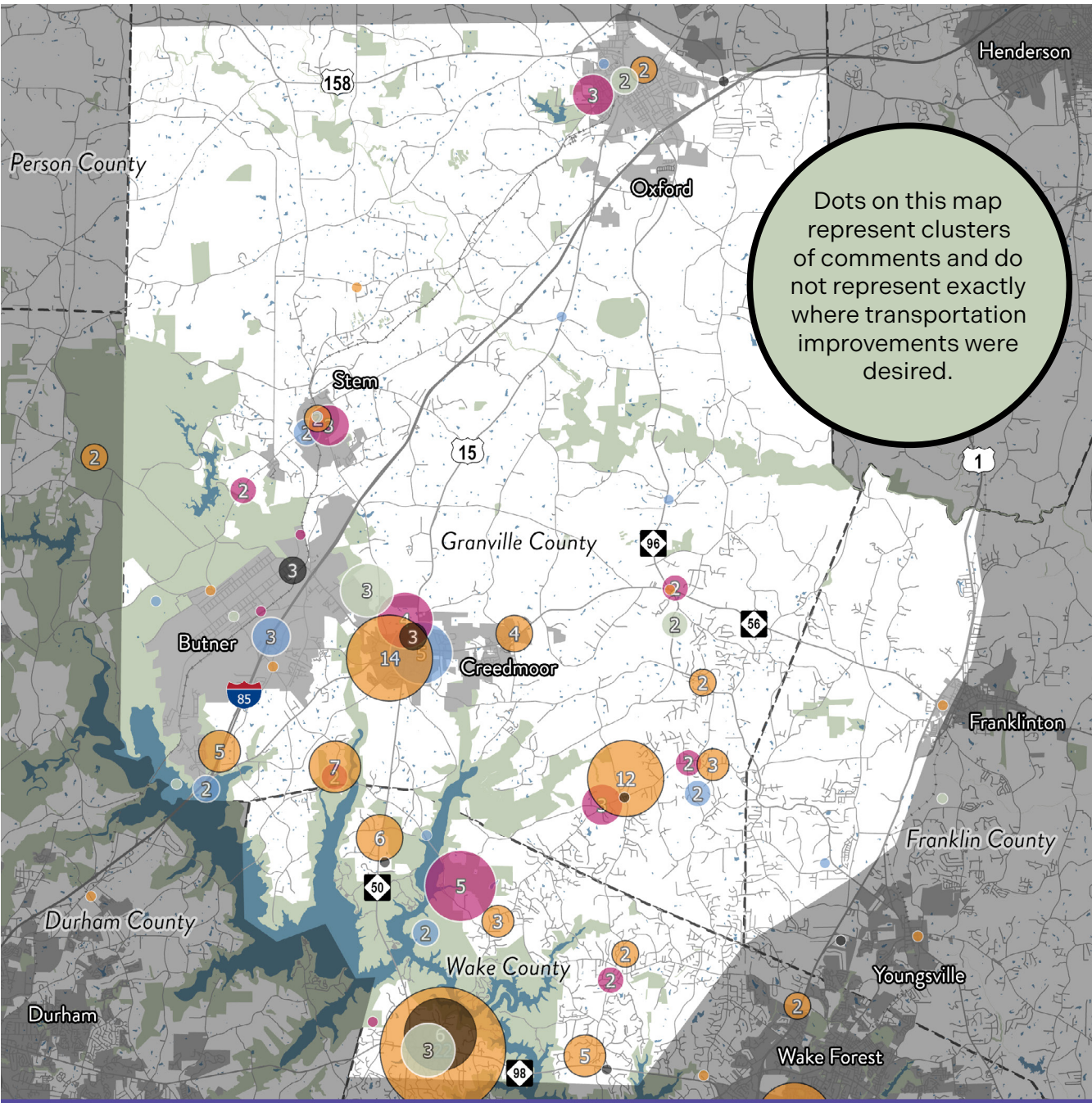
Legend



0 11 Miles

Source: ESRI, NCDOT, NCDNR, USFW, CAMPO

Figure 2.10 Transportation Priorities Survey Summary



Transportation Survey Summary

Response Types

- Transit Service
- Intersection or Road Improvements
- Greenways and Trails
- Bicycle and Pedestrian Improvements
- Other Transportation Improvements

Number of Responses

- Fewer Responses
- More Responses

- 0 3 Miles
- Roads
- Railroads
- Waterbodies
- Protected Lands
- Municipalities
- County Boundaries

Phase 2 Engagement

Outreach Tactics

Phase two of engagement for the North Falls Lake Area Study also included a mix of physical and digital tactics designed to promote awareness of the study and opportunities for public engagement.

Advertisements for the community open house and online engagement opportunities were posted in surrounding grocery stores, food trucks, and other areas with high levels of community traffic. Additionally, five social media posts were created to promote the open house and updated information on the study website. Free posts and a short video were posted on Facebook, X, Instagram, LinkedIn, and Nextdoor. Paid advertising was deployed and targeted to the study area using Nextdoor and LinkedIn. The local newspaper, The Ledger, promoted the open house with an article, and was also used for two print ads and digital ads on their homepage and in the online local news section.

In-Person Activities

On May 19, 2026 a project open house was held at the Creedmoor Community Center. Approximately fifty people attended.

Participants gave feedback on the material shown using sticky notes or notepads. Materials included draft recommendations for sewer and water utilities, land use types and policies, and modes of transportation (walking, biking, transit, and autos). Materials also recapped what has been done over the life of the project and what was heard in the first round of engagement. The project team recorded these responses and transcribed them to an online format to evaluate and identify similar concerns. Approximately fifty comments were given.

Common themes from the open house feedback included:

- NC 56 (Nine total comments)
 - » Crosswalk/Sidewalk/Bike Lane Improvements (Three comments)
 - » Bypass/Widening of NC 56 (Four comments)
 - » Intersection Safety Improvements (Two comments)
- Bruce Garner and Graham Sherron Intersection Safety Improvements (Three comments)
- Gate 2 Road Intersection Safety Improvements (Three comments)
- Transit/Microtransit Improvements (Three comments)

Virtual Activities

Virtual engagement included updating the project website to show project recommendations and ask participants guided questions about the material shown. There were more than 550 visits to the study's recommendations web pages.

The online survey accompanying the recommendations asked participants to provide their opinions on land use and transportation recommendations. Forty-two participants were recorded with a total of thirty-seven open response comments.

Land Use Recommendations

The online survey asked residents to provide their opinion on various land use related recommendations. Response options included the following stances: Highly Negative, Somewhat Concerned, Neutral/No Opinion, Somewhat Positive, and Highly Positive. Overall, 56% of respondents expressed positive opinions on all land use recommendations, with 35% expressing negative opinions.

Transportation Recommendations

The second guided question asked respondents to rank roadway prioritization criteria from least to most important. Prioritization criteria results showed that Managing Congestion and System Reliability was most important followed by Connecting People and Places; Stimulating Economic Vitality and Opportunity; Promoting Safety, Health, and Wellbeing; Ensuring Equity and Participation; and Promoting and Expanding Multimodal and Affordable Transportation.

Free Response

Open house participants were provided with numerous opportunities to leave written comments on any material presented or any other topic related to the study. The following themes were recorded:

- Enhancing and Increasing Bike/Pedestrian Infrastructure (Seven comments)
- Suburban/Urban Sprawl (Six comments)
- Negative View on Development (Six comments)
- Positive View on Development (Three comments)
- Less or Reduced Bike/Pedestrian Infrastructure on Major Roadways (Three comments)

Focus Group Engagement

Core Technical Team

The Core Technical Team (CTT) consisted of twenty members representing the Town of Butner, City of Creedmoor, City of Oxford, Town of Stem, Franklin County, Granville County, Wake County, Kerr-Tar RPO, Triangle West TPO, NCDOT Division 5, CAMPO, and the consultants Bolton & Menk and RS&H.

The purpose of the CTT was to provide technical guidance while representing their respective communities and organizations throughout the project. Team members also served as liaisons to their communities, organizations, and elected officials, helping to promote engagement and education. In this role, they connected the planning team with additional staff, data, community partners, and other resources as needed.

The Core Technical Team met seven times throughout the length of the project.

Stakeholder Committee

The Stakeholder Committee consisted of implementation partners and community organizations from NCDOT, GoTriangle, KARTS, South Granville Water & Sewer Authority (SGWASA), Tar River Land Conservancy, Triangle Land Conservancy, and others.

The purpose of the Stakeholder Committee was to provide specific input on various aspects of the project while representing their respective organizations.

The Stakeholder Committee met four times throughout the length of the project.

Elected Officials Committee

The Elected Officials Committee (EOC) consisted of elected officials from all jurisdictions in the study area.

The purpose of the EOC was to provide honest, open input about the direction of the project to ensure that all aspects would be in alignment with the goals of the respective communities.

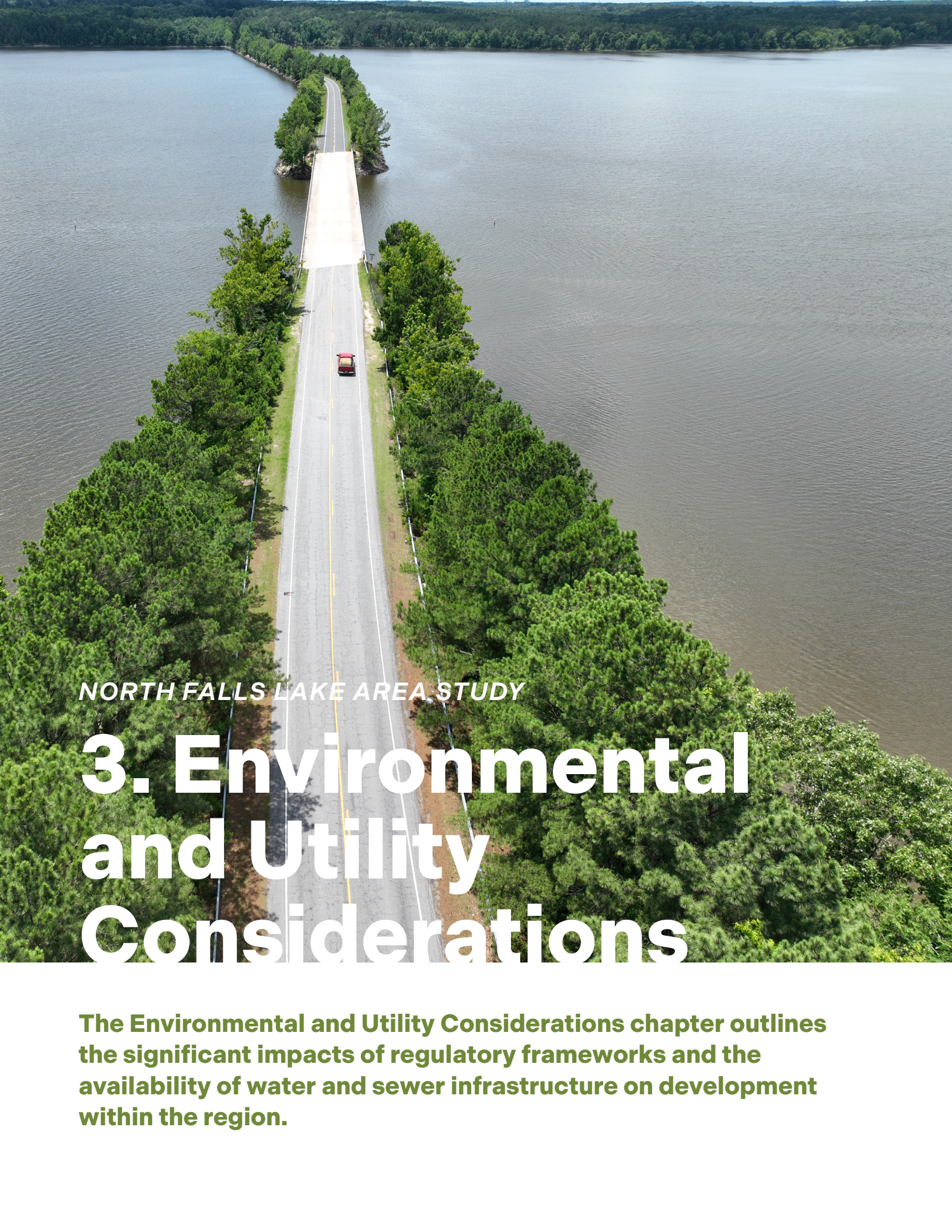
The Elected Officials Committee met three times throughout the length of the project.

The first meeting of the EOC focused on establishing a shared understanding of the planning process, regional challenges, and opportunities for future growth in the study area. Key themes included the desire to concentrate on higher-density development within municipal boundaries to leverage existing water and sewer infrastructure, while recognizing that county areas face constraints due to soil conditions and utility limitations. There was broad interest in

promoting mixed-use development, economic growth, and sustainable transportation options, including expanded transit and bicycle infrastructure. The group also mentioned the need for flexible zoning and interjurisdictional planning agreements, particularly among Butner, Creedmoor, and Stem.

The second meeting of the EOC focused on recapping all activities completed since the previous meeting in addition to reviewing results from the land use scenario modeling results and potential performance measures.

The third meeting of the EOC was a joint meeting with the Stakeholder Committee where the project was recapped and final steps were discussed.

An aerial photograph showing a long, straight road bridge crossing a large body of water. The bridge is flanked by dense green trees. A small red car is driving on the bridge. The water is calm and reflects the sky.

NORTH FALLS LAKE AREA STUDY

3. Environmental and Utility Considerations

The Environmental and Utility Considerations chapter outlines the significant impacts of regulatory frameworks and the availability of water and sewer infrastructure on development within the region.

Introduction

The North Falls Lake Area Study area is defined as the region north of Falls Lake from US Highway 1 on the east, Granville County boundary to the west, and Oxford to the north. The natural characteristics of this region greatly impact potential development and the rules that govern it. The area is divided between the Neuse River basin, containing Falls Lake, and the Tar River basin, each governed by distinct nutrient management strategies aimed at controlling nitrogen and phosphorus pollution. These regulations impose stringent limits on nutrient loading from new developments, necessitating adherence to specific standards for stormwater management and wastewater discharge. Additionally, Triassic basin soils in the region limit the viability of smaller, regional water and sewer systems in part of the study area. The Study aims to summarize environmental constraints and to provide foundational understanding that will inform the land use vision for the region. This land use will ultimately guide planned transportation improvements to better serve the community.

The availability of public water and sewer infrastructure also plays a crucial role in shaping development patterns. The document highlights that the presence or absence of water supply and wastewater treatment capacity significantly impacts development feasibility, especially in fast-growing or underserved areas. Major water and sewer providers in the study area, such as Franklin County Public Utilities, Kerr Lake Regional Water System, and South Granville Water and Sewer Authority, have varying capacities and policies that influence where and how development can occur. A structured and thoroughly planned approach helps manage the pace and location of new development, ensuring that infrastructure can support the anticipated growth.

Overall, the combination of environmental regulations and the availability of water and sewer infrastructure creates a complex landscape for development in the CAMPO North Falls Lake Area. Agencies and developers must navigate regulatory requirements while also considering the capacity and policies of local utility providers. This dual consideration will ultimately shape the growth and development patterns in the region.

Regulatory Context

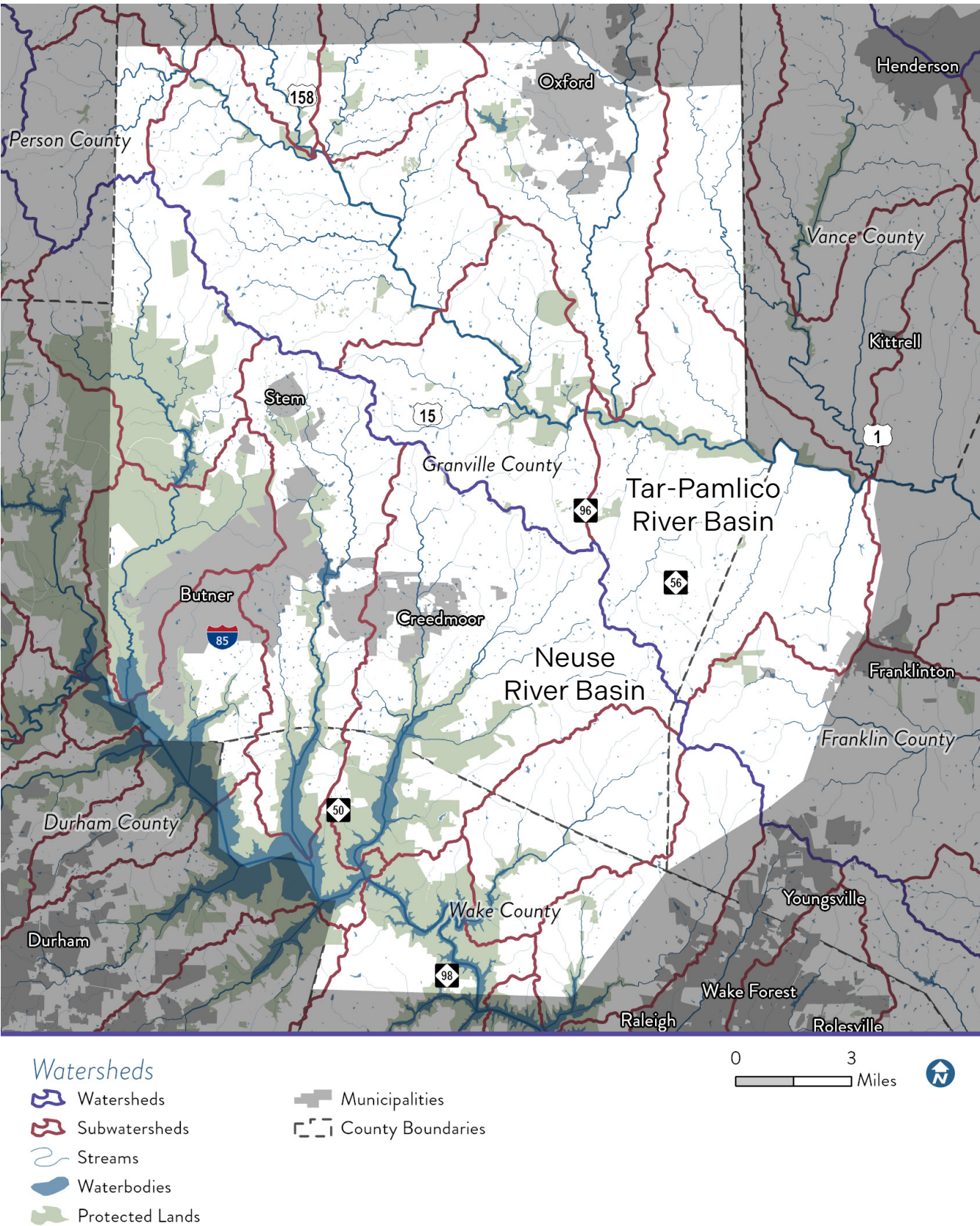
The CAMPO North Falls Lake Area is divided roughly in half between two major watersheds – the Neuse River basin (containing Falls Lake) in the South and the Tar River basin in the North (illustrated in Figure 3.1). Water quality and stormwater regulations in the area vary between these watersheds due to differences in hydrology, development history, and use of the basins. Both the Neuse and Tar Rivers have experienced major issues in their estuaries with algae blooms, fish kills, and eutrophication (process where a body of water becomes overly enriched with nutrients).

The Falls Lake Nutrient Strategy and Tar-Pamlico River Nutrient Strategy (hereto referred to as the Tar River Nutrient Strategy) both seek to prevent these issues by regulating sources of nitrogen and phosphorus, a class of pollutants known as nutrients. Almost all local environmental regulations, including land use and stormwater, seek to implement these state-level nutrient management strategies.

This report provides a summary of the nutrient management strategies in each watershed, highlighting the most relevant factors for transportation, land use, and water resources planning. Regulations vary across the study area, with different standards for new and existing development across Falls Lake and Tar River subwatersheds.

Falls Lake is a major drinking water source for Raleigh and surrounding communities; thus it has stricter rules protecting water quality and managing nutrient discharge. The Falls Lake Strategy, implemented in 2011, is a two-stage plan that targets pollution from wastewater, stormwater, and agriculture. By contrast, the Tar-Pamlico strategy, which protects the river and estuary leading to the Pamlico Sound, was one of the first in the country to use a nutrient trading program, allowing dischargers to buy credits from others who reduce pollution more efficiently. While both strategies aim to improve water quality, Falls Lake emphasizes direct regulation and local government action, whereas the Tar-Pamlico approach leans more on collaboration and market-based solutions.

Figure 3.1. Watersheds



Regulatory Overview

Riparian Buffers

Both the Falls Lake and Tar-Pamlico River Nutrient Strategies include a foundational land use requirement: a 50-foot riparian buffer limiting development and disturbance along perennial and mapped or unmapped intermittent streams, rivers, and other surface waters. The buffer can be divided into two zones on each side of a waterbody. Zone 1, consisting of the nearest 30 feet to the stream, must be left functionally undisturbed (no grading or devegetation). Zone 2 extends an additional 20 feet beyond Zone 1. In this area, grading is allowed but vegetation must be re-established and managed. Maintaining vegetation and slope stability around streams is critical for filtering runoff, reducing erosion, and protecting aquatic ecosystems.

Floodplains

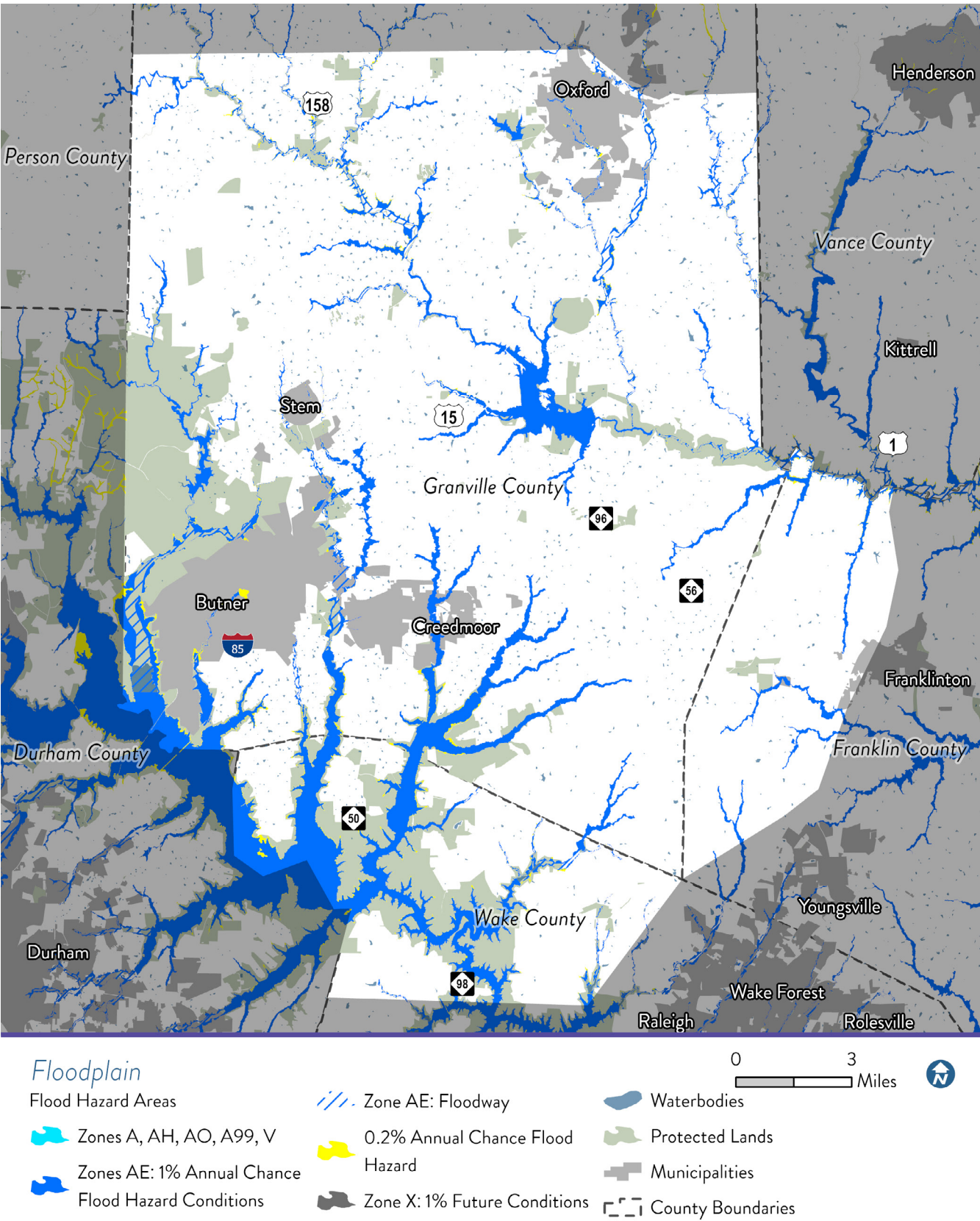
Floodplains developed in the region are mapped through hydrological studies conducted by the Federal Emergency Management Agency (FEMA). Areas that are determined to have a 1% chance of flooding in any given year, commonly referred to as 100-year floodplains, are regions that can be subjected to a significant impact on potential development. To mitigate risks in these regions, regulations including restrictions on building elevations, the requirement for flood-proofing measures, and limitations on the types of structures are common. These regulations aim to protect property and human life from flood damage, but they can also increase the cost and complexity of development projects. Additionally, developers may need to obtain revisions to flood hazard mapping like Conditional Letter of Map Revision (CLOMR) or Letter of Map Revision (LOMR) and adhere to specific design standards to ensure compliance with floodplain management policies. The study area as depicted in Figure 3.2 has significant streams with flood hazards that impact future development.

Flood Hazard Area

Figure 3.2 also shows the floodplain area within the North Falls Lake Area. This area is divided into the following categories:

- Zone A: Subject to inundation by the 1% annual chance flood event. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AH: Subject to inundation by 1% annual chance shallow flooding, typically areas of ponding, where average depths are between one and three feet. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AO: Subject to inundation by 1% annual chance shallow flooding, usually sheet flow on sloping terrain, where average depths are between one and three feet. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone A99: Subject to inundation by 1% annual chance flood event, but will ultimately be protected upon Federal flood protection systems. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone V: Areas along coasts are subject to inundation by 1% annual chance flood event with additional hazards associated with storm-induced waves. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AE: Subject to inundation by 1% annual chance flood event determined by detailed methodology. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone X: Areas of moderate flood hazard between limits of the 1% annual chance floodplain and the 0.2% annual chance floodplain.

Figure 3.2. Floodplains



Source: ESRI, NCDOT, NCDNR, USFW, CAMPO, FEMA

Soils

The southwestern portion of Granville County has significant areas of Triassic basin soils, as shown in Figure 3.3. Triassic basin soils, common in parts of North Carolina, are composed of dense clays and fine-grained sediments that significantly limit water infiltration. These soils often form a hard, compacted layer that restricts the downward movement of water, leading to poor percolation. As a result, rainwater tends to run off rather than recharge groundwater aquifers, making it difficult to rely on wells for water supply. Sedimentary rocks underlying the basin have minimal porous spaces, meaning that water transmission is limited through the region to balance groundwater levels. Additionally, the limited infiltration capacity poses challenges for private septic systems or regional sanitary sewer surface application treatment, which depend on soil absorption to treat and disperse effluent.

The North Carolina Department of Environmental Quality (NCDEQ) monitors and permits groundwater extraction. NCDEQ encourages property owners to consult geologic maps and conduct site-specific investigations prior to pursuing groundwater resources. Formal site evaluations should additionally be conducted prior to the installation of septic systems. This combination of low groundwater recharge and unsuitable conditions for conventional septic systems can constrain development and necessitate careful land use planning.

However, not all of the study area is located on Triassic basin soils. This means that groundwater recharge varies by location and as stated previously, property owners are encouraged to conduct site-specific investigations prior to pursuing groundwater resources.

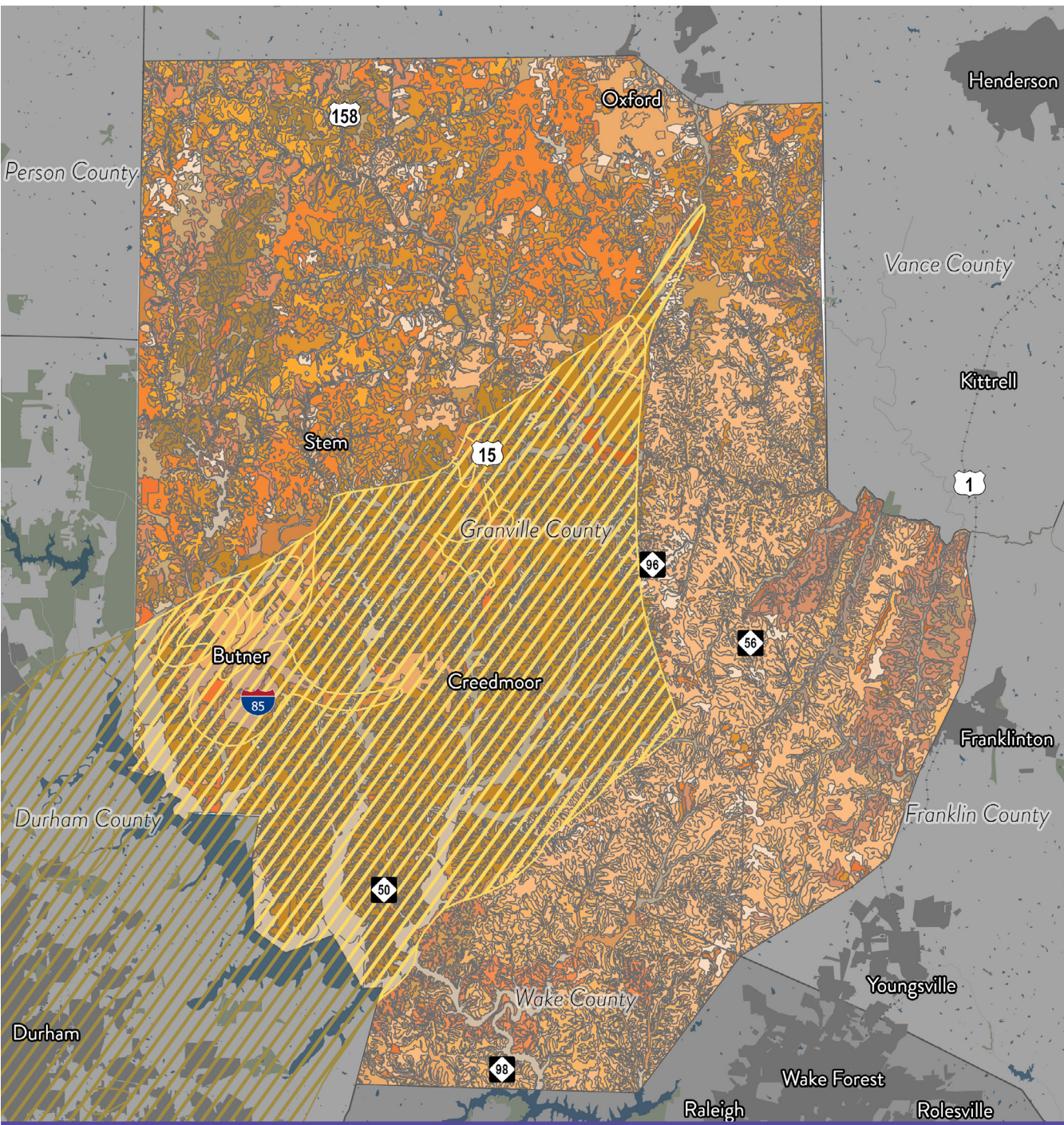
Wastewater Discharge

Wastewater dischargers in the Falls Lake Watershed are subject to a basin-wide total nutrient load which is allocated among individual dischargers. These plans are geographically specific, with discharge facilities in the Upper Falls Watershed required to submit detailed plans by 2027 outlining how Stage II mass load limits will be met. These requirements do not exist for discharges in the Lower Falls Watershed. Dischargers in the Tar Watershed have a similar, but a less restrictive basin-wide total load and fewer reporting requirements.

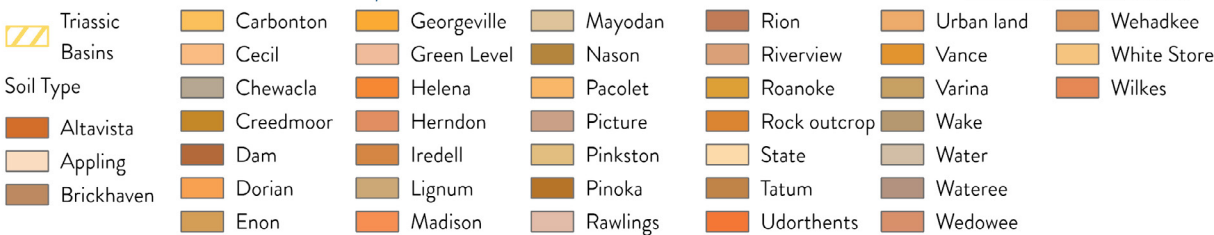
Stormwater

Stormwater design standards also differ significantly between the two strategies. For new development in the Falls Lake watershed, nutrient loading must not exceed 2.2 pounds of nitrogen and 0.33 pounds of phosphorus per acre per year. By contrast, the Tar-Pamlico strategy allows for higher nutrient loads—up to 4 pounds of nitrogen and 0.4 pounds of phosphorus per acre per year—making it less restrictive in terms of stormwater nutrient control. In both basins, projects must ensure no increase in peak flow from a 1-year, 24-hour storm event. Standards for existing development in Falls Lake are also under consideration, with assumptions based on land use and impervious surface coverage.

Figure 3.3. Soils



Triassic Basin and Soil Map



Source: ESRI, NCDOT, NCDNR, USFW, NRCS, NCDEQ, CAMPO, USGS

Nutrient Credit Trading

Both strategies incorporate the use of nutrient credits to provide flexibility in meeting nutrient reduction goals. The NC Division of Energy, Mineral, and Land Resources (DEMLR) defines the Stormwater Control Measures (SCMs) eligible for credit generation. Developers and dischargers can calculate their credit needs and reductions using the Stormwater Nitrogen and Phosphorus (SNAP) Tool, which standardizes nutrient accounting across the state.

Interbasin Transfer (IBT)

The transfer of surface water between river basins through an interbasin transfer (IBT) should be avoided within the study area whenever possible. In North Carolina, IBTs are regulated under G.S. §143-215.22I, which requires a certificate from the Environmental Management Commission for any new transfer of 2 million gallons per day (MGD) or more. These certificates are awarded after a thorough review process. Falls Lake, located in the upper Neuse River Basin, is a key water supply for municipalities in the Triangle region that have received IBT certificates to move water across basin boundaries. Similarly, in the Tar-Pamlico Basin, communities downstream of the study area including Greenville and Farmville rely on regulated transfers to meet their water needs. These transfers are carefully managed and monitored to ensure they do not compromise the ecological health or nutrient reduction goals of the source basins. As such, IBTs are closely tied to nutrient strategies, since moving water between basins can shift nutrient loads and affect compliance with water quality standards.

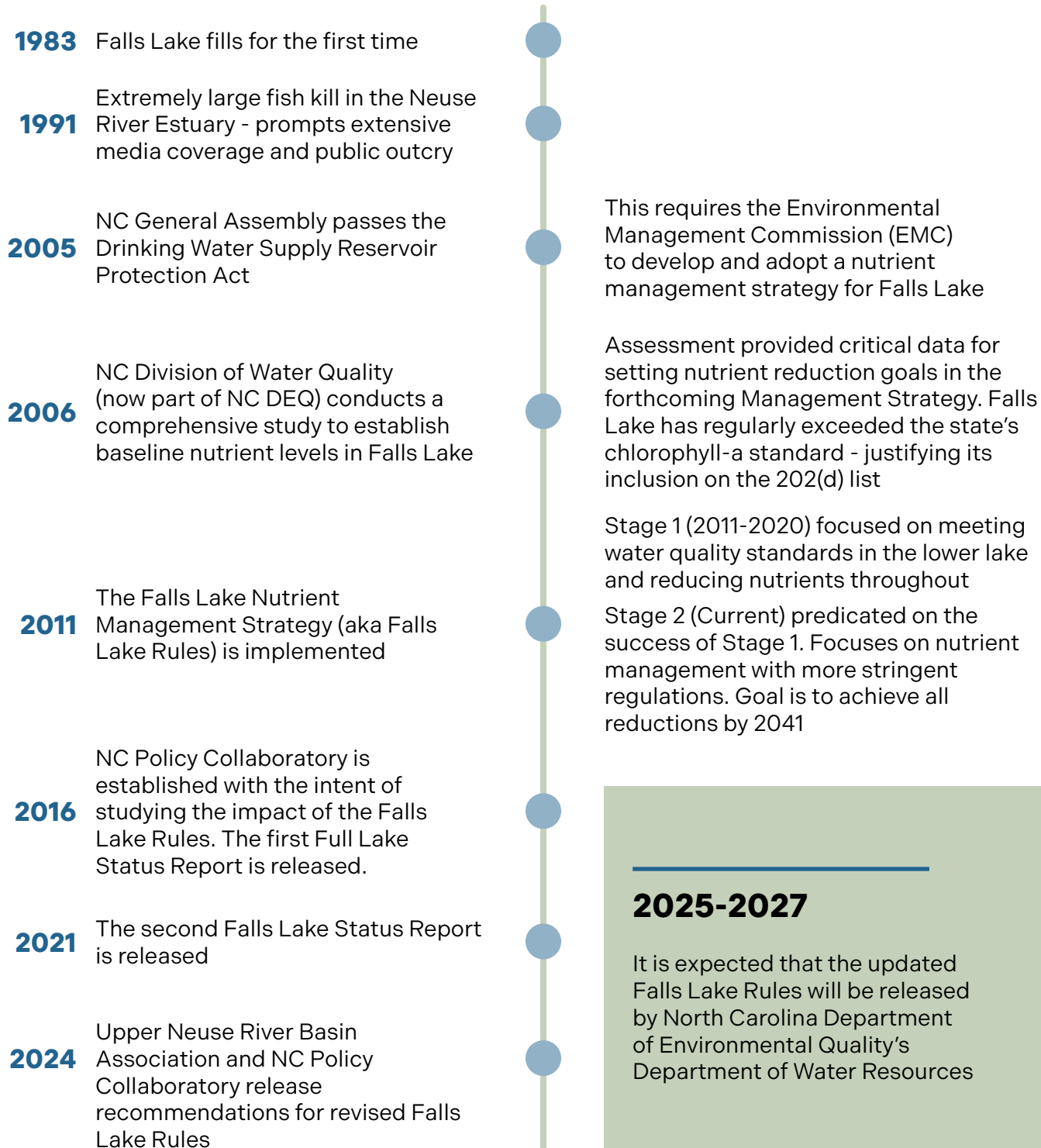
Expected Changes to Regulations

The Falls Lake Rules, which were adopted in 2011, have been undergoing a review and update process. Following a study to identify long-term solutions for Falls Lake by stakeholders in the Upper Neuse River Basin Authority and the NC Collaboratory, NC DEQ is expected to release updated rules by 2027, at the latest. In general, stakeholders are asking for more flexibility in methods to achieve nutrient goals and more frequent updates to the rules to reflect the dynamics of the basin.

The Tar-Pamlico Strategy has been less intensively evaluated in recent years, with no public mention of an update process. However, this may change as the area faces increased development pressures.

Falls Lake Nutrient Strategy

Overview Timeline



Public Water and Sewer Utilities

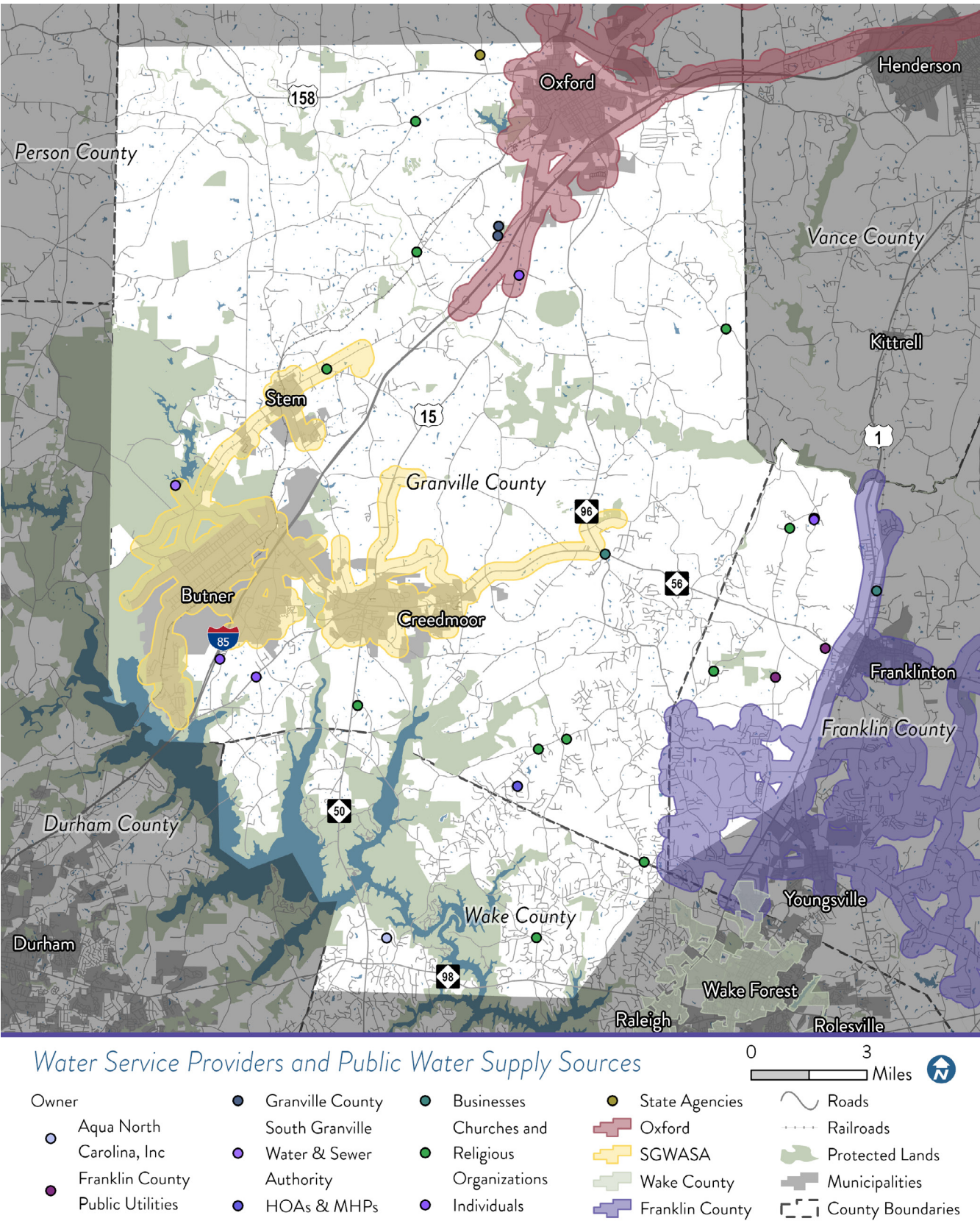
Existing Water and Sewer Infrastructure

As the North Falls Lake Area Study Area continues to plan for long-term growth, understanding the role of public water and sewer providers is essential for aligning land use and transportation strategies. Water and wastewater infrastructure not only supports existing development but also directly influences where and how future growth can occur. The availability or absence of water supply and wastewater treatment capacity significantly impacts development feasibility, particularly in fast-growing or underserved areas.

To provide the foundation for land use examination, the North Falls Lake Area Study team examined information primarily from the NCDEQ database, including the Local Water Supply Planning and Drinking Water Watch. This information has been provided by third parties and is considered reliable; however, it has not been independently verified, and no assurances are offered regarding its accuracy or completeness.

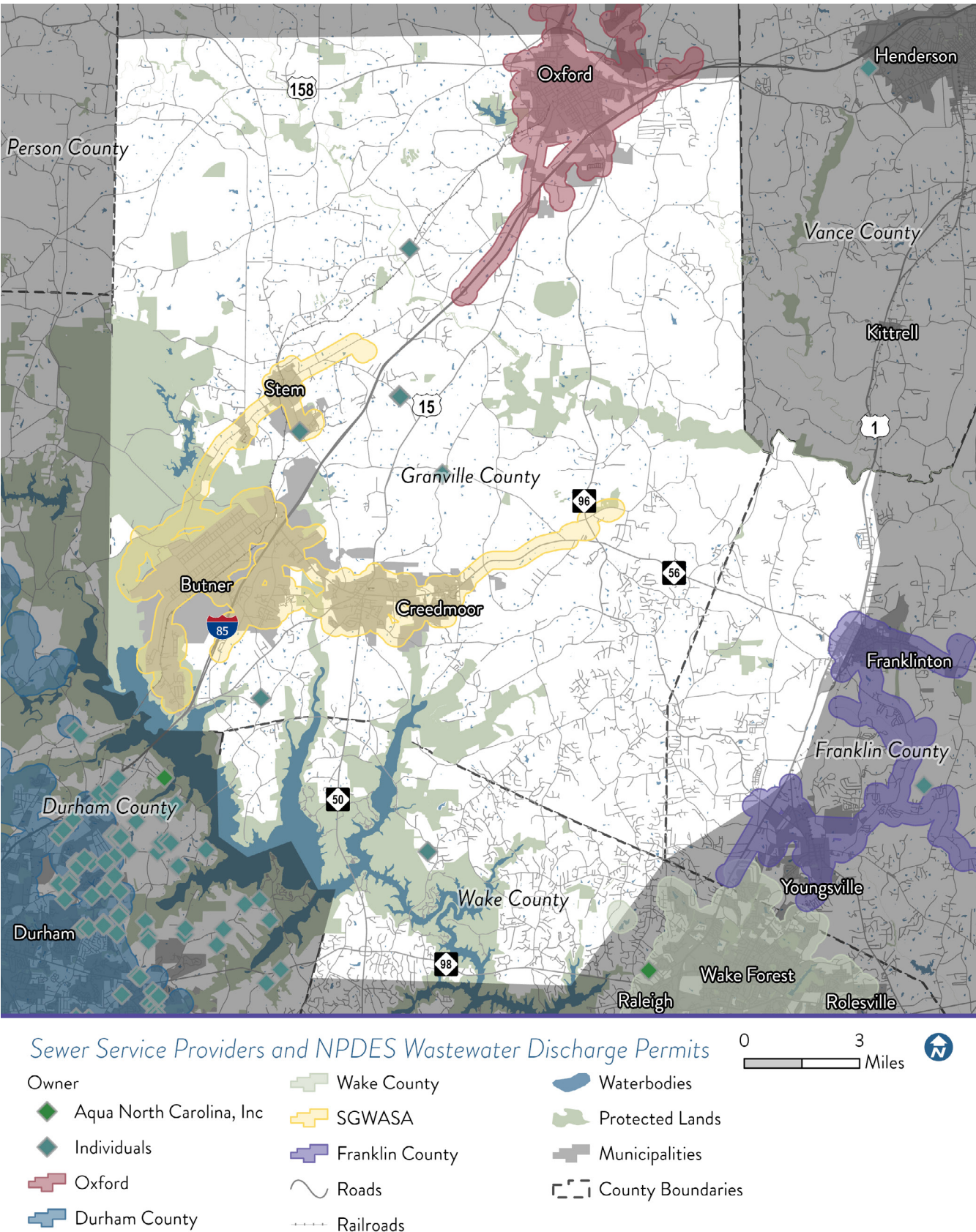
This section summarizes the public water and sewer utilities operating within the study area, with a focus on their service areas, permitted capacities, current usage, and policies that influence development. There is a total of 69 public water systems permitted with NCDEQ and 18 NPDES wastewater discharge permits. The section is organized into two parts. It first highlights the major regional water providers, including Franklin County Public Utilities, Kerr Lake Regional Water System, South Granville Water and Sewer Authority, and Aqua North Carolina. This is followed by an overview of the smaller and privately operated systems, which serve residential subdivisions, mobile home parks, churches, schools, and commercial properties. Figures 3.4 and 3.5 depict the water supply and wastewater providers in the region.

Figure 3.4. Public Water Supply Sources



Source: ESRI, NCDOT, NCDNR, USFW, CAMPO, Wake County, Granville County, Franklin County, SGWASA

Figure 3.5. NPDES Wastewater Discharge Permits



Major Water and Sewer Providers

Franklin County Public Utilities (FCPU)

Franklin County Public Utilities is a regional water and wastewater utility provider serving residents, businesses, and industries throughout Franklin County, North Carolina. The utility is responsible for the operation, maintenance, and expansion of the County's public water distribution and wastewater collection systems.

The Franklin County Water & Sewer system (PWSID NC0235030) receives potable water from four sources: the Town of Louisburg, the Franklinton Water Plant (owned and operated by Franklin County Public Utilities), the City of Raleigh, and the City of Henderson. Louisburg sources its raw water from the Tar River, while the Franklinton Water Plant draws from two local reservoirs known as Taylor Creek and Cedar Creek. Henderson supplies treated water from Kerr Lake. The City of Raleigh supplies treated water from Falls Lake.

Town of Franklinton

Franklinton Water System (PWSID NC0235010) (owned and operated by Franklin County Public Utilities) sources its drinking water from two surface water bodies: Taylor Creek and Cedar Creek, both located within Franklin County. These creeks supply raw water to the County's surface water treatment plant, located off NC Highway 56 west of US 1.

The water treatment plant uses conventional treatment and discharges both treated filter backwash wastewater and treated extracted wastewater. It is designed and permitted to produce up to 1 MGD of potable water and is permitted for a maximum monthly average discharge of 0.053 MGD of treated wastewater. Treated effluent from the facility is discharged into Taylor Creek, which is part of the Tar-Pamlico River Basin.

Treated water is then distributed to County residents via the Franklin County Water & Sewer system.

The Franklin County Public Utilities water system (NC0235010 & NC0235030) serves a population of approximately 27,560 through 10,600 customers. Franklin County Public Utilities supplies water to the customers in Franklin County, the Town of Franklinton, and the Town of Youngsville, and sells water to 2 bulk customers; Town of Bunn and lake Royale subdivision, each have their separate water system ID.

Town of Louisburg

The Town of Louisburg Water System (PWSID NC0235015) withdraws raw water from the Tar River in Franklin County. In 2024, the system averaged 1.018 MGD with a maximum daily withdrawal of 1.566 MGD. The water treatment plant is permitted to treat up to 2.0 MGD.

The system provides treated water to approximately 3,404 residents through 1,358 residential, 359 commercial, 7 industrial, and 10 institutional connections. It includes 36 miles of distribution lines and water storage capacity totals 0.85 MG. Louisburg also supplies an average of 0.488 MGD to Franklin County via a 16-inch interconnection under a 0.5 MGD agreement set to expire in 2025.

The wastewater system serves around 1,571 sewer connections and operates under two permits: NC0020231 for a conventional WWTP with a 1.5 MGD design capacity, and WQ0005981 for land application. In 2024, the system had an average annual discharge of 0.5865 MGD and a maximum daily discharge of 2.7 MGD at the WWTP, with up to 0.084 MGD land applied. Only 18 properties served by the water system currently rely on private septic systems.

Kerr Lake Regional Water System (KLRWS)

The Kerr Lake Regional Water System (PWSID NC0291010) is a public water system that serves portions of Vance, Granville, Warren, and Franklin Counties. The system provides treated water to three bulk customers – City of Henderson, City of Oxford, and Warren County, which then distribute water to the Towns of Kittrell, Norlina, Warrenton, Stovall, Middleburg, and Franklin County.

The system sources raw water from John H. Kerr Reservoir (Kerr Lake) via an intake on Anderson Creek and operates a conventional surface water treatment plant with a permitted capacity of 20 MGD. The system was awarded an Interbasin Transfer (IBT) certificate by the NC Environmental Management Commission in 2015, allowing a transfer of up to 14.2 MGD from the Roanoke River Basin, calculated as a monthly average.

In 2023, the system averaged a daily withdrawal of 6.85 MGD, with a maximum daily withdrawal of 8.96 MGD. The system includes 264 miles of distribution lines and has a finished water storage capacity of 1.75 MG. The water treatment plant is jointly owned by the City of Henderson, City of Oxford, and Warren County (collectively referred to as the Partners) and is managed by the City of Henderson. Water is then distributed to the Partners and their wholesale customers in the Roanoke River, Tar River, Neuse River, and Fishing Creek basins.

According to the City of Oxford's Water and Wastewater 30-Year Master Plan, the Kerr Lake Regional Water Treatment Plant capacity is allocated among the partners based on a 60-20-20 split. Under this allocation, the City of Oxford holds a 20% share of the plant's total capacity, which equates to 4 MGD. The specific allocations for Henderson and Warren

County have not been publicly disclosed. In 2023, the NC General Assembly awarded a \$10 million appropriation to the City of Oxford to support expansion of the Kerr Lake Water Treatment Plant. Originally built in 1975 and later expanded to 15 MGD, the plant is now being upgraded to 20 MGD to address regional growth and rural development. As a result, Oxford's daily allocation will increase from 2 MGD to 4 MGD.

KLRWS currently provides water to approximately 14,770 year-round residents through 8,122 residential and 1,351 commercial connections. No institutional or industrial connections were reported. In addition to retail service, KLRWS supplies treated water to four wholesale customers under long-term agreements. Franklin County receives an average of 1.80 MGD through a 24-inch main under a contract with a maximum allocation of 3.50 MGD, set to expire in 2036. The City of Oxford receives an average of 1.16 MGD through a 24-inch main under a contract with a maximum allocation of 2.00 MGD, expiring in 2047. Warren County receives an average of 1.21 MGD through a 20-inch main under a contract with a maximum allocation of 2.00 MGD, also expiring in 2047. Vance County, the smallest wholesale customer, receives an average of 0.22 MGD through a 12-inch main under a contract with a maximum allocation of 0.32 MGD, expiring in 2052.

The wastewater system includes 9,228 sewer connections and is permitted under NC0020559 for a 4.14 MGD design capacity. In 2023, the system had an average annual discharge of 1.96 MGD, with a peak discharge of 7.57 MGD to Nutbush Creek. About 1,960 properties served by the water system continue to use private septic systems.

City of Oxford

In addition to its participation in the Kerr Lake Regional Water System for drinking water, the City of Oxford independently operates a municipal wastewater treatment plant under NPDES Permit NC0025054. The facility has a permitted discharge capacity of 3.5 MGD to Fishing Creek, part of the Tar River Basin, and a design capacity of up to 8.75 MGD to handle peak flow conditions. In 2024, the average annual daily discharge was 1.17 MGD, with a recorded maximum daily discharge of 7.9 MGD, or approximately 90 percent of the design capacity. This indicates that while the system is currently managing its average flows well within capacity, it approaches its operational limits during peak flow conditions.

South Granville Water and Sewer Authority (SGWASA)

South Granville Water and Sewer Authority is a regional utility provider that delivers public water and wastewater services to the southern portion of Granville County, North Carolina, including the municipalities of Butner, Creedmoor, and Stem. Established in 2005 through the consolidation of local systems, SGWASA operates independently under the oversight of a governing board composed of member jurisdiction representatives.

The South Granville Water and Sewer Authority (PWSID NC0239107) withdraws raw water from Knapp of Reeds Creek, which flows into R.D. Holt Lake, also known as Lake Holt, located in Granville County. The lake, which covers approximately 385 acres, was impounded in 1965 to serve as a raw water supply for the region.

The raw water source has an estimated 20-year safe yield of 11 MGD. In 2024, average daily withdrawals ranged from 2.4 to 3.0 MGD, with a maximum daily withdrawal of 3.44 MGD. The SGWASA Water Treatment Plant has a permitted treatment capacity of 7.5 MGD and supplies treated water to a population of approximately 17,232 residents through 5,454 residential, 385 commercial, 54 industrial, and 47 institutional connections. The distribution system includes approximately 145 miles of water mains, and finished water storage totals 2.45 MG.

The wastewater system is permitted under NC0058416 with a treatment capacity of 7.5 MGD. In 2024, the system had an average annual discharge of 1.63 MGD. Wastewater is discharged to Knapp of Reeds Creek.

Aqua North Carolina, Inc.

Aqua North Carolina is a private utility company providing public water and wastewater services across 50 counties in North Carolina. It operates as a subsidiary of Essential Utilities, one of the largest publicly traded water, wastewater, and natural gas utility companies in the United States. Aqua's growth has been driven largely by the acquisition of small and medium-sized municipal and private systems, allowing it to serve areas not typically reached by larger municipal utilities.

In the study area, Aqua North Carolina operates 14 public water systems, serving a total of approximately 20,500 residents through over 8,500 service connections. All of these systems rely on groundwater sources, which reflects the utility's historical development in less densely populated or unincorporated areas where centralized surface water infrastructure is not readily available.

Although Aqua North Carolina operates numerous wastewater systems across the state, a review of the available NPDES Wastewater Discharge Permits within the study area indicates that none of the permits list Aqua North Carolina as the owner.

Private and Small Utility Systems

In addition to the major utility providers, the study area includes numerous small-scale and privately operated water and wastewater systems as shown in Figure 3.6. Of the 69 public water systems permitted by NCDEQ within the study area, 53 are small systems serving residential subdivisions, mobile home parks, churches, schools, and small businesses. These systems rely entirely on groundwater wells and are supported by either septic systems or package wastewater treatment plants.

The need for these systems often arises from the absence of nearby public utility infrastructure, particularly in rural or low-density areas where centralized water and sewer service is not economically feasible. As a result, these decentralized systems play a critical role in enabling development in locations that would otherwise be infeasible to serve. However, they also present long-term challenges related to maintenance, monitoring, and future integration with regional utility networks.

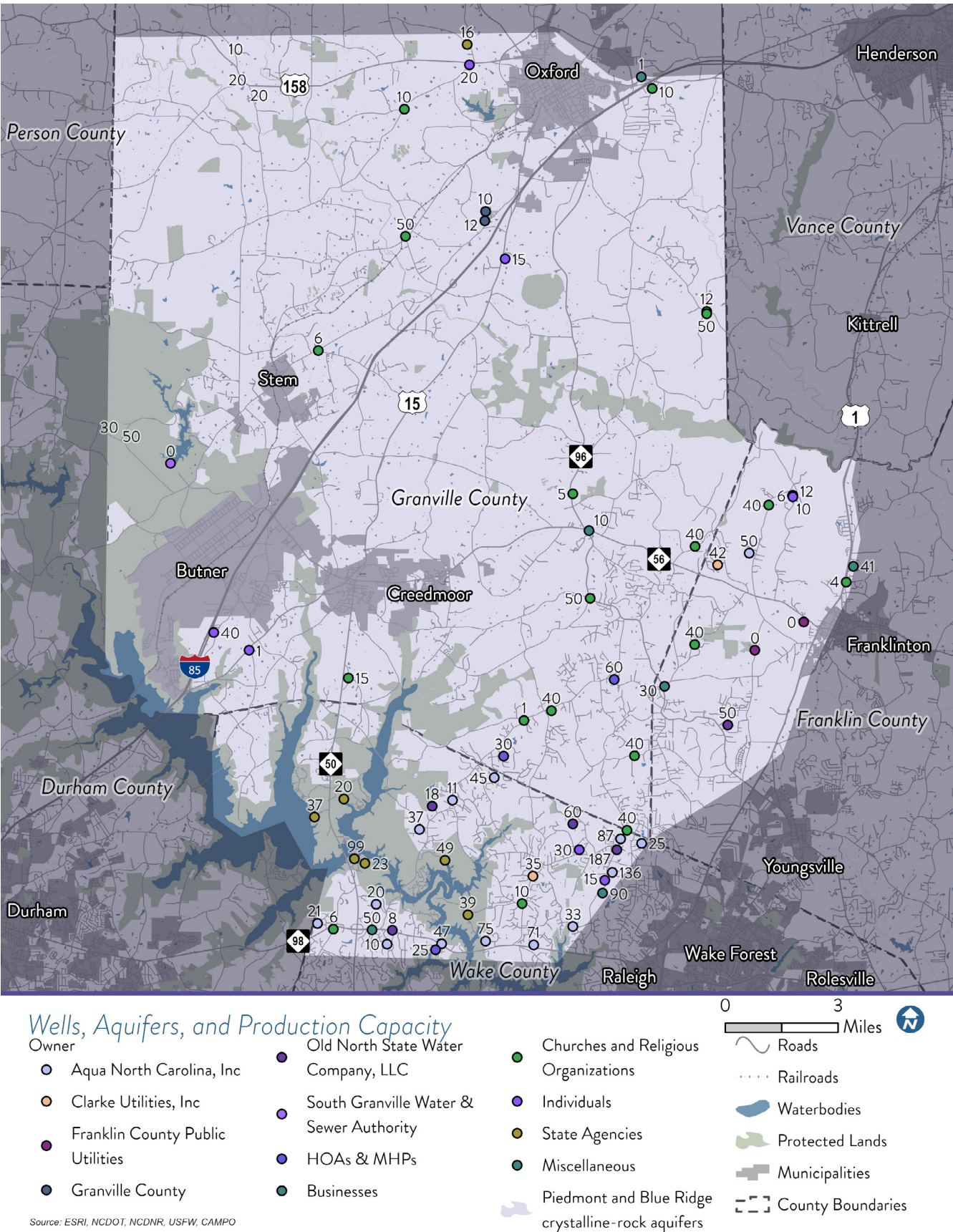
Of the 53 small systems identified in the study area:

- 19 serve churches or other faith-based institutions, typically through one or two groundwater wells (3 in Franklin, 14 in Granville, and 2 in Wake County)
- 8 serve residential subdivisions, often managed by a utility company or homeowners' association (8 in Wake County)
- 7 serve mobile home parks (4 in Franklin, 1 in Granville, and 2 in Wake County)
- 19 serve commercial, institutional, and recreational facilities, including schools, childcare centers, retail sites, parks, and community gathering spaces (8 in Granville and 11 in Wake County).

Among the 18 NPDES wastewater discharge permits in the study area, only a few are associated with municipal infrastructure, including the SGWASA WWTP and the Oxford WWTP, which are classified as Municipal Wastewater Discharge permits. Additionally, the SGWASA WTP and Franklinton WTP (owned and operated by Franklin County Public Utilities) have discharge permits under the Water Plants and Water Conditioning Discharge category related to the water treatment process waste. The remaining 14 permits fall under the NPDES as Certificates of Coverage (COCs) for single-family or small-scale domestic wastewater discharge with discharge flows ranging from 360 to 1,000 gallons per day (GPD).

Appendix B “Environmental and Utility Considerations” summarizes all public water systems within the study area and an overview of the wastewater systems.

Figure 3.6. Wells, Aquifers, and Production Capacity



Regional Water and Wastewater Treatment Capacity

Within the study area, three major entities operate public water treatment facilities: the Town of Franklinton (via Franklin County Public Utilities), the City of Oxford (through its allocation in the Kerr Lake Regional Water System), and the South Granville Water and Sewer Authority. Collectively, these facilities provide a total permitted water treatment capacity of approximately 12.5 MGD:

- Franklinton WTP (owned and operated by Franklin County Public Utilities): 1.0 MGD
- Kerr Lake Regional WTP (City of Oxford allocation): 4.0 MGD
- SGWASA WTP: 7.5 MGD

Reported average daily flows for systems with available data are:

- Franklin County: 0.487 MGD (2025)
- City of Oxford: 1.09 MGD (2024)
- SGWASA: 2.59 MGD (2024)

Combined, the known average daily flow is 3.68 MGD, which represents approximately 32% of the permitted treatment capacity for the City of Oxford and SGWASA.

On the wastewater side, two major municipal facilities provide centralized wastewater treatment within the study area: the Oxford WWTP and the South Granville Water and Sewer Authority WWTP. Together, these plants offer a combined permitted treatment capacity of approximately 11.0 MGD:

- Oxford WWTP: 3.5 MGD permitted capacity, 8.75 MGD design capacity
- SGWASA WWTP: 7.5 MGD permitted capacity

Reported average daily flows in 2024 are:

- Oxford WWTP: 1.17 MGD
- SGWASA WWTP: 1.63 MGD

The combined average daily flow of 2.8 MGD represents roughly 25% of the total permitted capacity. However, peak flow conditions place considerably more demand on the system:

- Oxford WWTP: 7.9 MGD (2024)
- SGWASA WWTP: 5.63 MGD (2023)

Combined, these systems have treated up to 13.53 MGD on maximum flow days, representing about 83% of their combined design capacity and exceeding the total permitted capacity. This indicates that while average flows are currently manageable, both facilities operate near critical thresholds during peak events.

It is generally recommended that wastewater treatment systems remain below 80% of their permitted capacity to maintain regulatory compliance and ensure operational resilience. Given that both the Oxford and SGWASA facilities are approaching or exceeding this limit on peak flow days, planning for capacity expansion will be essential to accommodate continued growth and development in the region.

Additionally, Franklin County owns and operates a biological and nutrient removal wastewater treatment plant located off Lane Store Road in Franklinton. The plant operates under permit NC0069311. The WWTP is a Grade IV Biological WPCS and the permit will expire on September 30, 2029. The WWTP is permitted to discharge 3.0 MGD of treated wastewater into the Cedar Creek which is a tributary to the Tar River in the Tar-Pamlico River Basin. The average daily discharge for 2025 is 1.393 MGD. The total nitrogen loading is 42,784 lb/year and the total phosphorus is 7,732 lb/year.

Policies Guiding Development

The availability and allocation of public water and sewer capacity directly influence the pace and location of new development. Each major utility provider within the study area has established policies and procedures to manage how water and wastewater capacity is extended to new residential, commercial, and industrial projects. The following subsections summarize the capacity allocation and extension policies for each of the key providers in the study area.

Franklin County Public Utilities (FCPU)

FCPU manages the allocation of water and sewer capacity for both residential and non-residential development projects through a formal ordinance and structured process. Governed by Chapter 34-2 of the Franklin County Code of Ordinances, the Water and Sewer Allocation Program ensures that utility capacity is reserved fairly and transparently to support future growth. Developers must submit a formal Water and Sewer Allocation Application to request capacity, following the steps outlined in the County's Water and Sewer Allocation Process guide. All submitted requests are tracked on a publicly available Water/Sewer Allocation Request List, which shows the order in which applications were received. Oversight of the allocation process is provided by the Franklin County Utilities Advisory Committee, which reviews requests during publicly noticed meetings.

As of March 26, 2025, Franklin County Public Utilities has received a total of 54 utility allocation requests for both water and sewer service, representing approximately 2,602 proposed residential and commercial units. These requests collectively account for an estimated 351,270 gallons per day (GPD) of water allocation and 335,205 GPD of sewer allocation. The majority of the applications are for residential developments, with a high concentration of projects located in Youngsville, Franklinton, and surrounding unincorporated areas of the

County. A few requests include only water allocation, potentially due to reliance on private septic systems or wastewater package treatment plants, particularly in areas where centralized sewer infrastructure is not yet available.

Allocation requests are processed on a first-come, first-served basis, but eligibility is contingent on satisfying the County's 30% project completion rule and other requirements outlined in the Water and Sewer Allocation Ordinance. Final approvals remain at the discretion of the Utility Advisory Committee and the Franklin County Board of Commissioners.

City of Oxford

The City of Oxford manages water and wastewater capacity allocations for new development through its formal water and sewer extension policy, as codified in § 21-6 of the City Code. This policy establishes the procedures for extending utility services to residential, commercial, and industrial developments. It includes a utility plan approval process, assessment and funding requirements, city participation guidelines, and defines the types of extension projects that may be considered.

South Granville Water & Sewer Authority

SGWASA adopted its current System Development Fee (SDF) Policy on February 13, 2024, to manage water and wastewater capacity allocations for new development. The policy ensures that new users contribute equitably to the cost of both existing and future utility infrastructure. System Development Fees are required for all new development projects within SGWASA's service area prior to the reservation of water and/or sewer capacity. These fees are applied uniformly across all development types and are established through the Board-approved Schedule of Rates, Fees, and Charges. Capacity allocation is coordinated with SGWASA's participating political subdivisions, which include Granville County, Butner, Stem, and Creedmoor, as part of the development review process. SGWASA evaluates whether sufficient capacity exists within the water and sewer systems before accepting any payment or granting service commitments.

Aqua North Carolina, Inc.

Aqua operates as a private utility and reserves the right to accept or deny connections based on its internal standards. Aqua North Carolina manages its wastewater systems through a detailed Sewer Use Rule, updated as of June 2023. Prospective developers are required to fund any necessary pretreatment facilities or infrastructure upgrades before connection approval. While Aqua has not publicly disclosed any major new infrastructure plans within the study area, ongoing residential growth near existing service areas suggests potential for incremental expansion.

Groundwater and Community Well Considerations in Southeast Granville County

In response to growing concerns about water availability in southeast Granville County, discussions between Granville County and the NCDEQ, through its Division of Water Resources, have highlighted key considerations regarding groundwater monitoring, well permitting authority, and regulatory limitations for private water supply wells. The main concern raised by members of the public is the impact of proposed community wells on local groundwater availability.

Based on available data from the state's groundwater monitoring network, specifically from two sites in Granville County, there is no indication of significant drawdown caused by existing community wells. From a geologic standpoint, southeastern Granville County is underlain by metamorphic and Triassic basin sedimentary rocks, which are typically associated with lower-yield wells. However, impacts from wells in hard rock formations tend to be localized and site-specific. U.S. Geological Survey (USGS) findings indicate that well yields in the region vary widely, ranging from 0.1 to 100 gallons per minute, depending on site conditions.

While NCDEQ oversees public water supply systems, the permitting and regulation of private wells are managed by local health departments under the NC Department of Health and Human Services, and regulatory authority over smaller wells remains limited. This limitation can make it challenging to evaluate or control the cumulative impacts of numerous small wells on the local groundwater supply.

Additionally, the feasibility of developing surface water infrastructure has been discussed as a long-term solution to reduce reliance on limited groundwater sources, despite the higher capital costs associated with such projects. Beyond cost, other challenges are also present such as environmental impacts and ownership.



NORTH FALLS LAKE AREA STUDY

4. Land Use

This chapter details the land use analysis and scenario planning components of the North Falls Lake Area Study project. Growth trends, scenario development and performance, engagement, Preferred Scenario assumptions and land use recommendations are included.

Existing Conditions and Trends

Existing Land Use

The majority of the study area is made up of farms and forests (51%). Rural areas with a mix of low density residential uses and agriculture make up 24% of the study area. Protected open space is a significant land use. Falls Lake State Park, state game lands, local parks, and other managed areas account for nearly 10% of the study area or approximately 30,000 acres.

Residential development covers 9.4% of the land area and commercial and industrial account for 2.1% of the land area. More intensely developed areas are clustered around the towns of Butner, Creedmoor, Stem, Oxford, and Franklinton. There has also been significant subdivision development in county jurisdictions, particularly in southeast Granville County and southwest Franklin County. Lack of utility capacity in southern Granville County combined with poor soils in the Triassic Basin which covers many areas surrounding Butner and Creedmoor “leapfrog” residential growth on the better soils in the southeastern part of the county. This area of largely rural roads and rolling topography has seen a dramatic increase in home development. See the Existing Land Use map in **Appendix C “Land Use”**.

Natural Resources

Soils

The southwestern portion of Granville County is comprised of Triassic Basin soils, which significantly limit water infiltration. This constrains where and how many wells can be constructed and where septic systems can be placed and will restrict density of development that is not connected to utilities.

Water Supplies

The North Falls Lake Area is divided roughly in half between the Neuse River basin and the Tar River Basin. There are several Water Supply Watersheds located in the study area that provide drinking water to public water systems locally and regionally. Most of the southern part of Granville County is located in the Falls Lake Water Supply



Watershed. The Falls Lake watershed provides drinking water to over 500,000 people.

In addition to public water supplies, many homes and businesses outside of existing utility service areas rely on wells for water sources. Recently there has been concerns over groundwater and surface water availability for existing homes and agriculture due to widespread residential growth.

Habitats and Land Conservation

High value habitats are located throughout the study area. This includes North Falls Lake, the Tar River, and areas north of the River. There are also numerous Natural Heritage Areas that are managed through partnerships with private and public partners. These include the State of North Carolina, the City of Raleigh, and the Tar River Land Conservancy.

Development Trends

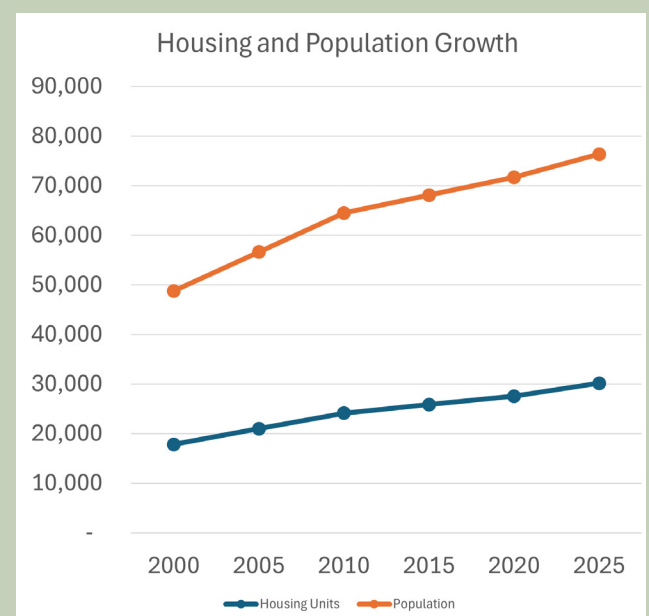
The study area's proximity to Raleigh, Durham and RTP has led to steady housing and population growth. Overall the North Falls Lake Study Area, including parts of Granville, Franklin and Wake County has grown by 12,335 housing units and 27,564 people between 2000 and 2025 (Source: Esri). This represents a 69% increase in housing units and a 57% increase in population since the year 2000.

Demographic projections for the study area indicate that there will be demand for over 13,000 housing units and over 6,000 jobs during the next thirty years (as shown in Figure 4.1). Local policies and decisions that manage growth in the region will influence how these homes and jobs are accommodated.

The planning process included coordination with local governments to update CAMPO's inventory of approved and committed developments. A number of large residential developments have been approved in the study area in recent years. These were documented and are shown on the Pending Development Map (**See Appendix C "Land Use"**). Only a portion of these developments meet the criteria for being included in the land use model as "committed" developments. These developments must have buildings under construction. The study inventoried 1,581 single family dwelling units and 398 multi-family dwelling units in committed developments in the study area.

Figure 4.1 Housing and Population Growth

The study area is expected to grow by over 13,000 housing units and over 6,000 jobs in the next thirty years.



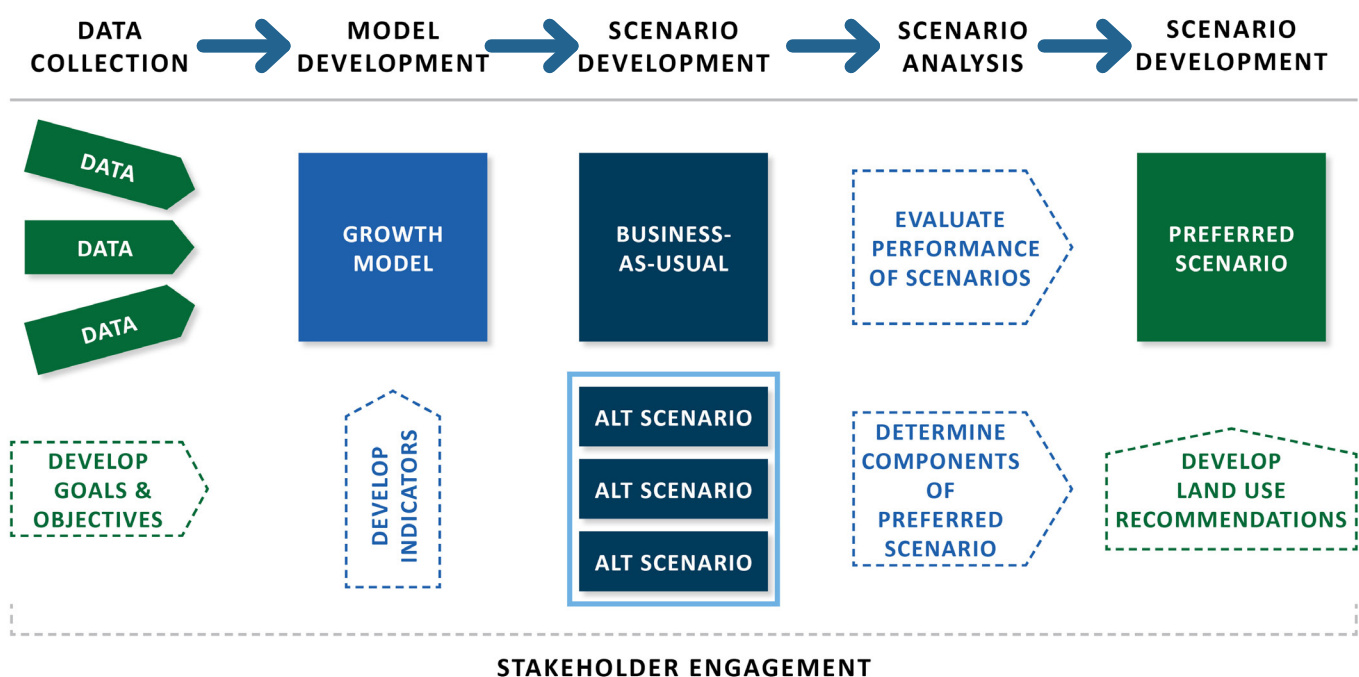
Scenario Planning

Process

The goal of the North Falls Lake Area Study was to develop a land use and transportation vision for the study area. A scenario planning process, as illustrated in Figure 4.2, was used to test environmental, economic, and transportation impacts of alternative land use scenarios. The Business As Usual (BAU) Scenario reflects existing plans or zoning. Other alternative scenarios were developed and modeled based on initial feedback from elected officials, staff, stakeholders and members of the public. Indicators were created using Geographic Information Systems (GIS) and specifically the regional CommunityViz land use model, customized for this study and the Triangle Regional Transportation Model to test transportation impacts. The alternative scenarios illustrate different sets of policies and investment and have positive and negative impacts that are shown on the report card later in this chapter. A preferred scenario was created based on additional input from stakeholders in order to maximize the performance of key indicators. The preferred scenario illustrates an intended development pattern in the study and serves as the basis for recommended changes in policies or incentives. It was also utilized in the process to analyze transportation impacts of future growth. Transportation recommendations in this report are based on an attempt to address impacts of and support the growth pattern depicted in the preferred scenario.

The alternative scenarios illustrate different sets of policies and investment and have positive and negative impacts.

Figure 4.2 Scenario Planning Process



Alternative Scenarios

The following scenarios were developed and analyzed as part of the Study:

- **Business as Usual (BAU):** Plans and trends scenario that reflects current land use plans or zoning. There is some concentration of residential and commercial uses near Towns. Current policies have led to new dispersed subdivisions in South Granville County and Franklin County. This development pattern will increase transportation needs related to roadway modernization and intersection improvements. Shown in Figure 4.3.
- **Economic Growth (EG):** Emphasis on commercial, mixed-use and industrial growth along major corridors. New employment centers, including industrial, office, and distribution uses along I-85 and near interchange at Hester Road. New commercial and mixed-use centers to serve county areas. East Coast Greenway completed with trail-oriented development. Shown in Figure 4.4.
- **Strong Towns (ST):** Emphasis on reinforcing and creating walkable downtowns and neighborhoods. Two to three story buildings with a mix of uses. Residential infill including small homes and missing middle housing (duplexes, triplexes, and quadplexes). Targeted transportation improvements (i.e. Creedmoor Southern Connector and new collector streets) would be needed to support this scenario. Shown in Figure 4.5.
- **Watershed Protection (WP):** Open space, agriculture, and natural resources protection in the Falls Lake Watershed, Triassic Basin east of Creedmoor and along the Tar River Corridor. Very low-density residential development only near Falls Lake in county jurisdiction. Conservation subdivisions are emphasized in other areas with sensitive natural resources (i.e. Tar River Corridor). Growth in towns and along highway corridors outside of sensitive watersheds. Shown in Figure 4.6.

More information on alternative scenarios evaluated as part of the North Falls Lake Area Study is available in the Appendix C "Land Use".

BAU 	Plans and trends scenario that reflects current land use plans or zoning.
EG 	Emphasis on economic growth and new job and commercial/mixed-use centers.
ST 	Compact development around towns and in areas with water and sewer service.
WP 	Strong watershed and environmental focus near Falls Lake and the Tar River.

Figure 4.3 Alternative Business as Usual Scenario

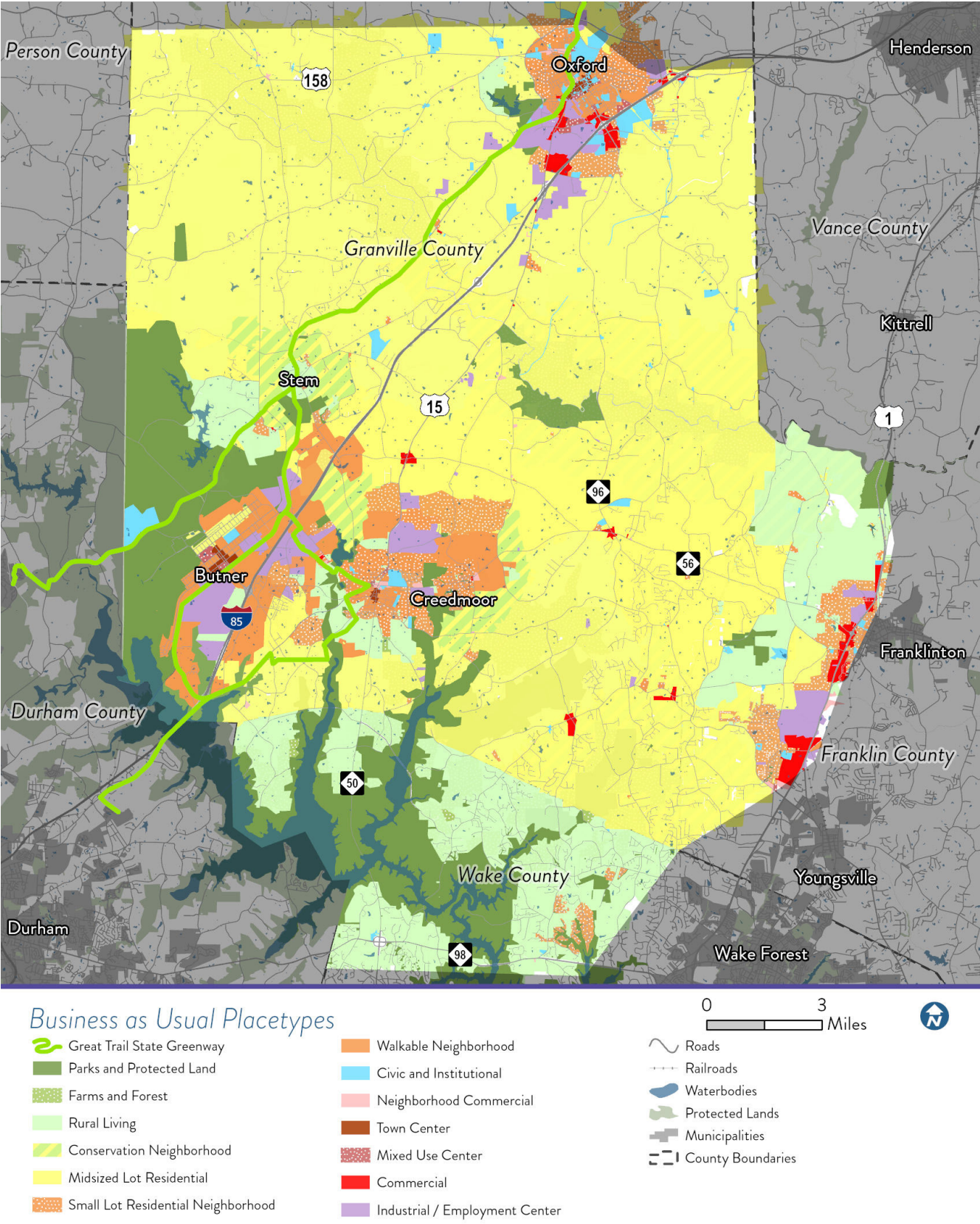
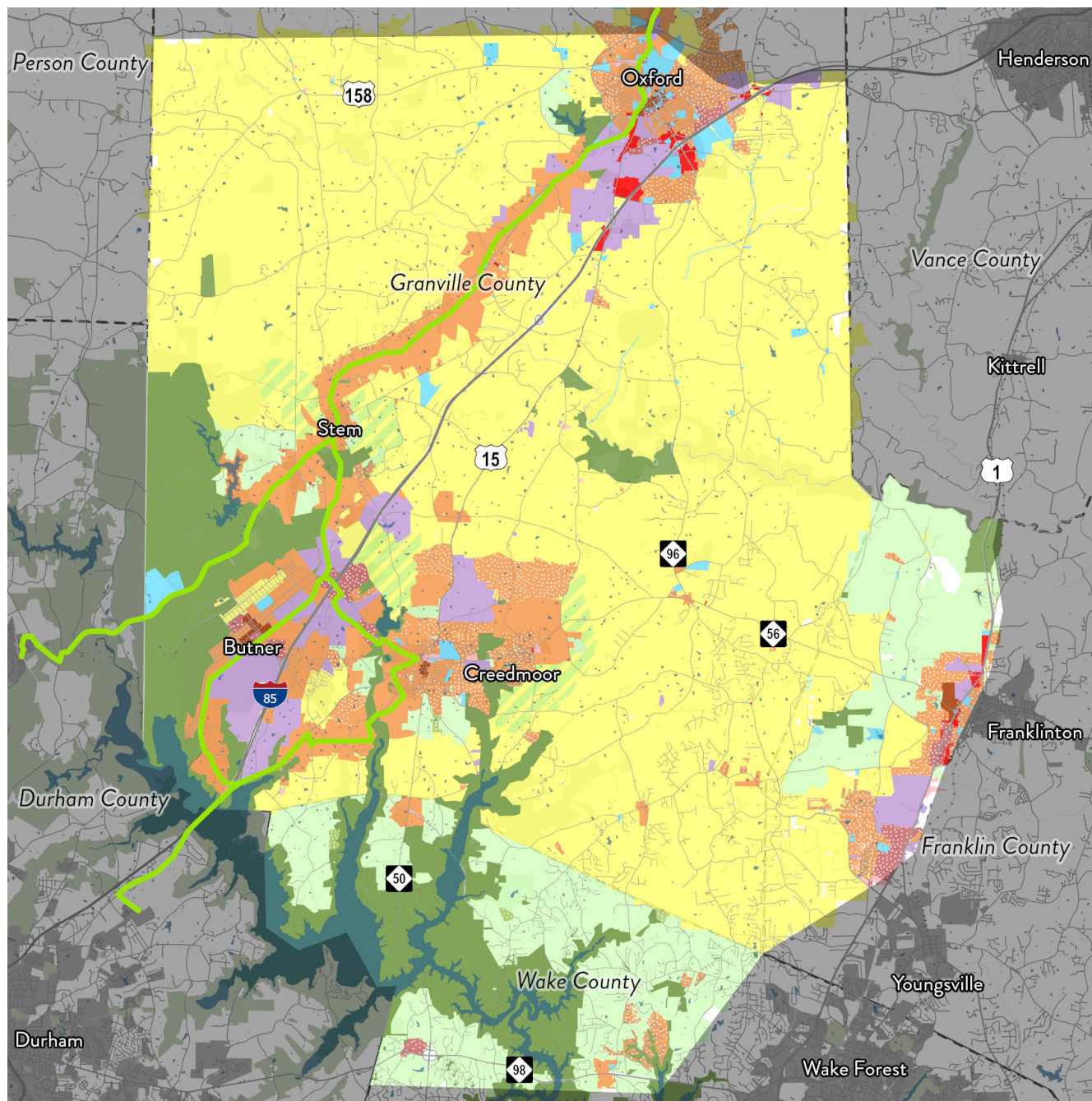


Figure 4.4 Alternative Economic Growth Scenario**Economic Growth Placetypes**

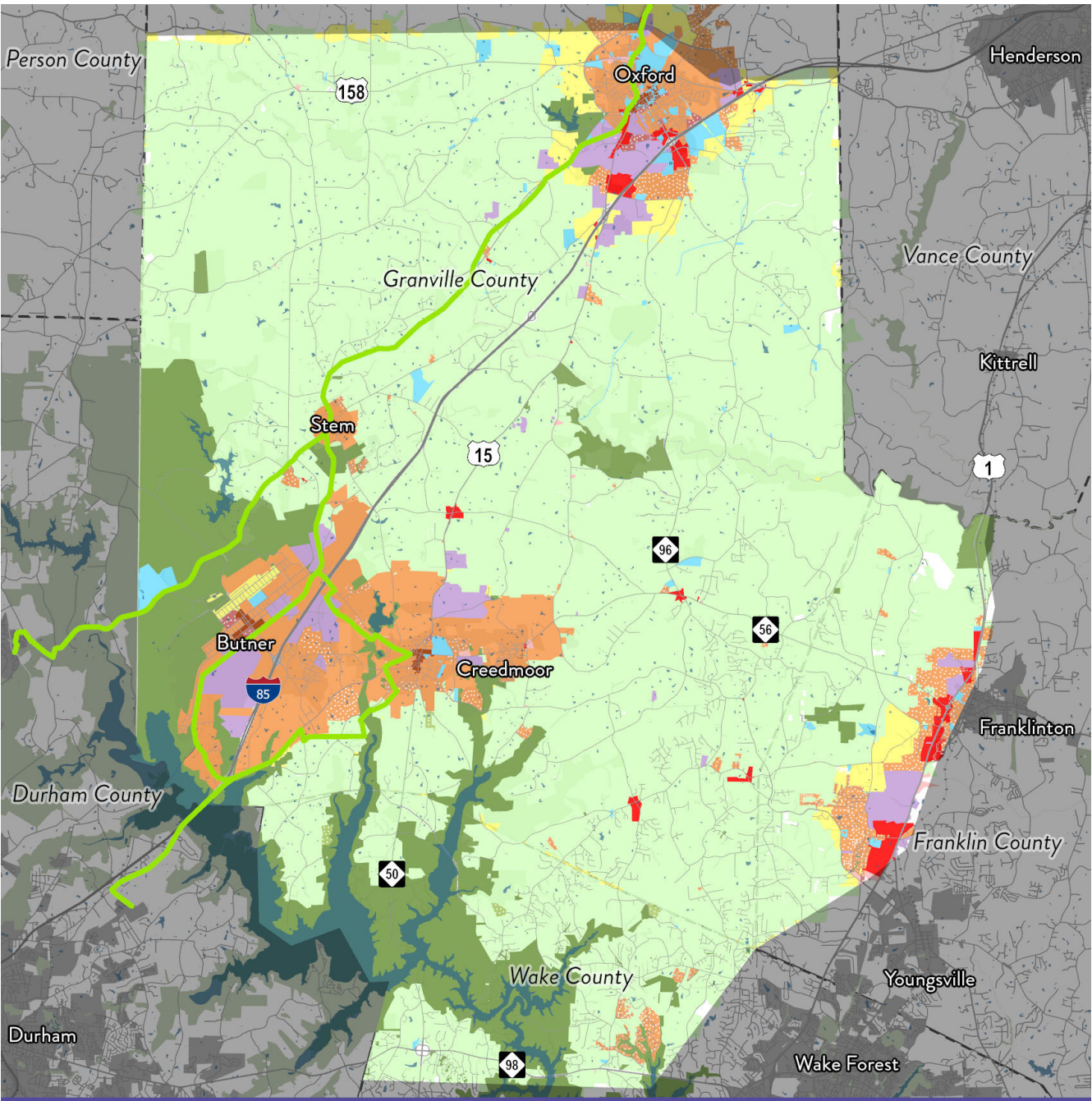
- | | |
|------------------------------------|--------------------------------|
| Great Trail State Greenway | Walkable Neighborhood |
| Parks and Protected Land | Civic and Institutional |
| Farms and Forest | Neighborhood Commercial |
| Rural Living | Town Center |
| Conservation Neighborhood | Mixed Use Center |
| Mid-sized Lot Residential | Commercial |
| Small Lot Residential Neighborhood | Industrial / Employment Center |

0 3 Miles

- Roads
- Railroads
- Waterbodies
- Protected Lands
- Municipalities
- County Boundaries



Figure 4.5 Alternative Strong Towns Scenario



Strong Towns Placetypes

- Great Trail State Greenway
- Parks and Protected Land
- Farms and Forest
- Rural Living
- Midsized Lot Residential
- Small Lot Residential Neighborhood
- Walkable Neighborhood

- Civic and Institutional
- Neighborhood Commercial
- Town Center
- Mixed Use Center
- Commercial
- Industrial / Employment Center

0 3 Miles

Roads

Railroads

Waterbodies

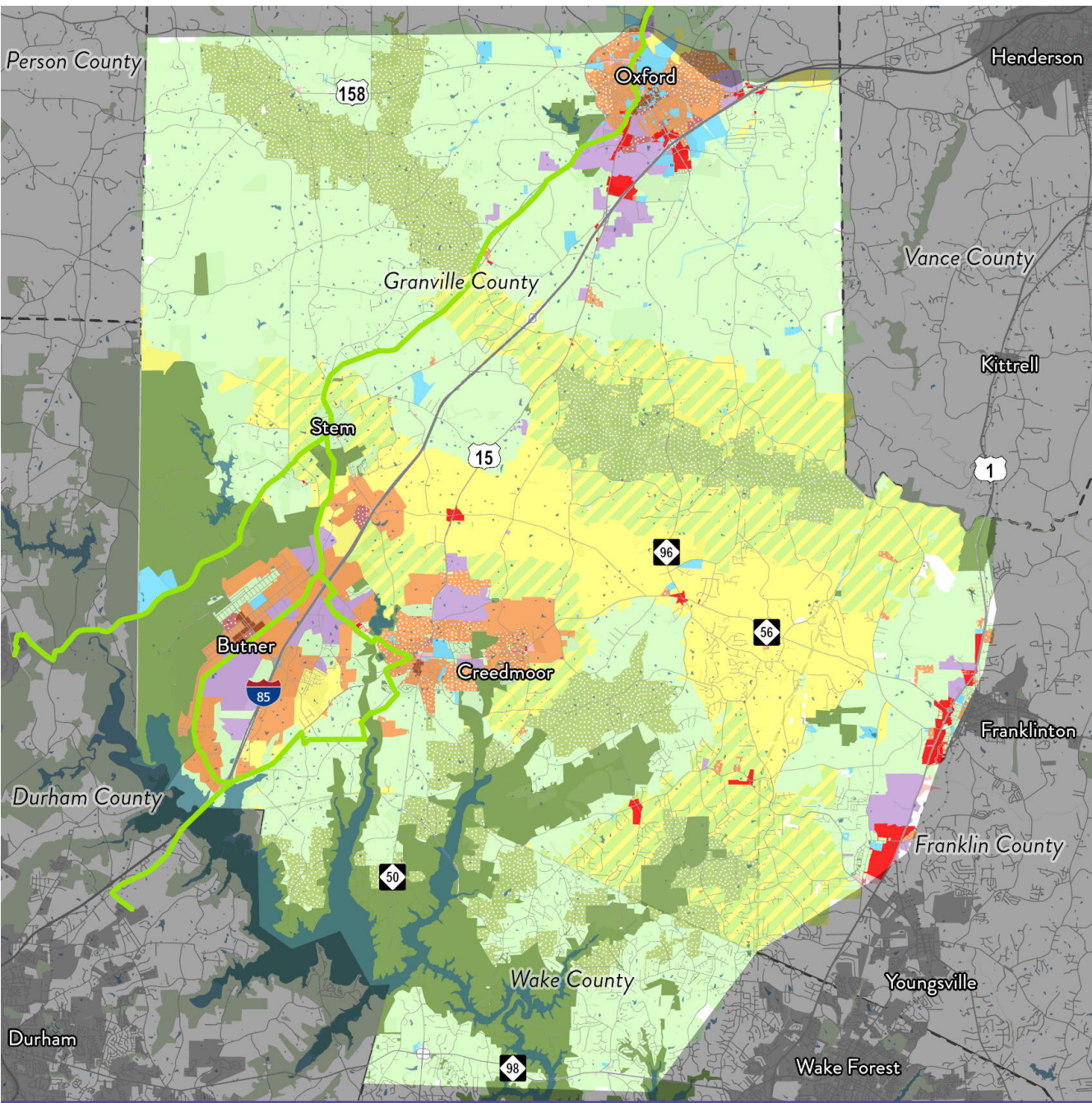
Protected Lands

Municipalities

County Boundaries

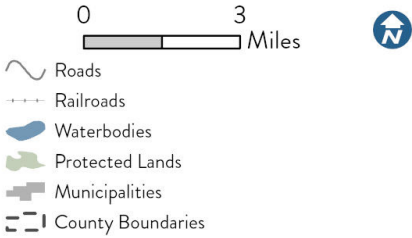
North Arrow

Figure 4.6 Alternative Watershed Protection Scenario



Watershed Protection Placentypes

- Great Trail State Greenway
- Parks and Protected Land
- Farms and Forest
- Rural Living
- Conservation Neighborhood
- Mid-sized Lot Residential
- Small Lot Residential Neighborhood
- Walkable Neighborhood
- Civic and Institutional
- Neighborhood Commercial
- Town Center
- Mixed Use Center
- Commercial
- Industrial / Employment Center



Source: ESRI, NCDOT, NCDNR, USFW, CAMPO, USDA NLCDC

Alternative Scenario Performance

Indicators were created using Geographic Information Systems (GIS) and the regional CommunityViz land use model, customized for this study and the Triangle Regional Transportation Model to test impacts. Key results include:

- Acres of industrial areas, commercial and mixed-use areas are maximized in the Economic Growth Scenario. The EG Scenario also leads to more jobs in municipalities, however this scenario results in more growth in sensitive natural areas and increases in impervious surface in some sensitive watersheds.
- The Strong Towns Scenario performs best overall on land use and transportation metrics with high scores in homes in walkable areas and near parks as well as transit propensity and traffic reductions.
- One drawback of the Strong Towns Scenario is that it concentrates development near municipalities, and some of these areas are in water supply watersheds.
- The Watershed Protection Scenario performs best for many of the environmental and open space related criteria, but has demonstrated only minor improvements compared to the Business As Usual Scenario on other economic development, land use and transportation metrics.

A report card showing scenario performance is available in Appendix C “Land Use”.



-83%

Reduction in urban footprint in Strong Towns Scenario



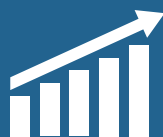
+39%

Increase in commercial and mixed-use development in Economic Growth Scenario



+34%

Increase in homes near parks and greenways in Economic Growth Scenario



+51%

Increase in jobs in municipalities in Economic Growth Scenario



+25%

Increase in homes in municipalities in Strong Towns Scenario

Engagement Summary

Engagement related to preferred development types and land use scenarios resulted in three sources of input (public preferences, elected officials and stakeholder input, and Core Technical Team meeting discussions). Public outreach included a digital survey and pop-up events where participants took a visual preference survey and voted on images of development types (placetypes) that they wanted to see more of in the study area. These interactions also encouraged participants to vote for their preferred scenario based on the four alternative scenarios developed for the study.

Elected officials and stakeholders meetings held early in the process included an exercise where attendees voted on different types of land use related outcomes. Additionally, midway through the planning process meetings were held with the Elected Officials Committee and Stakeholder Oversight Committee where attendees voted on their favorite alternative scenario and discussed elements of a preferred scenario.

The Core Technical Team met throughout the process and had many discussions related to land use, growth scenarios, and alternative scenarios. Their input was used to guide elements of the land use vision and transportation projects needed to support the preferred scenario.



What We Heard from Participants

Public Input on Scenarios

- In-person and online feedback favored the Watershed Protection Scenario and secondly the Strong Towns Scenario.
- The most supported residential placetypes included Rural Living, Midsized Lot, Conservation Neighborhood, and Mixed Density Residential.
- There was some support for the Urban Neighborhood and Trail Oriented Development placetypes.
- The most supported nonresidential placetypes included Protected Open Space, Town Center, Agriculture and Rural Business and Mixed-use Neighborhood.

Elected Officials and Stakeholders

- Voting on residential and natural resource related outcomes favored the Strong Towns Scenario and Watershed Protection Scenario.
- Voting on nonresidential and mixed-use outcomes favored the Economic Growth Scenario.
- Voting on alternative scenarios was split between alternatives to the Business As Usual Scenario.

Final Scenarios

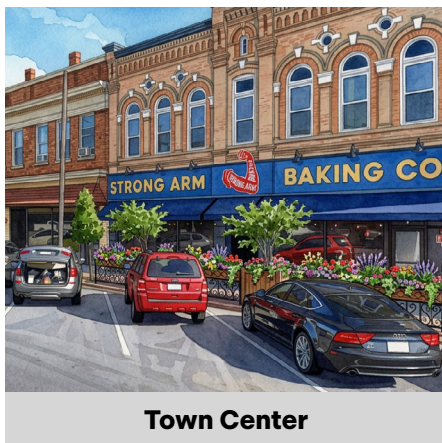
Two final scenarios were created based on input from the public and stakeholders. Both scenarios utilized the latest demographic control totals for counties developed by CAMPO over the winter of 2025-2026 and the regional CommunityViz model instead of a subarea model. An updated Business as Usual Scenario was created that reflected the updated control totals and an update to committed development assumptions. A Preferred Scenario was also created.

Preferred Scenario

The Preferred Scenario is a blend of alternatives and inputs from the Strong Towns, Economic Growth, and Watershed Protection scenarios. It emphasizes growth in and near Town Centers and in new mixed-use areas and walkable neighborhoods. Job recruitment and economic development efforts are targeted at well-located sites with access to infrastructure. Lower density development and conservation design is encouraged on the edges of municipalities and in rural areas. Preservation of farms and forests and land protection efforts are expected to continue in the Falls Lake watershed and along the Tar River.

The Preferred Scenario prioritizes placetypes favored by public feedback and aligned with stakeholder and committee goals. Many already exist in the study area, while others may require updates to land use plans and zoning to enable or encourage their development.

Figure 4.7 Preferred Scenario Placetypes



Impact of the Preferred Scenario (Figure 4.8)

Results of the Preferred Scenario include:

- Improvements in metrics related to economic development including increases in acres of industrial areas (+23%), jobs in municipalities (+18%), and commercial or mixed-use development (+16%).
- Reduced impacts on the environment including a reduction in future impervious surface in sensitive watersheds (-15%), a reduced urban footprint (acres of new development over a defined density) (-79%), and an increase in preserved open space (+27%).
- Mostly positive land use and transportation results including an increase in homes in walkable communities (+111%), homes near parks and greenways (+53%), and Transit Propensity (homes and jobs near transit (+133%). Travel model results showed limited changes in Vehicle Miles Traveled and Vehicle Hours Traveled but a 6% increase in Travel Time in Congestion due to more jobs being located in the study area.
- Infrastructure and cost of services metrics included an increase in homes in municipalities (+57%)* and New Water and Sewer Demand on public systems.

See Appendix C “Land Use” for additional information scenario performance measures.

Performance



+18%

Increase in jobs in municipalities*



+16%

Increase in commercial or mixed-use areas*



+27%

Increase in preserved open space*



-71%

Decrease in growth in sensitive natural areas*



+100%

Increase in homes in walkable areas*

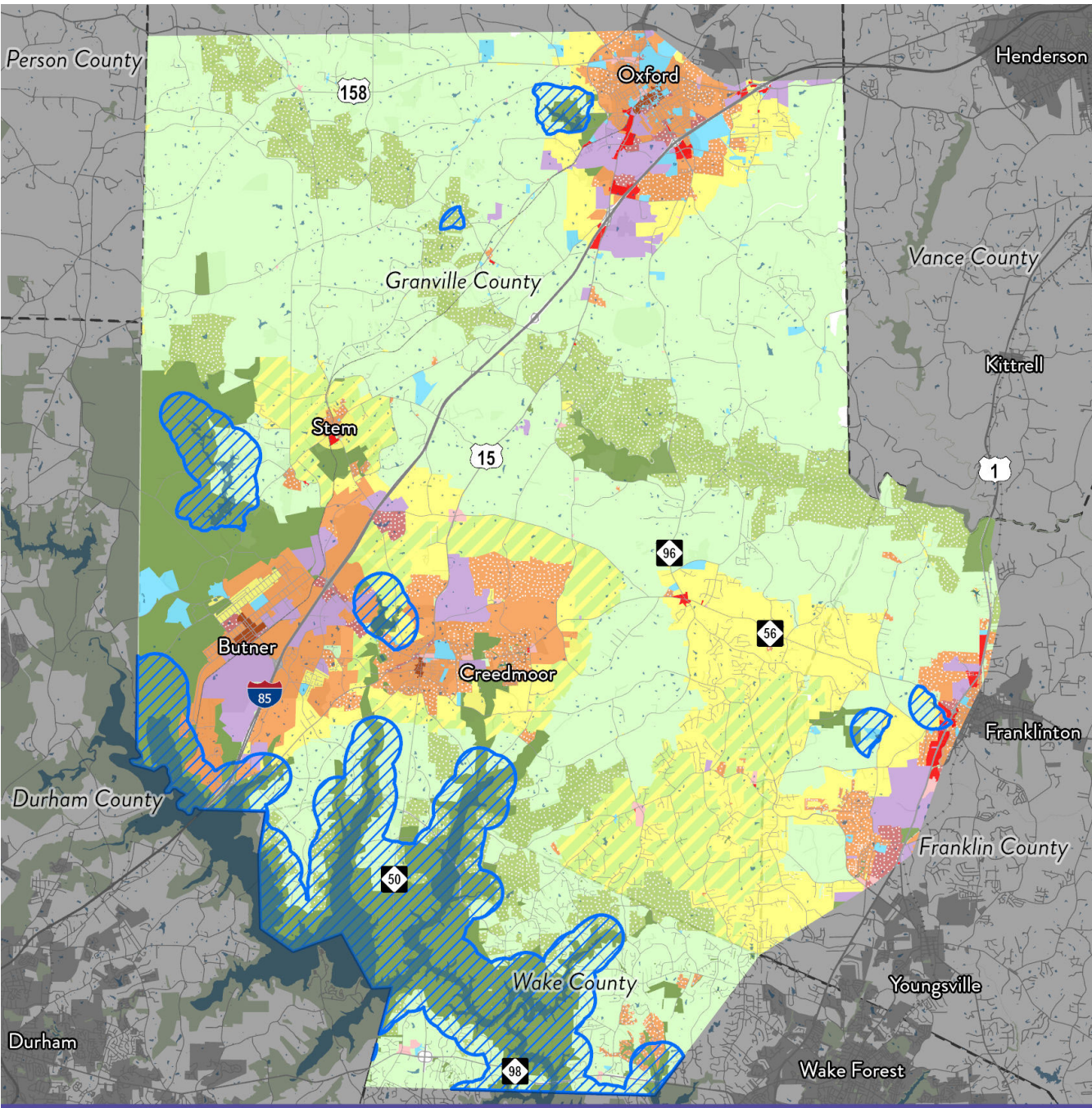


+57%

Increase in water and sewer demand in municipalities*

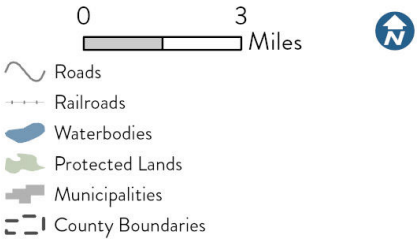
*Note metrics are compared to the Business As Usual Scenario

Figure 4.8 Preferred Scenario



Preferred Scenario Placetypes with Critical Watershed

- | | |
|------------------------------------|--------------------------------|
| Critical Watersheds | Walkable Neighborhood |
| Parks and Protected Land | Civic and Institutional |
| Farms and Forest | Neighborhood Commercial |
| Rural Living | Town Center |
| Conservation Neighborhood | Mixed Use Center |
| Mid-sized Lot Residential | Commercial |
| Small Lot Residential Neighborhood | Industrial / Employment Center |



Source: ESRI, NCDOT, NCDNR, USFW, CAMPO, USDA NLCD

Land Use Recommendations

Public input results indicated that protection of water quality and open space were very important. The rural character of many areas in Wake, Granville, and Franklin counties in this region are a defining feature. Falls Lake and other water supply sources provide drinking water for more than half a million people. Over 27,000 people have moved to the study area since the year 2000. New growth and development pressure has led to concerns about water quality, water availability, and loss of greenspace and natural areas. In addition, engagement highlighted support for downtowns, walkable neighborhoods, lifecycle housing (housing that meets the physical and financial needs at every stage of life), and more jobs in the study area. Recommendations below include strategies to address priorities that surfaced during the planning process.

Watershed Protection and Rural Character

LU-1: Limit impervious surfaces and encourage green stormwater infrastructure to protect water quality.

Falls Lake Rules regulate stormwater management for development in the watershed. These rules must be enforced by local governments. Flexibility is encouraged for projects that employ Low Impact Development techniques. For more information, see the North Carolina Low Impact Development Guidebook (2009).

LU-2: Encourage conservation easements and land acquisition for working agricultural lands and in sensitive natural areas.

LU-2.a: Coordinate with the City of Raleigh and the Tar River Land Conservancy to continue conservation efforts to protect water quality, sensitive habitats, and working lands in the North Falls Lake Area.

- The City of Raleigh and the Tar River Land Conservancy have been active conserving land through voluntary acquisition and conservation easements around Falls Lake and near the Tar River. These efforts support the goals of the Preferred Scenario developed during this study.

LU-2.b: Consider the creation of a Farmland Preservation Program.

- Local farmland preservation programs can help augment state funds to protect agricultural lands. For example a new program in Johnston County has preserved hundreds of acres of land in the last few years.

250 acres per year of conserved land is a goal for the Study Area between 2026 and 2055. This would result in over 7,000 acres of newly conserved land and support the preferred scenario.



LU-3: Build capacity for open space and trails planning at the county level.

- Other counties including Alamance County and Chatham County have demonstrated the effectiveness of a dedicated position devoted to open space and trails planning. A similar investment by Granville or Franklin County could assist and coordinate efforts to preserve and connect open space and trails in the region.

LU-4: Protect rural character and encourage only low-density development in areas of county jurisdiction without utility service.

LU-4.a: Update land use plans and policies for rural areas.

LU-4.b: Revise processes to result in an overall reduction in density and/or more context-sensitive design of new developments in rural areas.

- Large-scale subdivisions in rural areas such as southeast Granville County and southwest Franklin County have led to increased traffic on rural roads and concerns about water availability due to wells. Reducing overall density of new development is recommended, though current state law restrictions on downzoning may limit direct rezonings, changes to approval processes, site design, and incentives that encourage voluntary reduction in densities should be explored.

LU-5: Update site or infrastructure design standards or incentives to encourage open space reservation.

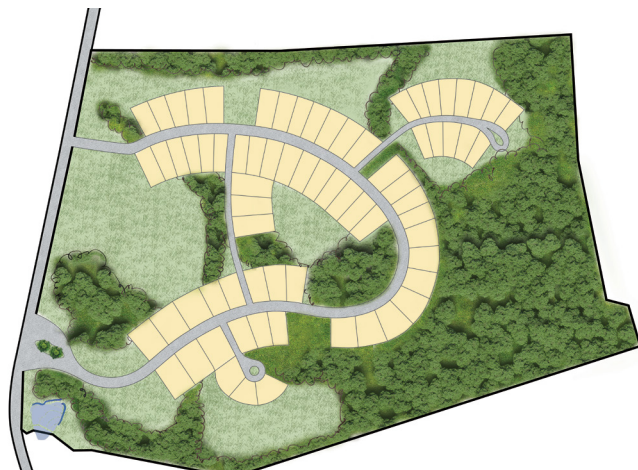
LU-5.a: Consider an option and potential incentives for conservation subdivisions in local zoning ordinances.

LU-5.b: Update open space requirements and consider measures to preserve tree canopy and/or heritage trees.

LU-5.c: Review and revise tree planting requirements to require native shade trees where appropriate.

Conservation Design

Conservation Subdivisions are designed to preserve large blocks of open space while accommodating some residential development. Ideally a low allowable “by-right” density or lot size would be accompanied by an option that allows some flexibility in lot size, dimensional standards, or housing type in exchange for substantial open space commitments.



Walkable Neighborhoods, Town Centers, and Mixed-Use Areas

LU-6: Encourage walkability through the provision of facilities, land use decisions, and design standards.

LU-6.a: Require sidewalks and greenway connections in new development.

- Many communities in the area require sidewalks in new development however ordinances should be updated to address existing and planned greenways.

LU-6.b: Update street and development standards to include comfortable pedestrian facilities with adequate width, separation from traffic, and street or yard trees to provide shade.

LU-6.c: Establish guidance on when alley loading and/or space for on-street parking is required in new development based on lot size, zoning district or development type.

LU-6.d: Emphasize facade and frontage design in commercial, mixed-use, and multifamily building and site design.

- The design of buildings and frontages of sites can have significant impacts walkability.



3 "D"s of Walkability

Design, density, and diversity all help determine whether an area is walkable.

Design refers to the overall layout of an area, including whether streets and sidewalks are connected. It also encompasses the detailed design of the built environment, such as the design of buildings, the presence of visually interesting facades, and attractive landscaping, as well as whether pedestrian facilities are safe and comfortable. Simply providing sidewalks is not necessarily enough to make an area walkable; they must also help pedestrians feel safe from traffic and offer features like shade that make walking tolerable on hot days.

Density also contributes to whether an area is conducive to walking. Compact development is generally more walkable than development that is more spread out. When there are more homes and jobs within an area, distances between destinations are typically shorter, and shorter distances are more conducive to walking.

Diversity of land uses, including different types of residential uses, commercial destinations, parks, schools, and jobs, also supports walking when these uses are located in close proximity to one another. Land use diversity increases the likelihood of walking, as a greater variety of uses creates more reasons to walk.

LU-7: Support compact, mixed-use development in downtowns and new centers.

LU-7.a: Allow for a horizontal and vertical mix of uses in key areas.

LU-7.b: Encourage multi-story development (a minimum of two stories) on key sites including downtown infill sites and key gateways.

LU-7.c: Review existing ordinances and identify barriers to infill development. Review and modernize ordinances and approaches to parking requirements and buffers where walkability is desired.

- In some cases a new district or overlay may be needed to customize standards to allow for infill and redevelopment. Typical approaches to setbacks, buffers, and parking that are appropriate for suburban commercial areas may not be appropriate in areas where walkable downtowns are desired.

LU-7.d: Pursue local street connections, streetscape improvements, and public parking in downtown areas.



Economic Development and Housing

LU-8: Plan for utility infrastructure and service improvements in southern Granville and Franklin counties.

- Lack of sewer capacity and availability in parts of the study area, particularly near Creedmoor and Butner have led to increased development pressure in the southeastern Granville and southwestern Franklin counties leading to growth in areas without adequate transportation infrastructure. Additionally poor soils severely limit development potential of many lands near towns without public utilities.

LU-8.a: Support planned SGWASA utility upgrades including sewer transmission and treatment capacity.

LU-8.b: Define utility service areas and provide public utilities to these areas to limit wells and septic tanks in areas with poor soils and concerns about groundwater availability.

- Joint land use and utility planning should occur during updates to local comprehensive plans and land use plans.

LU-8.c: Manage growth in the near-term until planned utility upgrades are complete.

LU-9: Consider infrastructure capacity, economic development opportunities, and housing needs during updates to local plans and ordinances.

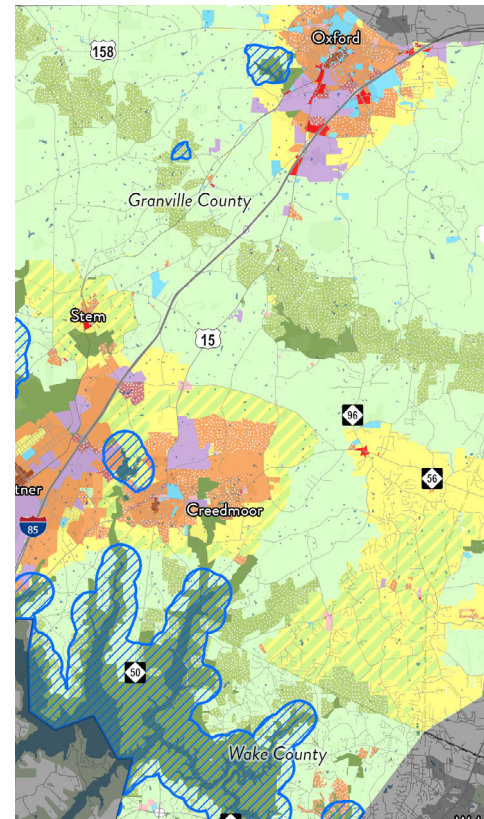
LU-9.a: Consider policies that set aside reserved utility capacity for economic development opportunities.

LU-9.b: Continue and expand job recruitment activities and protect prime industrial lands.

LU-9.c: Update land use plans to be supportive of the Preferred Scenario.

- More detailed study is needed to determine exact locations for mixed-use, commercial, and industrial or employment areas shown on the Preferred Scenario.

LU-9.d: Modernize zoning ordinances including district structure, approval processes, use tables, and standards.



Land Use Plan Updates

The Preferred Scenario made broad recommendations related to land use and development in the North Falls Lake Area. More detailed planning should be undertaken by local governments to evaluate the appropriateness of recommended placetypes in a given area. In addition, updates to zoning ordinances may be beneficial to assist in implementation of ideas from this study.

LU-10: Encourage “lifecycle housing” that includes housing options for different stages of life.

LU-10.a: Define and allow missing middle housing types in more areas.

- Missing middle housing is housing types that are much smaller than large apartment buildings, but with attached structures or much smaller lots than typical suburban single family homes.

LU-10.b: Review and revise allowances for accessory dwelling units.

LU-10.c: Encourage senior housing in and near town centers.

LU-10.d: Encourage trail-oriented development (TrOD) near planned regional greenways.



Lifecycle Housing

Input from committees during the process identified a need for more diverse housing types in towns in the study area.

Trail Oriented Development

The East Coast Greenway is planned to traverse the study area, and local governments could proactively plan for this new development. Policies could include incentives for residential development and/or specific design requirements to help activate the trail. This is similar to transit-oriented development in that it capitalizes on proximity to transportation infrastructure.





NORTH FALLS LAKE AREA STUDY

5. Transportation

This chapter evaluates existing transportation plans, provides an overview of general vehicular, bike and pedestrian, and transit travel, and provides recommendations to be included in the 2055 Metropolitan Transportation Plan.

Introduction

A primary goal of the North Falls Lake Area Study is to update the recommendations included in the Destination 2055 MTP to include the full North Falls Lake study area and to update the recommendations and prioritization of projects to better acknowledge the new land use vision for the area and to consider the community's desires for the region. Based on the Preferred Scenario land use vision and feedback from multiple facets of the community, the study reexamined MTP recommendations, incorporated other studies, identified new recommendations in the new geographies included, and conducted detailed studies in key areas to refine and expand transportation recommendations. Detailed studies included corridor studies on NC 56 east of Creedmoor and Brogden Road from Stem to Creedmoor as well as a Roadway Safety Audit (RSA) conducted near Butner-Stem Elementary School. Ultimately, these projects were prioritized based on a number of objective factors and concept designs for key projects were completed to support future implementation.

Before beginning a detailed analysis of potential recommendations and projects, the project team reviewed existing conditions and previous planning that had been completed for the North Falls Lake study area. This allowed the team to start work from a solid foundation and incorporate previously supported recommendations into this document. The team also reviewed the project development process to understand how transportation projects are planned for, developed, and funded in the CAMPO area to ensure recommendations were feasible and to understand how funding for these could be achieved.

North Falls Lake Area Mobility Overview

The North Falls Lake Study area includes I-85, US Highway 1, US Highway 50, and NC Highway 96 which provides north/south connectivity to and from locations within the study area. East/west connections are more limited with a large majority of east-west travel occurring on NC Highway 56 and NC Highway 98 in addition to numerous indirect routes.

Walking and biking facilities are less prominent and occur in limited areas across the study area. Where walking and biking facilities do exist, they are limited to the more urbanized areas of Butner, Creedmoor, Franklinton, and Stem. In some areas, these facilities exist as sidewalks and bike lanes while in other areas trails and off-road facilities are more present.

Transit services are also quite limited. Current transit providers in the area include KARTS and an independent shuttle loop service in the Town of Oxford. Limited hours and service areas pose the greatest challenge to residents using these services. KARTS is the only agency that offers out-of-county transit to major healthcare centers in Durham and Raleigh although this service is only provided Monday through Wednesday.

KARTS requires a 48-hour notice for ride requests outside of the City of Henderson, in which same-day demand-response service is available through the KARTS FLEX program.

An initial analysis was conducted to determine where residents travel, and how far they travel, to their places of employment, based on the United States Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) service (2023). This analysis is demonstrated in Figure 5.1 and Figure 5.2. From the North Falls Lake study area, approximately 30,000 commute out to other communities for work. The overwhelming majority of jobs worked by study area residents are located to the south and southwest of the study area in Durham County and Wake County. 47.0% of all jobs are located 10 to 24 miles away from a person's home. (Followed by 19% of jobs being greater than 50 miles away, 18% located less than 10 miles away, and 16% located 25 to 50 miles away.)

A second analysis was conducted using LEHD data to determine where the approximately 21,000 employees who work in the study area are traveling from and how far they are traveling. For those who work in the study area, 16,000 come from areas outside the study area while approximately 5,000 commute within the study area. Inbound commuters travel from a wide range of locations while the majority travel from the south and southeast. For those who do travel into the study area, approximately 35% travel 10 to 24 miles, 26% travel less than 10 miles, 22% travel greater than 50 miles, and 17% travel 25 to 50 miles.

With the expected increase of over 20,000 people in the study area over the next 25 years, additional stress will be placed on the services and facilities currently provided in the North Falls Lake Study area. Based on environmental analysis, community engagement, and land use modeling, the following pages include projections of mobility in the future and recommendations that could be implemented to improve conditions for those living in, working in, and visiting the area.

Figure 5.1 Commuters Out

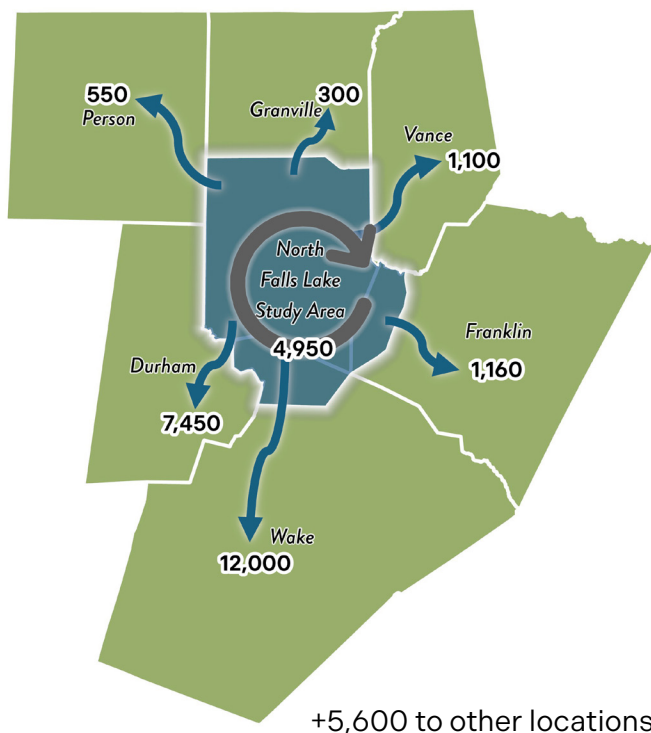
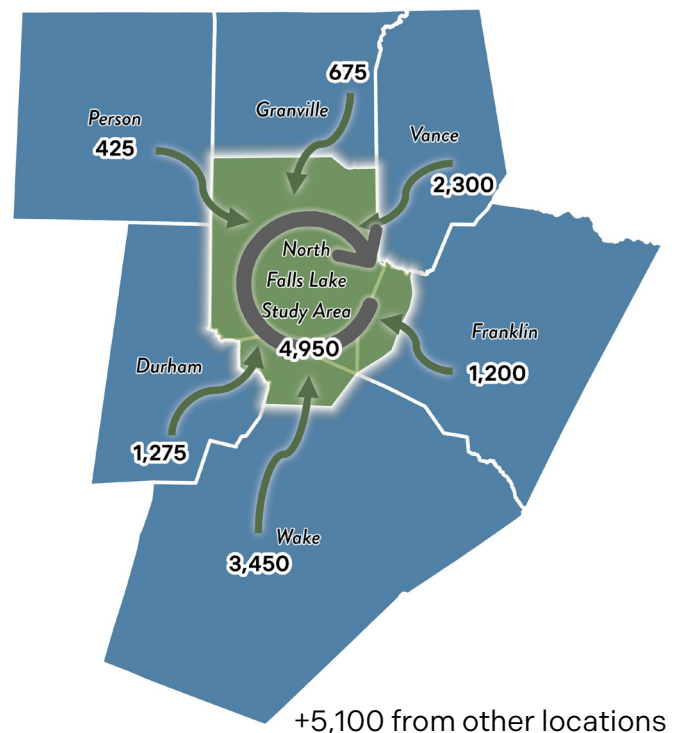


Figure 5.2 Commuters In



NFLAS's Role in the Project Development Process

The journey a transportation improvement takes from idea to reality can be a long one. Below is a high-level overview of how projects typically move from ideation to construction in North Carolina. (This process is also demonstrated in Figure 5.3). While this is a typical process, many projects utilize other funding sources or other design or procurement approaches and may follow a different path.

Initial Ideation - Comprehensive Transportation Plan

A Comprehensive Transportation Plan (CTP) is a long-range, multimodal planning document that forecasts future conditions and identifies a broad universe of projects that are thought to be needed to address existing and future needs of a community.

Because the CTP is not fiscally constrained, it identifies all needed and desired projects, regardless of anticipated funding availability. Instead, projects are included based on projected long-term needs, adopted land use plans, and expected population and employment growth. This allows the plan to capture a complete picture of future transportation demand without being limited by current funding realities.

Although the CTP does not directly allocate funding, it serves as the foundation for projects entering the transportation planning process. It establishes a broad universe of potential projects that can later be refined and prioritized in more actionable plans. Inclusion in the CTP indicates that a project is consistent with long-term growth and mobility goals, which is an important step toward advancing it. Projects that are not included in the CTP often face significant challenges moving forward into subsequent plans such as the MTP and ultimately the STIP.

In this way, the CTP plays a critical role in preparing projects for future funding opportunities by ensuring they are already well-justified, coordinated, and aligned with long-term community priorities.

Prioritization and Fiscal Constraint - Metropolitan Transportation Plan

Before projects within MPO boundaries become programmed, they must be planned for in the transportation planning organization's Metropolitan Transportation Plan (MTP). For CAMPO, this is Destination 2055, which was adopted in February 2026. This document is federally required and outlines a region's transportation vision and priorities over a 30-year horizon. The plan identifies major projects, policies, and strategies needed to support future growth, mobility, and economic development while doing so within fiscal boundaries. Each MTP is required to include a financial plan that demonstrates all proposed projects can be built and maintained using committed, available, or reasonably anticipated revenue sources over the life of the plan.

While the MTP does not directly fund projects, it establishes a foundation that allows them to compete for and receive funding later on, based on initial analysis completed as part of the MTP development process and through local support. In the CAMPO region, projects may receive funding through the Locally Administered Projects Program (LAPP) or through North Carolina's Strategic Prioritization (SPOT) process.

Near-Term/Programmed – State Transportation Improvement Program

Near-term/programmed transportation infrastructure projects in North Carolina are funded through the State Transportation Improvement Program (STIP), a structured and competitive process that determines which projects move forward to design and construction. Projects enter this program through submission by a MPO, RPO, or NCDOT Division Engineer, ensuring that needs are identified at both the local and regional level.

Once submitted, projects compete for funding within three major categories under the Strategic Prioritization (SPOT) process, which allocates resources based on a defined distribution. The largest share (40% of available funds) is dedicated to statewide mobility projects. These projects focus on addressing significant congestion and bottlenecks that impact travel at a statewide level. Because of their importance to the broader system, certain improvements are prioritized first, including interstate maintenance, bridge rehabilitation and replacement, and highway safety upgrades.

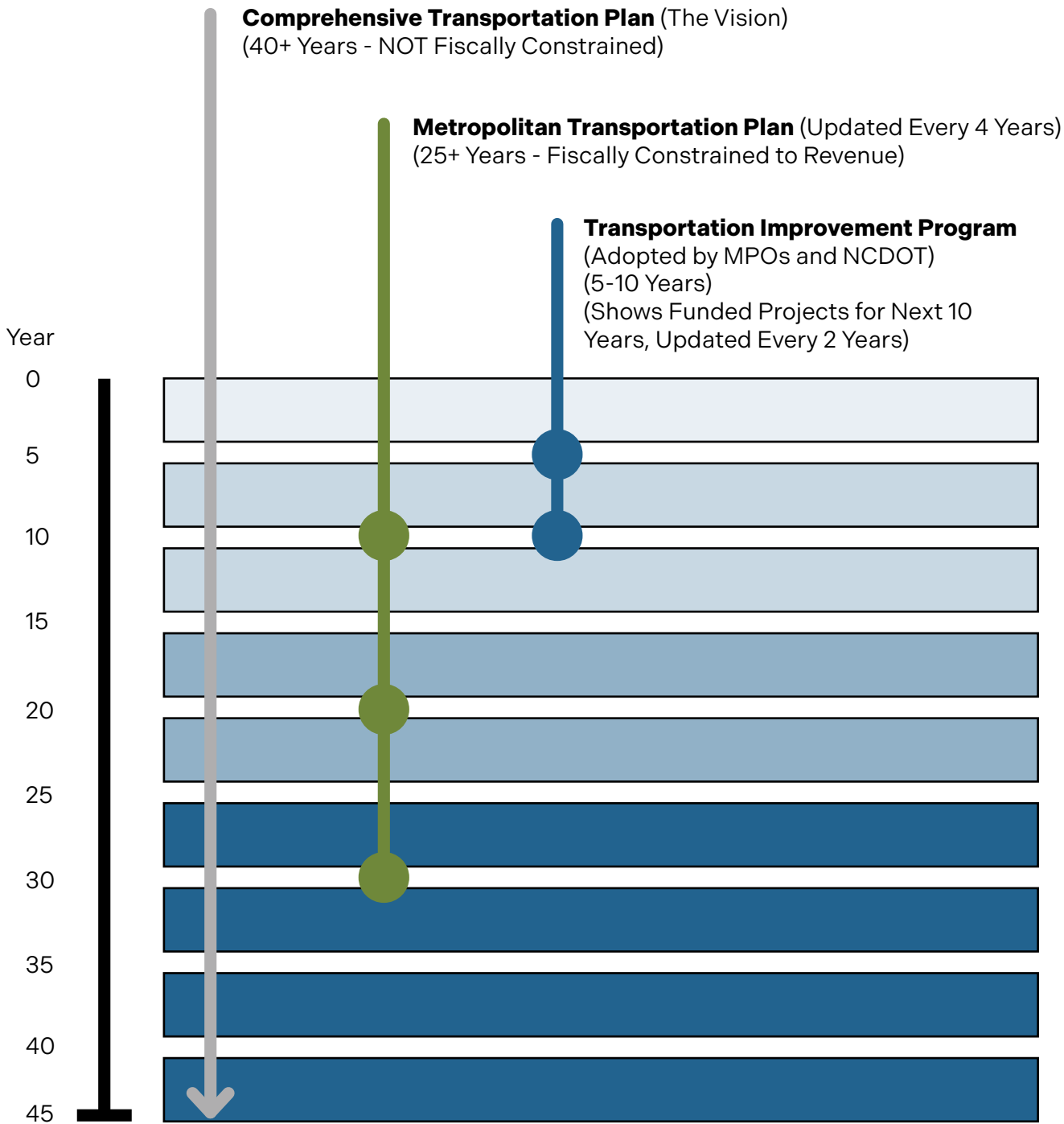
Another 30% of funding is assigned to regional impact projects, which aim to improve connectivity and mobility within specific regions of the state. These projects often enhance travel between communities and support regional economic activity. Similar to the statewide category, bridge replacement, bridge rehabilitation, and highway safety projects are given priority when programming funds in this category.

The remaining funds (30%) are allocated to division need projects, which address more localized transportation concerns. This category allows for greater flexibility in responding to community-level priorities, including smaller-scale improvements and multimodal investments. In addition to bridge and safety projects, transportation alternatives (such as pedestrian and bicycle facilities), highway-rail crossing improvements, and projects that support economic development are prioritized.

Despite this structured approach, several key realities shape how projects advance in the near-term. First, funding is limited relative to the number of identified transportation needs, meaning not all proposed projects can be funded. Second, transportation projects require substantial time to move from planning through design and into construction, often taking many years before completion. Finally, because funding decisions are competitive, projects must perform well within their category and geographic area during the SPOT scoring

process. As a result, strong project justification and scoring are critical to securing funding and moving projects forward in the STIP.

Figure 5.3 Transportation Planning Products



Land Use and Transportation Connection

Transportation and land use are closely linked, creating a continuous cycle where each shapes the other. As the public calls for improvements to address congestion, access, or safety concerns, agencies respond by expanding roadways or enhancing connectivity. These upgrades increase accessibility, making more land attractive for development and contributing to increased property values.

As development occurs, access to an increasing number of homes, jobs, and services also contributes to increasing property values while these new residential and commercial uses generate additional traffic. Over time, this increased demand can lead to congestion and declining roadway performance, prompting renewed calls for transportation improvements, continuing the cycle.

The way development occurs within this cycle plays a significant role in shaping transportation demand and mobility options. Dispersed, low-density development (sprawl) tends to extend travel time to desired destinations, increasing reliance on automobiles and requiring a larger and more expensive transportation network to serve scattered trips. While this can distribute traffic across a wider area, it also makes it more difficult to provide efficient transit service or support walking and bicycling. In addition, in some rural areas this pattern of development increases traffic on rural road networks which are typically not capable of supporting it due to narrow roads, unimproved intersections, and lack of connections.

In contrast, compact development patterns, often associated with smart growth principles, concentrate people, jobs, and services in closer proximity. This improves accessibility across multiple modes of travel, making it easier for residents to walk or bike to businesses and amenities, shortening automobile trips, and better supporting transit services. Compact development can reduce overall vehicle miles traveled and create more vibrant, walkable communities.

Several key insights emerge from this relationship between land use and mobility. North Carolina continues to experience significant population growth, much of which is expected to occur in rapidly developing regions like the Triangle and the North Falls Lake Study Area. As a result, decisions made today about how and where to guide development will have long-lasting impacts on transportation systems. By proactively coordinating land use and transportation planning, communities can influence travel behavior, improve mobility options, and create more sustainable and efficient infrastructure systems for the future.

A major outcome of the land use scenario planning described in the previous chapter was a vision for land use in the study area that combines low-density rural areas in much of the study area with more concentrated, compact development in and around existing municipalities while respecting watershed protection rules. These changes were based on the feedback received from the community and a more recent understanding of ongoing development in the area and result in forecast transportation demand that is significantly more concentrated around the I-85 and US 1 corridors than what was previously projected.

Previous Plan Highlights

The reviewed plans and studies collectively emphasize the importance of coordinating land use, transportation, and infrastructure investment to manage continued growth in the region. Across jurisdictions, there is a shared focus on aligning development patterns with transportation systems to create more efficient, connected, and sustainable communities.

A key takeaway is the need to proactively guide growth. As the region continues to grow rapidly, plans highlight strategies such as promoting mixed-use development, preserving rural and environmentally-sensitive areas, and focusing development near existing infrastructure to reduce strain on transportation systems.

There is also a strong emphasis on multimodal transportation, with priorities extending beyond road expansion to include bicycle and pedestrian facilities and transit through complete streets. These investments aim to improve mobility options, safety, and overall quality of life.

Finally, the documents reinforce that while long-range plans establish a vision, implementation depends on competitive funding and phased project delivery. Aligning projects with adopted plans and broader goals is essential to advancing them, especially in a constrained funding environment.

An in-depth review of these plans can be seen in **Appendix D “Previous Plan Review”**.

Transportation

Conditions, Needs, and Recommendations

A foundational element of the NFLAS is a review into and documentation of the existing transportation needs of the study area and those that are likely to emerge as the area continues to attract homes and businesses. These analyses are organized below by travel mode, though these needs inherently interact with each other.

General Vehicular Travel

Existing Conditions and Issues Identification

Roadway Network

The transportation network in the NFLAS study area is dominated by two primary facilities – Interstate 85 and US Highway 1. I-85 connects much of Granville County including all of the municipalities included in this study, while US 1 runs along the eastern boundary of the study area primarily serving the communities in Franklin County and the unincorporated residents of southeastern Granville County. With the exception of short segments of roadway at interchanges, these two roads are the only multi-lane roads in the study area. All other roadways have no more than one travel lane per direction, consistent with the area's rural legacy. Most of these roads have a rural section with very small or no shoulders and no dedicated space or facilities for any travel other than automotive.

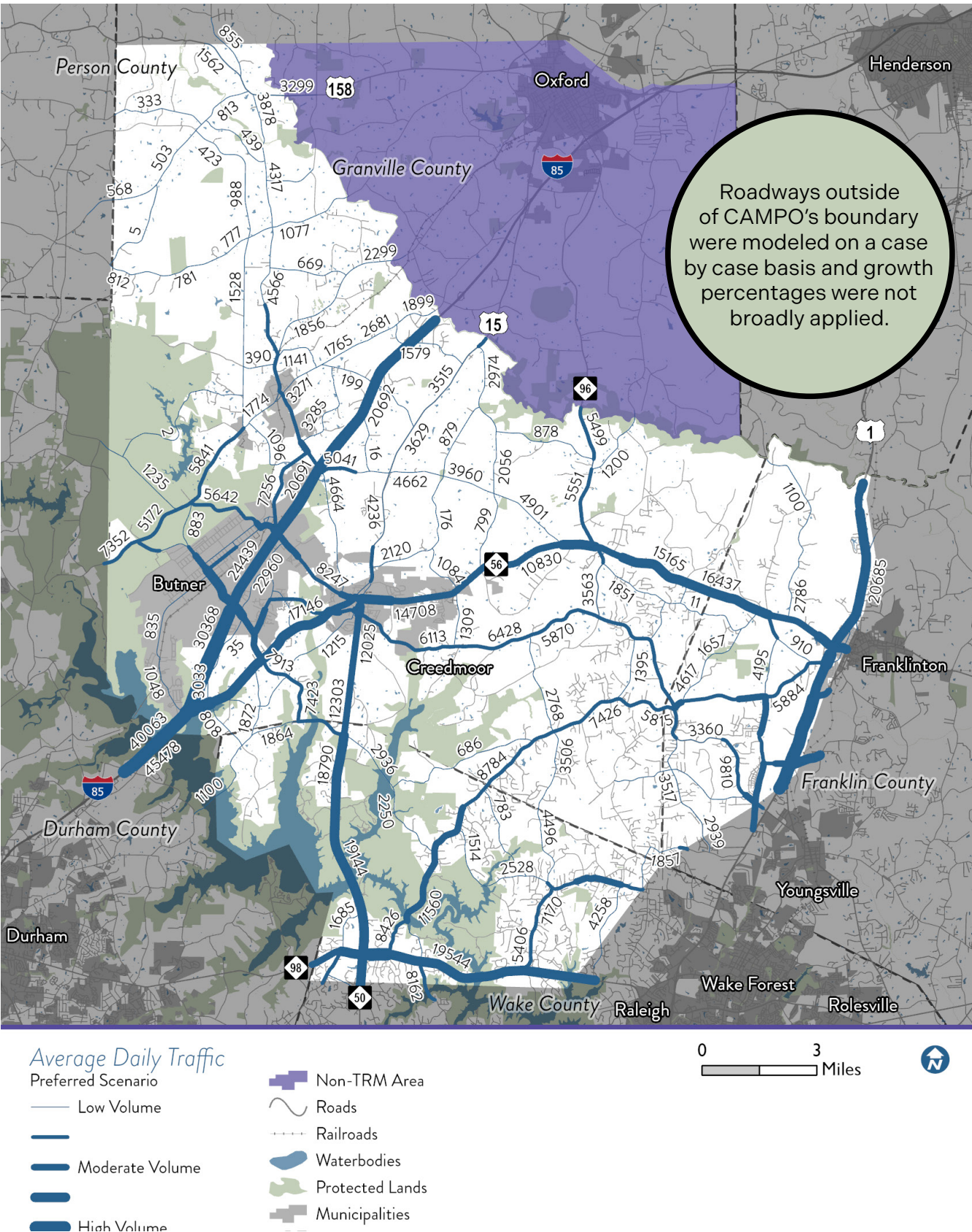
Current and Projected Traffic Volumes

Throughout the study area, traffic volumes range significantly with the most traveled roads being those that connect the region to Durham, Franklin, and Wake Counties, I-85 and US 1. NC 98 at the southern edge of the area is also highly traveled with volumes between 15,500 and 22,000. NC 56, especially through Downtown Creedmoor, and Central Avenue/Gate 2 Road in Butner also experience heavy traffic.

Based on the Preferred Scenario (2055), average annual daily traffic volumes indicate continued high demand along I-85, US 1, and NC 98. NC 56 also carries high traffic volumes, particularly between I-85 in the west and US 1 in the east. Additional roadways experiencing increased traffic include US 15, NC 96, NC 15, New Light Road/Bruce Garner Road, and Brassfield Road, among others.

Despite rising traffic volumes, many of these roadways are expected to operate under capacity due to completed infrastructure improvements. Roadways that are projected to approach or exceed capacity include NC 50, NC 56, US 15, and New Light Road/Bruce Garner Road. This is shown in Figure 5.4.

Figure 5.4 Preferred Scenario Traffic Volumes



Lack of East/West Connections

A lack of strong east–west connectivity presents a significant transportation challenge within the study area. While rural areas benefit from well-established north–south routes that provide access to nearby urban centers, comparable east–west connections are limited or indirect. Notably, there are no direct routes linking I-85 and US 1, forcing drivers to rely on a network of smaller, rural roadways. There are also a lack of four-lane roadways connecting the study area to Wake County despite the large number of commuters.

These corridors are typically two-lane facilities that were not designed or upgraded to accommodate current traffic volumes or travel patterns. In addition, many of these routes include multiple four-way stop-controlled intersections, which can disrupt traffic flow and introduce safety concerns, particularly when vehicles approach at higher speeds and drivers fail to anticipate or comply with stop controls.

Rural Roadway Safety

Rural roadway safety is a key concern throughout the study area due to a combination of design and operational deficiencies. Many corridors lack dedicated pedestrian and bicycle infrastructure, limiting safe travel options for non-motorized users. In addition, several narrow two-lane highways are experiencing relatively high traffic volumes, creating constrained operating conditions and increasing the potential for conflicts. The absence of paved shoulders further reduces opportunities for error recovery and safe accommodation of cyclists. Safety concerns are compounded by inadequate or faded pavement markings, which diminish visibility and guidance for drivers, particularly at night or during inclement weather. Furthermore, limited lighting at some intersections reduces visibility and decreases reaction time.

CAMPO's Blueprint for Safety includes a [Safety Countermeasure Library](#) that presents potential solutions for the above design and operational deficiencies.

NC 56 and Brogden Road Corridor Studies

As part of the North Falls Lake Area Study, corridor studies of NC 56 east of Creedmoor and Brogden Road between Stem and Creedmoor were completed.

The analysis incorporated multiple data sources, stakeholder input, and field observations to develop a context-sensitive approach focused on safety, operations, access management, and multimodal mobility.

This evaluation included the following components:

- Review of CAMPO's High Injury Network to identify locations with elevated safety concerns
- Review of development activity and Traffic Impact Analyses (TIAs)
- Review of traffic volumes (historic, current, and anticipated) using NCDOT data and project datasets
- Review of environmental features using NCDOT ATLAS
- Review of existing and future land use conditions
- Review of planned transportation improvements identified in the 2055 Metropolitan Transportation Plan (MTP), Comprehensive Transportation Plan (CTP), and 2026-2035 State Transportation Improvement Program (STIP)
- Review of projected population growth through adopted 2055 MTP Traffic Analysis Zone (TAZ) data
- Review of relevant plans and studies including the 2015 NC 56 Corridor Study, the 2013 I-85 Future Interchange Location Analysis, and the CAMPO 2025 Blueprint for Safety
- Stakeholder interviews were conducted to gain a more detailed understanding of issues and needs along the corridors.

The following sections provide a brief overview of each corridor study and the recommendations made within them. Full copies of the corridor study report documentation are included in **Appendix E "Corridor Studies"**.

NC 56 Overview

NC 56 serves as a key east-west corridor connecting residential areas, schools, community destinations, and regional roadways, including US 1 and NC 96. The corridor is experiencing increasing traffic demand due to ongoing development and population growth within the North Falls Lake study area.

The evaluation identified a combination of operational, safety, and multimodal deficiencies, particularly in areas influenced by school traffic, developing residential areas, and locations with increasing turning movements.

NC 56 Key Issues and Needs

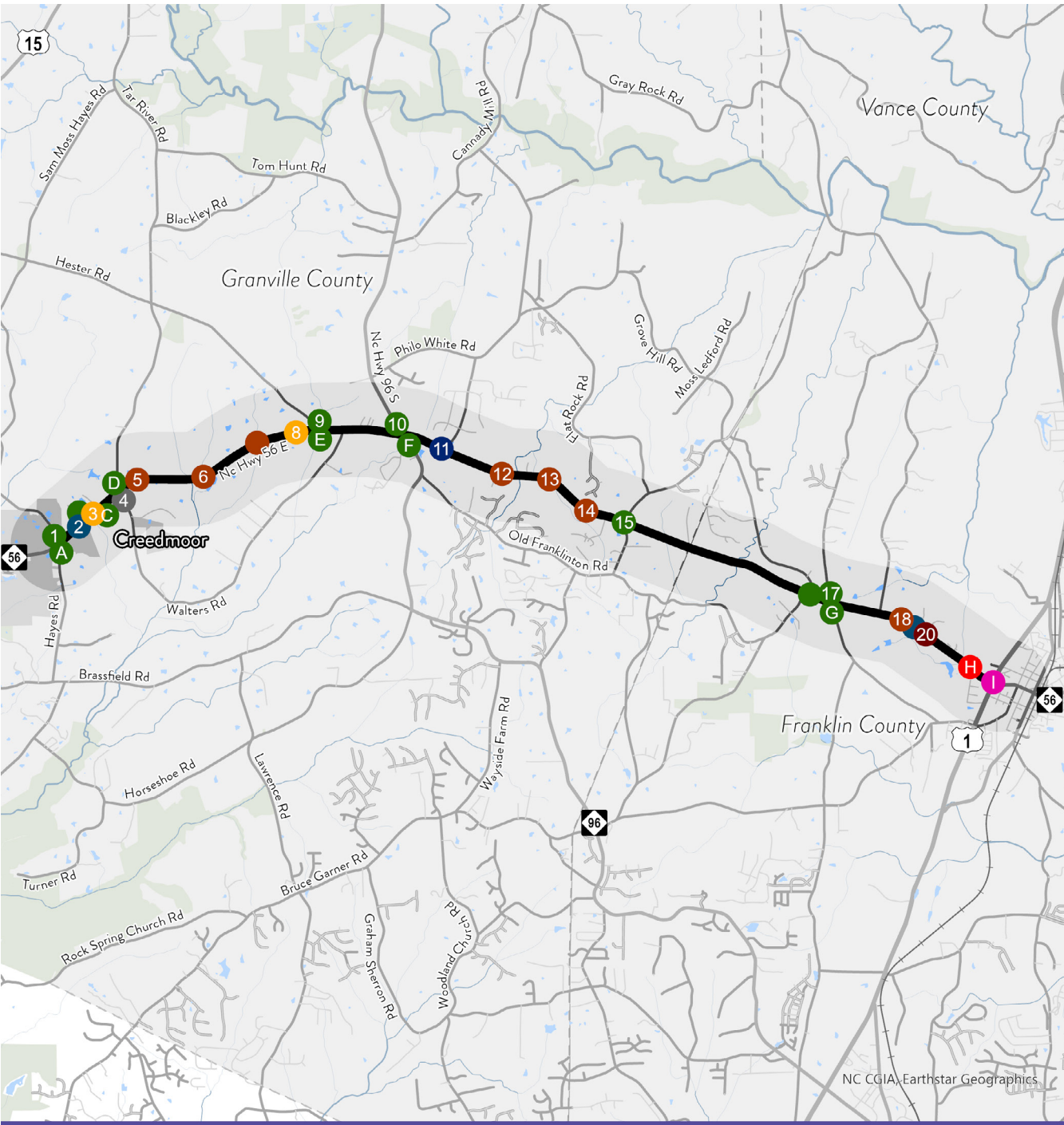
The following primary needs were identified along the NC 56 corridor:

- Intersection visibility and sight distance limitations due to skew, horizontal curvature, and roadside obstructions
- Congestion and queuing, particularly associated with Mount Energy Elementary School and adjacent development activity
- Frequent turning conflicts and lack of dedicated turn lanes in key segments
- Limited pedestrian infrastructure, especially near schools and residential areas
- Curve-related safety concerns and inconsistent advisory speeds
- High operating speeds and increasing driveway density in developing segments

NC 56 Recommendations

Recommendations for NC 56 focus on improving safety and operations in the near term while supporting planned long-term corridor widening identified in the MTP and CTP. The recommendations are shown in Figure 5.5.

Figure 5.5 NC 56 Corridor Recommendations



NC 56 Corridor Multimodal Transportation Recommendations

- | | | | |
|---|----------------------------|-----------------------------|-----------------------------|
| ① Recommendation as part of the study | ● Access Management | ● Intersection Improvements | ● Reduce Posted Speed Limit |
| ② Recommendation identified in previous plans | ● Adjust Advisory Speeds | ● New Intersection | ● Turn Lanes |
| | ● Interchange Improvements | ● New Sidewalks | ● Warning Signage |
| | | | — Study Corridor |
| | | | --- Railroad |

Source: ESRI, NCDOT, NCDNR, USFW, CAMPO

Brogden Road Overview

Brogden Road (SR 1127) functions as a local-to-collector roadway providing access to residential areas and connecting to NC 56 and I-85. The corridor is characterized by rural roadway conditions, frequent curves and grades, limited shoulders, and constrained sight distance conditions.

The evaluation identified that Brogden Road currently operates with limited geometric capacity and several safety-related constraints, which are expected to become more pronounced as development increases.

Brogden Road Key Issues and Needs

The following primary needs were identified along Brogden Road:

- Limited sight distance due to horizontal and vertical curvature and roadside conditions
- Rural crash patterns, including nighttime rural crashes and identified high-risk locations
- Lack of pedestrian and bicycle accommodations, including gaps in regional connectivity
- Operational challenges at key intersections (e.g. NC 56, Hester Road, W. Lyon Station Road)
- High driveway density in constrained segments
- Flooding vulnerability at the Ledge Creek bridge crossing

Brogden Road Recommended Improvements

Recommendations for Brogden Road focus on low-cost safety improvements combined with targeted operational and multimodal connectivity, and long-term flexibility for future regional transportation improvements. The recommendations are shown on Figure 5.6.

Road Safety Audit (RSA)

As part of the North Falls Lake Area Study, a Roadway Safety Audit was conducted for the roadway network surrounding Butner-Stem Elementary School. This audit included a review of historic crash data, current traffic volumes, pedestrian facilities, and other topics before conducting an in-person workshop with stakeholders from the school, CAMPO, NCDOT and the Town. The workshop included a walk audit where this committee visiting the primary ingress and egress points of the school and discussed the safety challenges present. A dedicated memorandum detailing the findings and recommendations of the RSA is included in **Appendix F “Road Safety Audit”**. Recommendations along the school’s frontage on D Street include:

- Relocate school-zone reduced-speed signage to maintain the speed reduction along the frontage of the school
- Modify dismissal operations to reduce queues
- Install vehicle stop bars
- Improve signage locations to optimize driver visibility
- Install additional signage while maintaining vehicle visibility
- Consider installing a signal at 23rd Street and East D Street Intersection
- Improve roadway approach grades where feasible
- Realign curb ramps
- Repaint crosswalks. Consider relocating East D Street pedestrian crossing
- Increase vegetation trimming
- Address sidewalk grade/side-slope issues where feasible
- Install additional pedestrian facilities where feasible
- Consider installing PHBs at roadway crossings

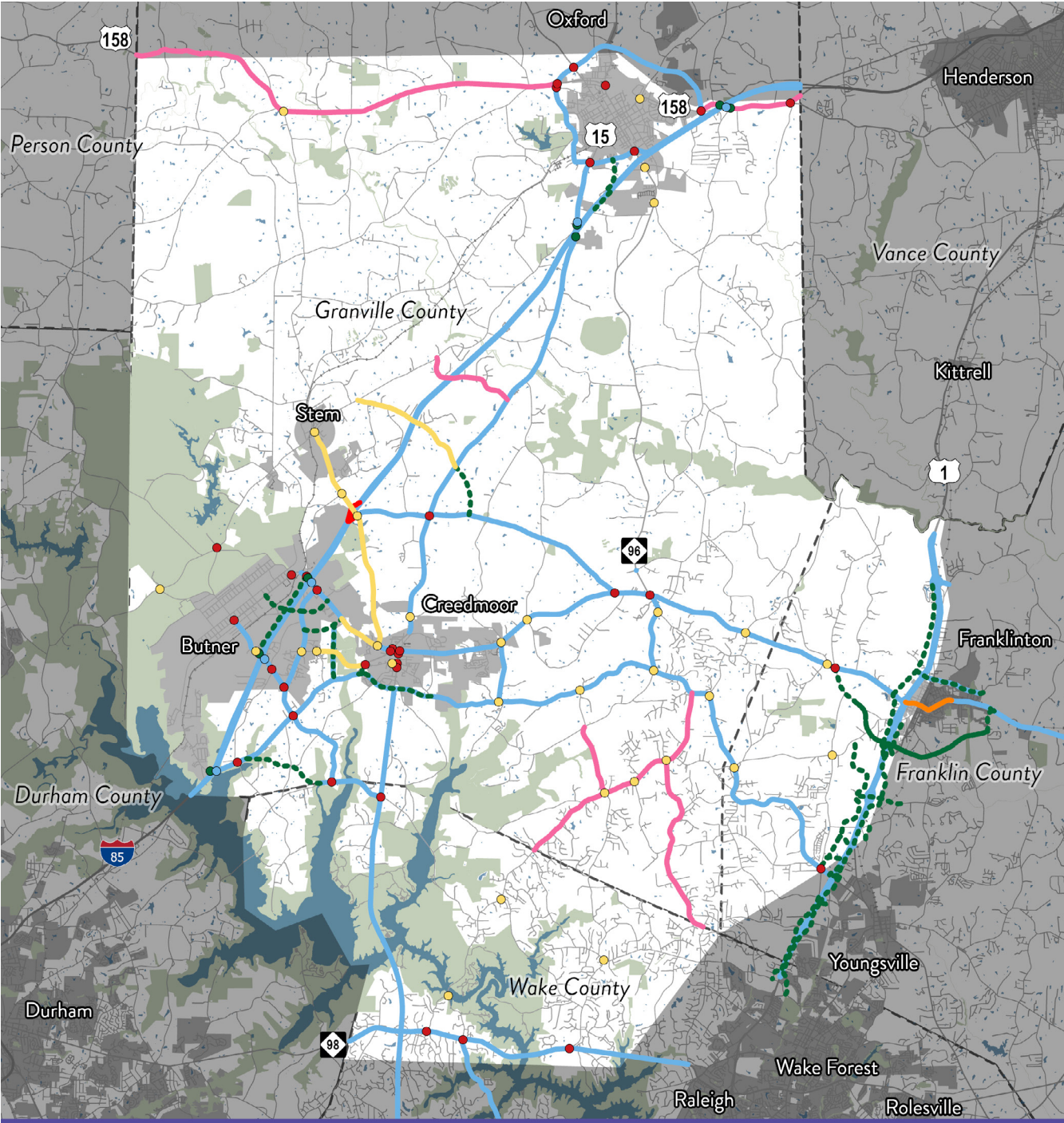
Roadway Infrastructure Recommendations

To address the needs identified in the regional review, while incorporating the appropriate recommendations identified in the focused studies, the plan recommends a range of improvements that can be tailored to different contexts across the study area (Figure 5.7). These are broadly categorized as one of the following:

- Center Turn Lane or Modernization - Addition of a center turn lane to an existing roadway or modernization including adding shoulders or intermittent turn lanes
- Interchange - New interchange at the intersection of existing roadways
- Intersection Realignment - Realignment of an intersection to improve safety and operation
- New Location - Construction of a new roadway in a new location
- Transportation Systems Management - Operational strategies to improve operations and safety. May include traffic signal coordination, access management, and technology upgrades
- Widening - Widening of existing roadways to accommodate additional facilities
- Minor Intersection Improvement – Addition of turn lanes at existing intersections, potential change from sidestreet stop control to all way stop control
- Major Intersection Improvement – Upgrades to intersections that might involve signalization, conversion to a roundabout or reduced crossing intersection, realignment of one or more legs, or other major expansion or improvement. Some intersections that are expected to need a minor improvement are labeled as major due to anticipated challenges related to right-of-way or utility impacts
- Interchange Improvement – A combination of major and/or minor intersection improvements at an interchange along I-85, potentially including adjacent, very nearby intersections

The full list of roadway-based recommendations can be reviewed in **Appendix G “Linear Roadway Infrastructure Recommendations”** and **Appendix J “Prioritization Metrics and Methodology”** which shows the prioritization metrics and results discussed later in this chapter.

Figure 5.7 Roadway Project Recommendations



Project Recommendations

- | | | | |
|----------------------------------|-----------------------------|----------------|--------------|
| Intersection Improvements | Roadway Improvements | Other | Scale |
| ● Major | Center Turn Lane | ● New Location | 0 3 Miles |
| ● Other | Interchange | ● TSM | |
| ● Interchange | Intersection Realignment | ● Widening | |
| ● Minor | Modernization | ● Roads | |
| | | ● Railroads | |
- Waterbodies
Protected Lands
Municipalities
County Boundaries

Roadway Policy Recommendations

R-1: Utilize roadway recommendations to inform future planning and project development in the North Falls Lake Area.

- **R-1.a:** Coordinate with the Capital Area Metropolitan Planning Organization (CAMPO) and the Kerr-Tar Rural Planning Organization (KTRPO) to include roadway recommendations in future plans including the next iteration of the Metropolitan Transportation Plan (MTP)
- **R-1.b:** Partner with the North Carolina Department of Transportation (NCDOT) to advance priority projects, with emphasis on those anticipated to perform well in a state prioritization exercise

R-2: Refine plans for new location roadways and collector street connections.

- **R-2.a:** Develop collector street plans for individual municipalities or at a multi-jurisdictional level
- **R-2.b:** Conduct feasibility studies to refine alignment, phasing and access recommendations associated with major new location roadways

R-3: Reserve adequate right-of-way for future roadway improvements.

- **R-3.a:** Incorporate right-of-way width standards by MTP project type into local planning efforts and/or development ordinances as appropriate
- **R-3.b:** Integrate adequate setbacks or right-of-way reservation requirements into subdivision regulations and site plan approvals

R-4: Pursue priority intersection improvement projects.

- **R-4.a:** Submit projects for funding through regional and state programs (some of which are described in more detail in the final section of this chapter)
- **R-4.b:** Develop a Critical Intersection Program that studies priority intersections to advance engagement, design treatment recommendations, phasing, and refined cost estimates

R-5: Utilize CAMPO's Blueprint for Safety to apply for federal funding through the SS4A program.

R-6: Utilize available tools to require mitigation of transportation impacts as part of development approvals.

- **R-6.a:** Update local ordinances to encourage connected streets, access management, and pedestrian facilities
- **R-6.b:** Utilize traffic impact analysis requirements, conditional zoning, developer agreements, and/or other techniques permissible under North Carolina law to require transportation improvements that address impacts from new development

R-7: Update Transportation Impact Analysis (TIA) Requirements at the local Level.

- **R-7.a:** Create a TIA Guidelines Manual
- **R-7.b:** Develop Approved Development Database
- **R-7.c:** Require Pre-Application Scoping Meetings for Larger Projects
- **R-7.d:** Establish review timelines and resubmittal standards

R-8: Encourage Public-Private Partnerships (P3) and other innovative approaches to maximize resources.

Bicycle and Pedestrian Travel

Existing Conditions

Bicycle and pedestrian travel in the region is shaped by existing conditions and a combination of local, state, and national planning efforts that are working toward a more connected and accessible transportation network. Local plans adopted by municipalities and counties play a critical role in guiding how facilities connect within and across jurisdictional boundaries. These plans represent the most detailed system plan for future sidewalks, bike routes, and greenways.

At a broader scale, initiatives such as North Carolina's Great Trails State Plan seeks to connect all counties and key destinations through a coordinated network of greenways while the East Coast Greenway aims to create a continuous, safe trail system spanning from Maine to Florida and includes a planned corridor through Granville County.

Currently, bicycle and pedestrian facilities are limited to urban areas within the study area, Butner, Creedmoor, Franklinton, and Oxford and in some new residential subdivisions (as shown in Figure 5.8). While municipalities have a combination of pedestrian paths (sidewalks), bicycle lanes, and crosswalks, this infrastructure does not create a well-connected system. These facilities have been implemented only in certain areas and connect a relatively small area of each municipality.

Issues and Opportunities

Despite this progress and strong planning history, several challenges are present. There is currently a lack of dedicated funding for pedestrian and bicycle projects at a statewide level, which can limit how quickly projects are planned, designed, and constructed. In addition, many rural roadways are not designed to safely accommodate users beyond motor vehicles, creating safety concerns and limiting travel options.

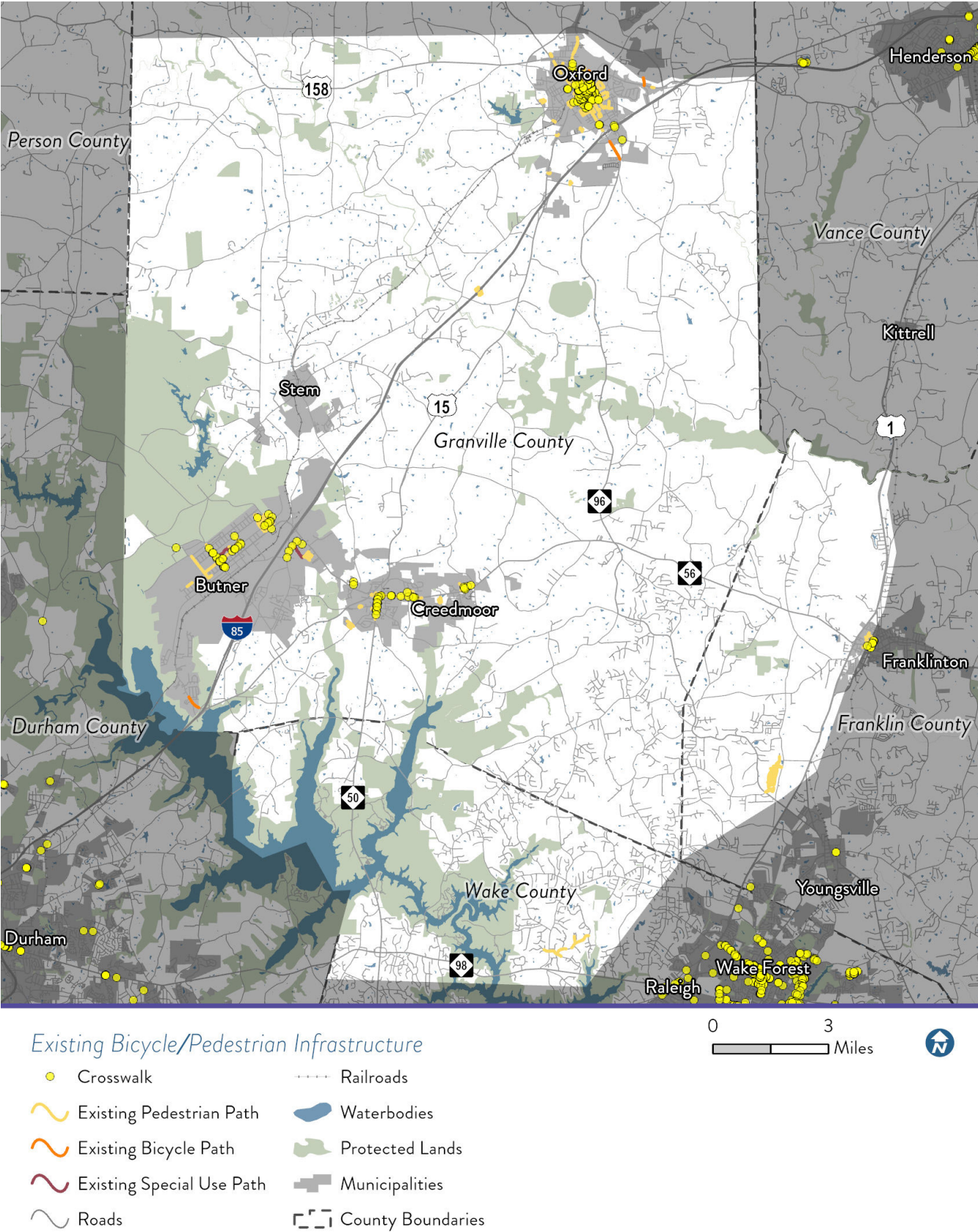
At the same time, there are clear opportunities to expand active transportation options in the North Falls Lake Study Area. Communities, and community members, have increasingly expressed a desire for more walkable communities that support everyday commuter travel, utilitarian trips and recreational opportunities. Furthermore, as roadways are improved or redeveloped, there are opportunities to incorporate pedestrian and bicycle infrastructure into those projects.

Creedmoor Cross City Trail

This trail was completed in November 2021 and creates a six-mile separated facility along a rural highway while connecting major destinations. These include schools, restaurants, parks, the Community Center, and Creedmoor City Hall.



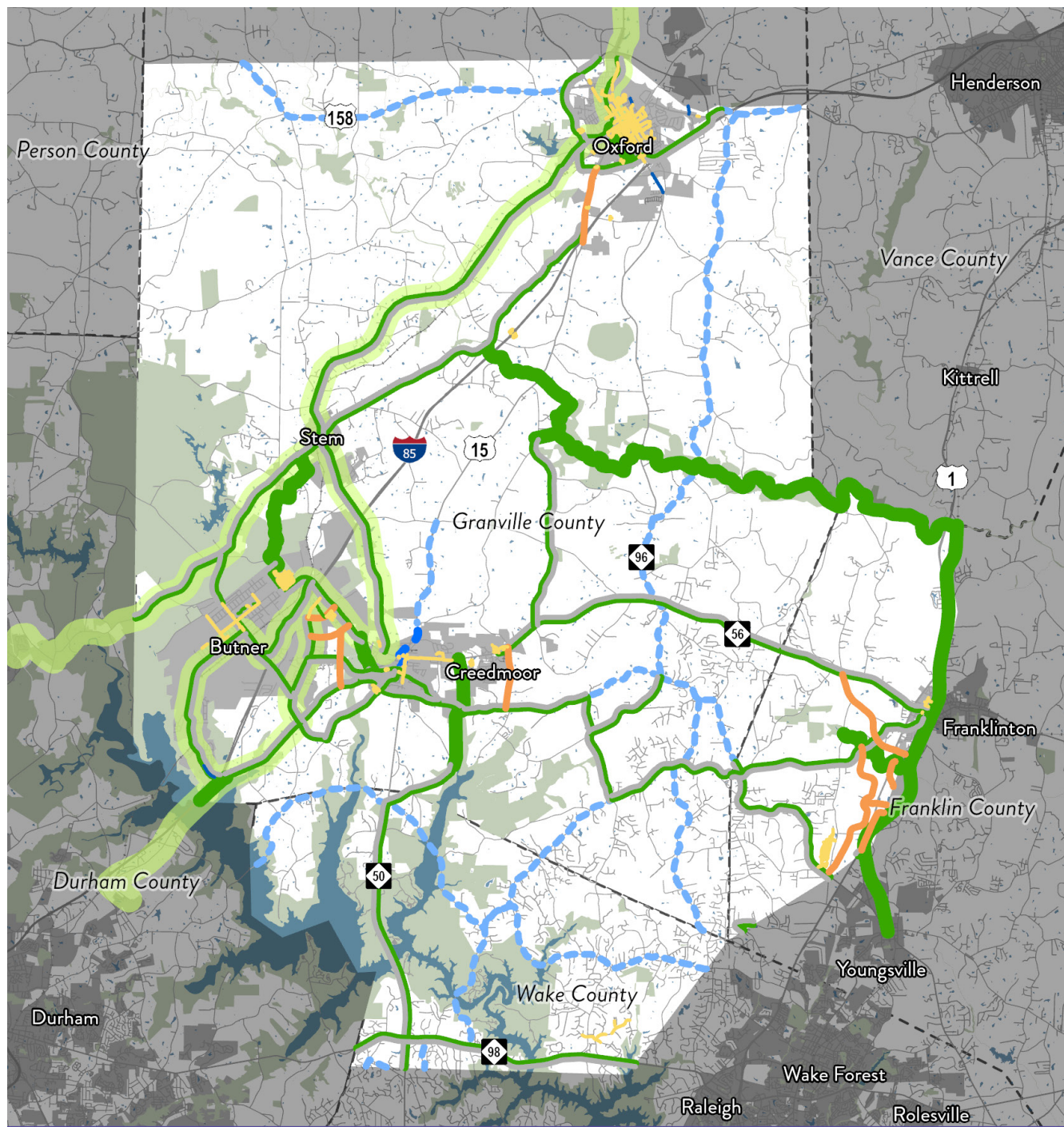
Figure 5.8 Existing Bicycle and Pedestrian Infrastructure



Bicycle and Pedestrian Infrastructure Recommendations

To address these needs, the plan recommends a range of facility types that can be tailored to different contexts as shown in Figure 5.9. These include:

- **Bike Lanes** - Bike facility with visual, spatial or vertical delineation from vehicular traffic. These bike facilities may be painted on a road facility, buffered or separated from moving traffic by a parking lane or other physical barrier
- **Paved Shoulder** - Widened roadway shoulder to accommodate multi-modal traffic
- **Shared Lane** - A shared lane is composed of markings and signage alerting drivers that bicyclists may be in the roadway
- **Sidepath** - Dedicated facility for pedestrians and bicyclists that is separated from vehicular traffic
- **Shared Use Path / Greenway** - Dedicated facility for pedestrians and bicyclists that typically does not follow a roadway alignment

Figure 5.9 Bicycle and Pedestrian Project Recommendations*Bicycle and Pedestrian Project Recommendations*

- Existing Special Use Path
- Existing Bicycle Path
- Existing Pedestrian Path
- Proposed Bike Ped Facility Type
- Bike Lane
- - Paved Shoulder
- Shared Use Path
- - Sidepath
- Sidewalk
- Roads
- - Railroads
- Waterbodies

- Protected Lands
- Municipalities
- County Boundaries

0 3 Miles



Bicycle and Pedestrian Policy Recommendations

BP-1: Pursue local, regional, state, and federal funding for priority pedestrian and bicycle facilities.

- **BP-1.a:** Prioritize and submit projects for consideration for existing funding programs
- **BP-1.b:** Consider incremental increases in local funding to assist with new projects including state and federal match requirements, betterments and improvements, sidewalk repairs, ADA improvements, sidewalk gaps, and greenway design and construction

BP-2: Review and update policies and ordinances related to pedestrian and bicycle facilities and infrastructure.

- **BP-2.a:** Review and refine street, sidewalk, and greenway standards for new development
- **BP-2.b:** Require reservation of right-of-way for or construction of planned greenways in the North Falls Lake Area
- **BP-2.c:** Provide bicycle parking in town centers, at key governmental facilities, and destination parks
- **BP-2.d:** Update ordinance to require or incentivize the provision of bicycle parking for commercial uses or mixed-use developments
- **BP-2.e:** Encourage land use and development design to enhance walkability. See Chapter 4 for more detailed recommendations

County Trails and Open Space Planner

Employing a dedicated Trails and Open Space Planner can lead to a more cohesive and equitable trail network in a region that can support active transportation, improve public health, enhance environmental conservation, and boost local economies through the development of pedestrian and bicycle facilities.

This position can help identify key connectivity gaps, prioritize investments, and advocate to integrate trails into broader transportation, environmental, and land use plans.

Alamance County should be looked to as an example of how a Trail and Open Space Planner can prove beneficial for a region.

BP-3: Conduct feasibility studies for priority regional greenway connections.

- **BP-3.a:** Study and refine planned greenway connections between Butner, Creedmoor, and Stem
- **BP-3.b:** Coordinate with Durham County, NCDOT, and the DCHC MPO to study the feasibility, facility type, cost and phasing of a future greenway connection to Durham parallel to I-85
- **BP-3.c:** Identify the preferred route for the future East Coast Greenway (ECG) between Oxford and Stem

BP-4: Expand coordination and planning for bicycle and pedestrian facilities in the region

- **BP-4.a:** Encourage participation in regional and statewide planning initiatives including the Triangle Trails Initiative and the Great Trails State Coalition and associated events
- **BP-4.b:** Consider the creation of a position or partial staff position devoted to planning and coordinating new trails and open space at county level (i.e. at Granville or Franklin Co)

Transit Services

Existing Conditions

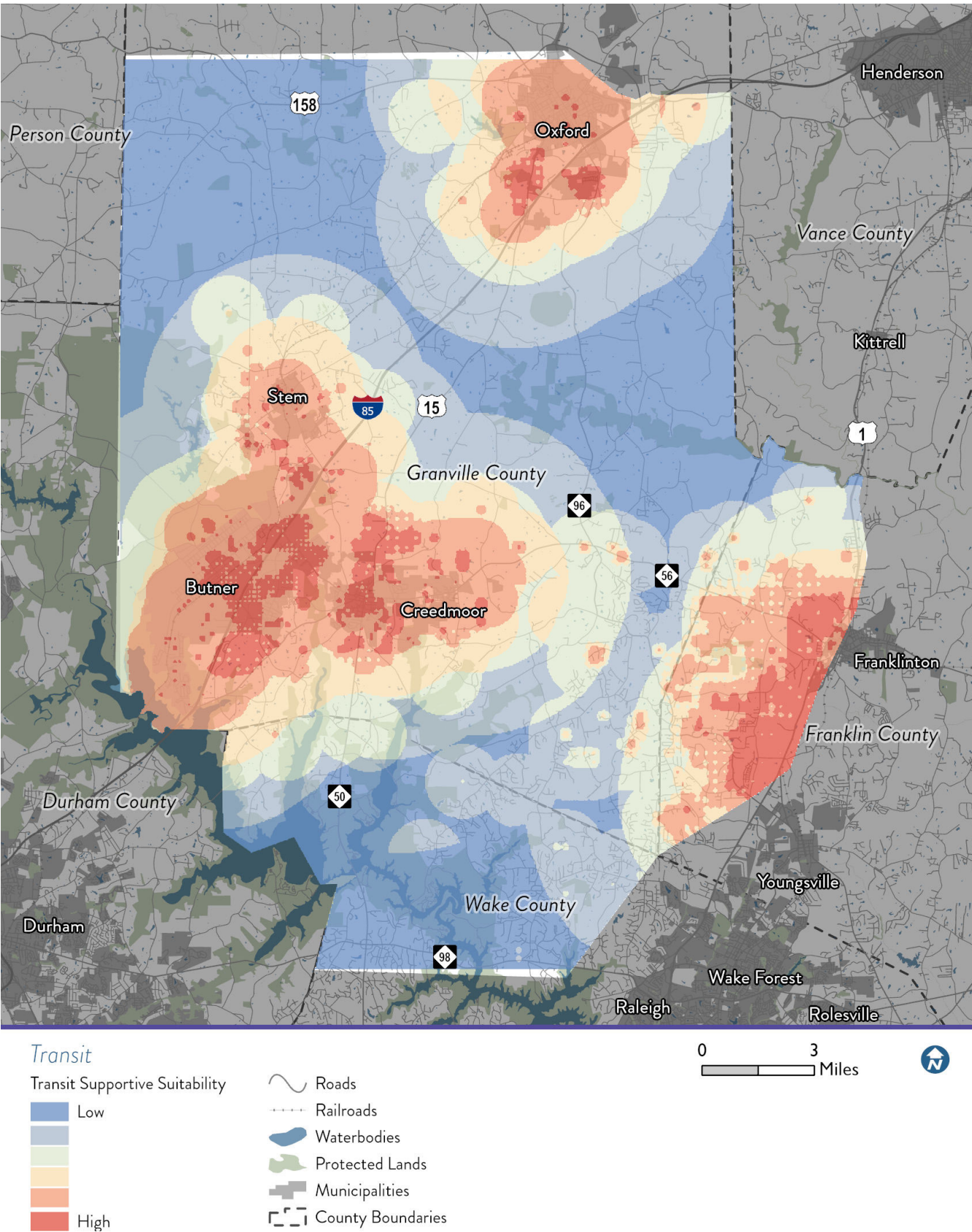
Kerr Area Rural Transit System (KARTS) is the public transportation service that serves Franklin, Granville, Vance, and Warren Counties. It has limited ride hours; 6am-6pm Monday through Friday, and request hours; 8am-5pm Monday through Friday. Passengers are expected to make ride requests 48 hours in advance – riders who request a ride prior to 48 hours are not guaranteed service. Out-of-county transit through KARTS is available to medical facilities. Options include Chapel Hill, Durham, Raleigh, and Wake Forest. Round trip fares cost between \$20-25; this is significantly cheaper than most ridesharing/hailing services such as Uber and Lyft. Out-of-county travel is limited to Monday through Wednesday, which impacts residents' appointment scheduling at healthcare centers.

Flex Ride is a separate program operated by KARTS for residents of the Town of Henderson. Unlike regular KARTS services, Flex Ride offers same-day trip requests, providing greater flexibility for local travel. However, service is limited to destinations within Henderson city limits. Flex Ride has 1 fewer hour of availability - Monday through Friday from 6:30 a.m. to 5:30 p.m.

The Oxford Shuttle Loop is operated as a fixed-route van shuttle to destinations around The Town of Oxford. These locations include but are not limited to: The Oxford Senior Center, Food Lion, Walmart, Oxford Baptist Church, and numerous apartment complexes. Fixed-route services are inflexible compared to on-demand transit; However, it requires significantly less planning for residents as the route operates on an hourly schedule. The shuttle is free to ride and operates Monday through Friday from 8am to 5pm.

Figure 5.10 on the following page shows the current transit suitability of the study area. Developed areas are more likely to support transit services while more rural areas are less likely to be able support these services. However, this suitability is relative and does not account for surrounding areas (such as Durham and Raleigh). However, if services were to be increased/expanded in the future, the areas labeled as 'High' should be considered.

Figure 5.10 Transit Supportive Suitability



Issues Identification

The North Falls Lake Area lacks reliable public transportation connections to the Research Triangle. While KARTS provides limited regional service by connecting residents to medical facilities in the Triangle—its availability is constrained by restricted service days, advance booking requirements, and overall inconsistency. Out-of-county trips are only offered Monday through Wednesday and must be scheduled at least 48 hours in advance, creating significant barriers to healthcare access for older adults, individuals with disabilities, and those with chronic conditions who are unable to drive themselves.

Population characteristics in the North Falls Lake area present a fundamental challenge to expanding public transportation services. Low overall population density limits the ability to support frequent and efficient transit operations. The I-85 and US-1 corridors are some notable exceptions, with urban centers supporting robust populations and higher density though distance between towns purports another problem. In parts of the study area, population density is as low as 33.4 people per square mile—densities at this level do not typically generate sufficient ridership to sustain traditional fixed-route bus transit service.

Transit Infrastructure Recommendations

Transit recommendations for the region focus on expanding mobility options while recognizing that additional analysis will be needed to determine feasibility, service design, and station locations. Together, these strategies aim to build a flexible and scalable transit network that can respond to the area's growth and evolving travel needs. These recommendations are shown in Figure 5.11.

A key recommendation is the potential expansion of KARTS. Currently, KARTS offers scheduled service to major destinations on limited days. Expanding this service, through extended hours, increased trip frequency, and additional regional connections, would improve accessibility and allow more residents to rely on transit for a wider range of trips.

The plan also recommends introducing both express and local transit options. Express bus service along major corridors such as I-85 could provide efficient connections between the study area and nearby urban centers. This could be implemented in phases, beginning with service to Butner and Creedmoor and later extending to Oxford. Complementary local bus routes would support shorter, everyday trips within communities.

Supporting infrastructure will also be important to transit success. Park-and-ride facilities are recommended throughout the region to encourage carpooling and provide convenient access points for transit riders. These locations, when paired with mobility hubs, can serve as centralized nodes where different travel modes, such as walking, biking, transit, and driving, connect seamlessly, improving overall network accessibility.

A mobility hub is a centralized location where multiple transportation options converge making transfers between them easier. Mobility hubs vary in scale, ranging from small neighborhood access points to major regional connections to serve the communities around them. See the following pages for more information.

Finally, the plan highlights microtransit as a flexible option to fill service gaps. Operating similarly to app-based ridesharing services, microtransit can provide on-demand, door-to-door trips that complement fixed-route transit. This approach is particularly well-suited to lower-density areas, where traditional bus service may be less efficient, and can help expand access to transit for a broader range of users.

Transit Policy Recommendations

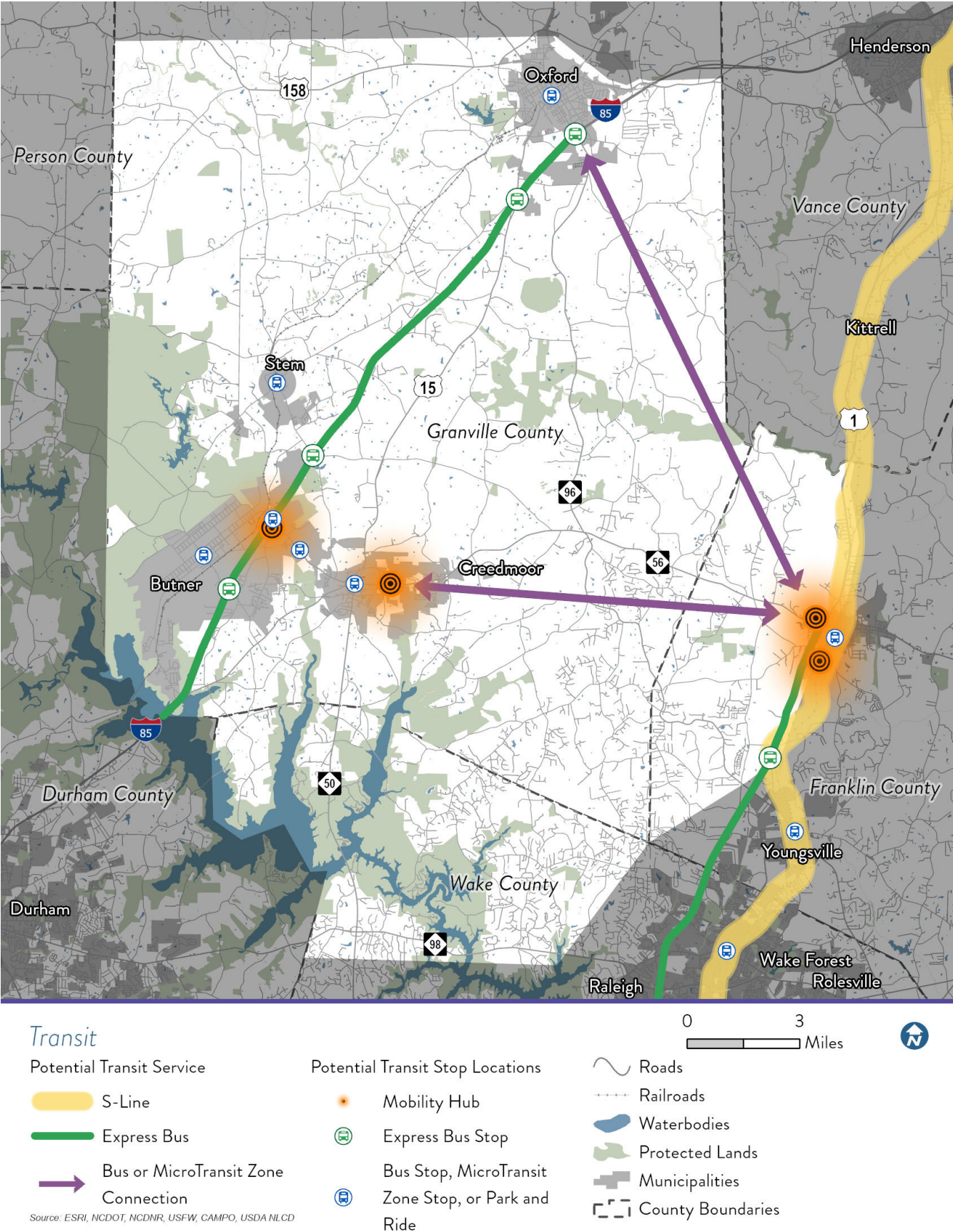
T-1: Conduct a more detailed transit study for southern Granville County and potentially the US 1 corridor in Franklin County.

- This study should evaluate alternative service options, as well as potential funding sources and initial, long-term, and ongoing costs

T-2: Identify locations and develop conceptual designs for bus stops or mobility hubs.

- **T-2.a:** Additional planning related to stop location, pedestrian access improvements, or conceptual design for layout of mobility hub locations is recommended

Figure 5.11 Transit Project Recommendations



Page intentionally left blank.

Figure 5.12 What is a Mobility Hub?

A mobility hub is a centralized location where multiple transportation options converge to support seamless travel and community connection. These hubs typically combine public transit (such as buses and trains), shared mobility services (including bikes, scooters, and carshare), and pedestrian-friendly infrastructure. Their purpose is to simplify transfers between modes while promoting sustainable, equitable, and efficient travel.

Mobility hubs are envisioned not only as transit nodes but also as vibrant community destinations. They can feature amenities like real-time transit information displays, EV charging stations, secure bike parking, and public spaces that foster social interaction and economic activity. These hubs also play a critical role in bridging first/last mile gaps, making it easier for residents to connect to transit from their homes or workplaces.

Mobility hubs vary in scale, ranging from small neighborhood access points to major regional connectors. The design should be tailored to the specific needs and context of each community they serve.





Five Key Design Categories

The Mobility Hub Elements provides a flexible framework for creating mobility hubs that are consistent across the Centralina region while adaptable to the unique context of each community. By organizing hubs into clear categories, the playbook helps communities identify the right elements to include, scale, or phase based on available resources, density, and local needs. This approach ensures hubs can grow over time while still delivering immediate benefits to riders.

They matter because they help communities prioritize investments, ensure consistency across the region, and demonstrate how mobility hubs are more than just transit stops but they are community assets that connect people to opportunities, reflect local identity, and promote safe, equitable, and resilient mobility for all.

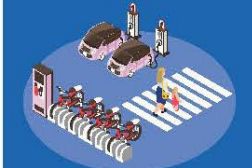
Core Mobility Services

These design elements form the foundation of every hub, ensuring seamless regional travel and easy access.

CORE MOBILITY SERVICE



FIRST/LAST MILE CONNECTIVITY



Supporting Services

These design elements are supportive, enhancing hubs with community services, identity, amenities, and resilient infrastructure.

HUB ANCHORS & IDENTITY



RIDER EXPERIENCE & AMENITIES



INFRASTRUCTURE & RESILIENCY



Where Mobility Hubs Can Happen

Mobility Hubs are most effective when located at the intersection of opportunity, demand and available space. They thrive where existing transportation and supportive infrastructure already provide a foundation for connectivity. They are ideal solutions for areas where land is underutilized or vacant lots, or oversized parking areas into vibrant community assets. Crucially, they belong where popular destinations are actively serving people, ensuring that hubs are integrated directly into the places where residents work, shop, learn, and play.

The sizing of hubs is highly variable and should be customized based on localized demand and available space, while considering future scalability and expansion needs. Generally, areas characterized by higher travel demand and significant land availability are better suited for larger-scale and higher-level hub typologies. By integrating these factors, planners can ensure that facilities remain functional as regional requirements evolve.

TRANSPORTATION INFRASTRUCTURE

- Transit stations and terminals
- Bus transfer centers and park-and-ride lots
- Highway rest areas or interchanges



VACANT OR UNDERUSED LAND

- Left-over spaces
- Vacant lots or infill sites
- Former gas stations or car lots
- Underutilized parking lots



PRIVATE & COMMERCIAL PROPERTIES

- Shopping centers, grocery stores, or retail plazas
- Office campuses or corporate headquarters
- Multi-family residential developments



PUBLIC AND CIVIC PROPERTIES

- Town halls, libraries, community centers/ social services, or schools
- Parks, plazas and recreation areas
- Schools and hospitals



PARKING FACILITIES

- Surface parking lots (public or private)
- Park-and-ride lots



STREET AND RIGHT-OF-WAY SPACES

- Curbside zones (along thoroughfares or arterials)
- Medians, curb extensions, or other expanded pedestrian areas
- Street corners



Recommendation

Prioritization

The roadway, bicycle, and pedestrian recommendations identified in this report were prioritized to add an understanding of which improvements are needed most urgently. The transit recommendations created are too preliminary in nature to be included in the prioritization. The prioritization approach used was developed to parallel CAMPO's Roadway Prioritization Tool (RPT) to the degree feasible. The RPT could not be used directly because it relies on a number of datasets only available within CAMPO's planning boundary, most notably outputs from the TRM. In addition, the RPT does not currently have the capability to prioritize intersection, bicycle, or pedestrian projects so a new approach for these was developed. Metrics were developed to represent the same categories used in the RPT, utilizing regularly available data so that the approach can be updated in the future. An overview of the metrics used is below, and a full description of the metrics and how they were calculated is included in **Appendix J "Prioritization Metrics and Methodology"**. Each metric is calculated and normalized across all projects to a score between 0 and 100.

Congestion

- Existing Congestion and Volume
- Future Congestion and Volume

Safety

- Historic Fatal and Serious Injury Crash Cost

Multimodal

- Inclusion of Bike/Ped Element (for roadway projects only)
- Proximity to Bike/Ped Facilities
- Connectivity to Regional Land Use Destinations
- Regional Trail Connections (for bike/ped projects only)

Connectivity

- Future Jobs and Population
- Nearby Network Connectivity (linear roadway projects only)

Economic

- Connections to Economic Development Centers

Equity

- Proximity to Communities of Concern

For the purposes of this prioritization and due to the different priorities and funding streams available, projects were split into three categories: linear roadway projects, intersection projects, and bicycle and pedestrian projects. The metrics listed above were weighted differently in each of these three categories. The weightings used for each metric are shown in the table below. It should be noted that equity is shown but has no weighting applied to it. This metric was calculated for all projects as an informational component but is not included in the prioritization process directly to comply with current federal directives. This approach parallels the approach used in CAMPO's RPT.

Category	Linear Roadway	Intersection Roadway	Bicycle and Pedestrian
Congestion	50%	40%	10%
Safety	20%	25%	20%
Multimodal	15%	15%	50%
Connectivity	10%	10%	10%
Economic	5%	10%	10%
Equity	0%	0%	0%

To normalize projects so that larger projects that inherently serve more users are more fairly compared with smaller projects, the final prioritization score for each project is composed of a "Needs Score" and a "Ratio Score". The "Needs Score" is as described above with the appropriate weightings applied for each project. The "Ratio Score" is the Needs Score divided by planning-level project costs, normalized to scores between 0 and 100. The prioritization score combines these two scores in a 50/50 split, and projects are sorted into tiers based on the prioritization score.

The tiers presented below are intended to represent the output of this scoring process and illustrate which projects are likely to be the most urgent as the North Falls Lake study area develops. These tiers can not directly be applied to specific timeframes as implementation is tied to securing funding, which is discussed at the end of this chapter.

It should be noted that this prioritization score is different from CAMPO's regional prioritization scoring (which is applied across the entire Triangle region, currently using the RPT) and is different from the scoring system used by NCDOT to identify projects for funding in the STIP.

Within each category, projects have been split into four priority tiers: Top, High, Medium, and Low based on the calculated prioritization scores.

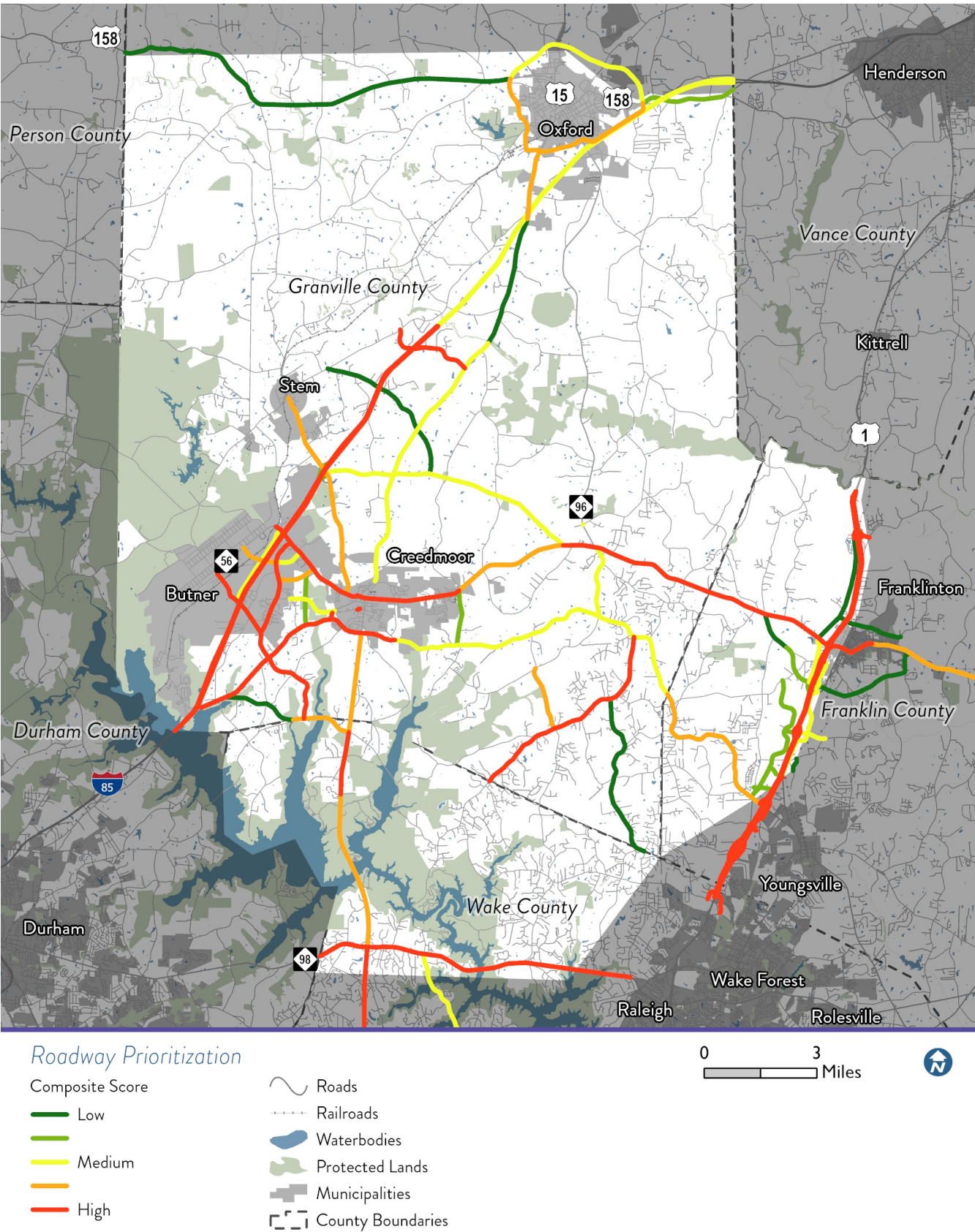
Linear Roadway Projects

The map on the opposite page, Figure 5.13, shows the results of the prioritization on linear roadway projects organized by scoring tier. Below is a subset of the projects in the Top Tier:

- Widening of Gate 2 Road from B Street in Butner to US 15 to the south
- Widening of NC 56 from west of I-85 in Butner to the east in Creedmoor, as well as a center turn lane improvement on NC 56 through Creedmoor
- Widening of NC 56 from Old Mill Farm Road to US 1 in Franklin County
- Portions and elements of the US 1 Freeway conversion in Franklin County
- Widening of NC 98 across the study area in Wake County

A full project list by tier is included in **Appendix G "Linear Roadway Projects by Tier"**.

Figure 5.13 Roadway Prioritization Scores



Intersection Roadway Projects

The map on the opposite page, Figure 5.14, shows the intersection projects by identified prioritization tier. Below is a subset of the projects in the Top Tier:

- Improvements to the NC 96 interchange with I-85 in Oxford
- Improvements to the Gate 2 Road interchange with I-85 in Butner
- Improvements to the intersection of Hester Road and Brogden Road
- Improvements to the intersection of Long Mill Road and NC 96 in Franklin County
- Improvements to the intersection of NC 96 and Industry Drive in Oxford.

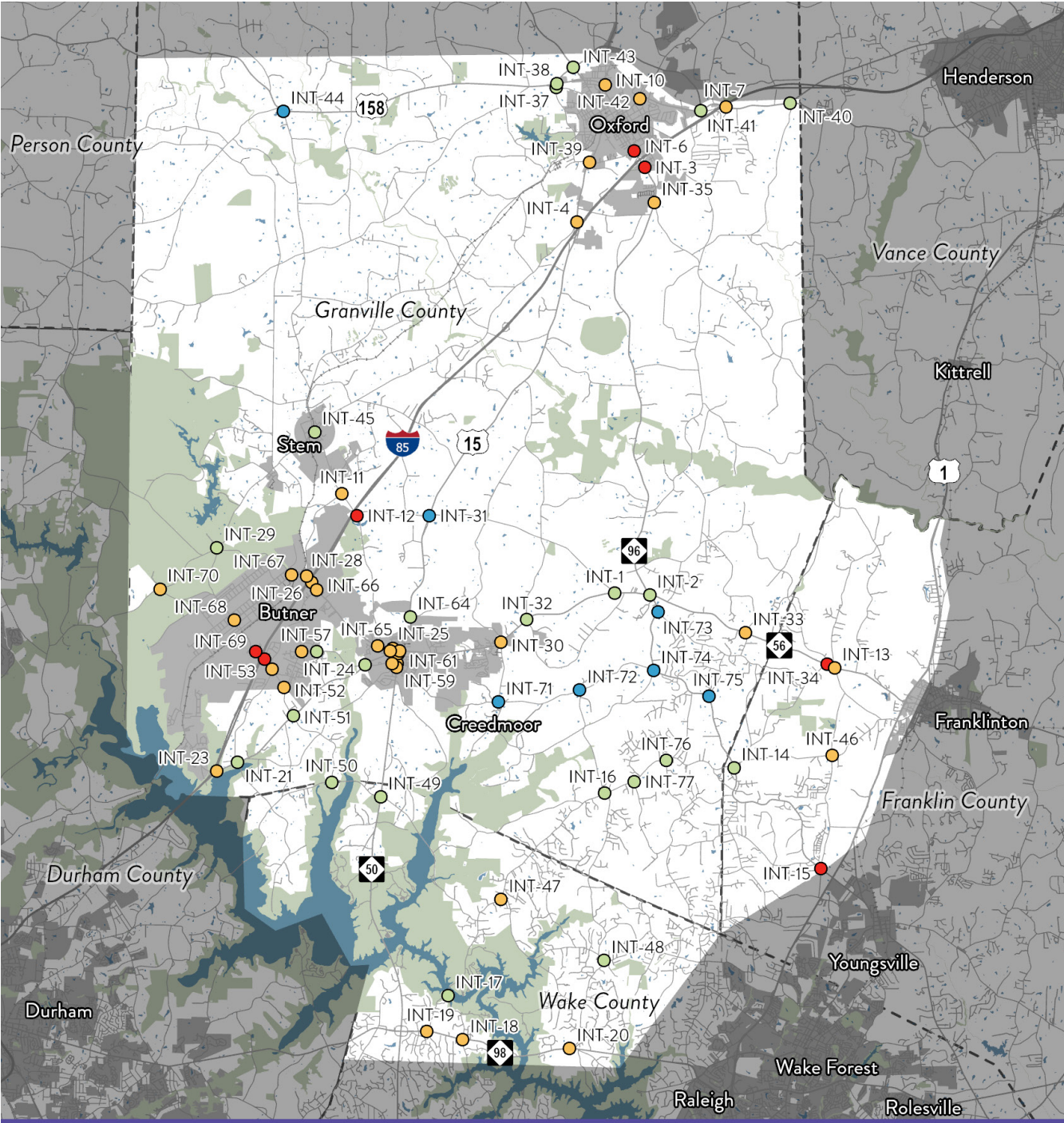
A full project list by tier is included in **Appendix H “Intersection Roadway Projects by Tier”**.

Concept Designs

Concept designs for the following intersections can be found in **Appendix K “Concept Designs”**.

- NC 56 and Wes Sandling Road (Franklin County)
- NC 98 and Ghoston Road (Wake County)
- Brogden Road and Hester Road (Granville County)
- NC 96 and W Antioch Drive (Oxford, NC)

Figure 5.14 Intersection Prioritization Scores



Intersection Prioritization Scores

Intersection Improvements

- Low
- Medium
- High
- Very High

- Roads
- Railroads
- Waterbodies
- Protected Lands
- Municipalities
- County Boundaries

0 3 Miles



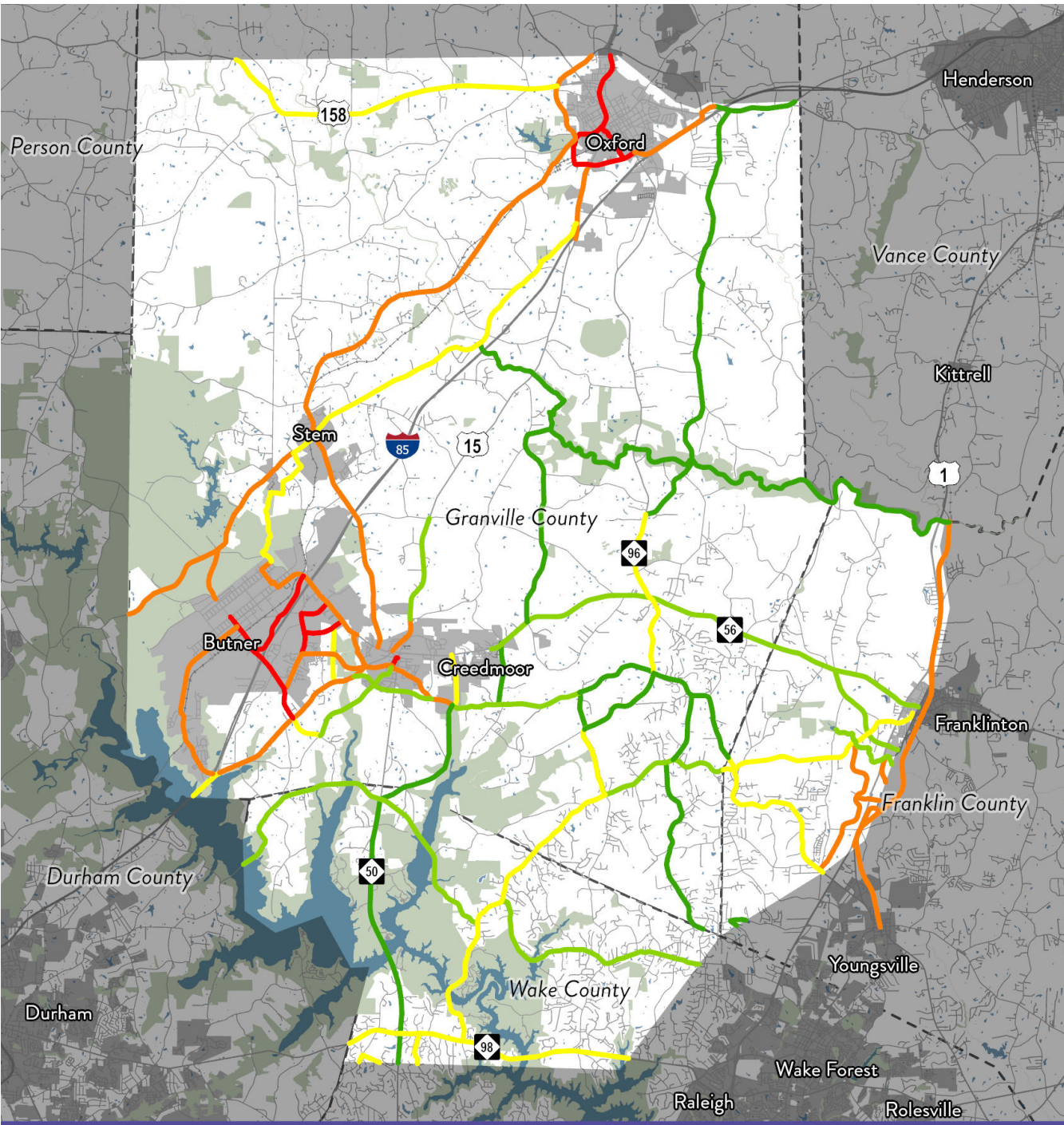
Bicycle and Pedestrian Projects

The map on the opposite page, Figure 5.15, shows bicycle and pedestrian projects by identified prioritization tier. Below is a subset of the projects in the Top tier:

- A sidepath on Gate 2 Road between D Street in Butner and US 15 to the south
- Portions of sidepath on Industry Drive in Oxford
- Portions of the East Coast Greenway, particularly those that pass through central Oxford
- A number of sidepaths in the Butner and Creedmoor areas, including segments on East Lyon Station Road and a proposed new road on the north side of I-85

A full project list by tier is included in **Appendix I “Bicycle and Pedestrian Projects by Tier”**.

Figure 5.15 Bicycle and Pedestrian Prioritization Scores



Bicycle and Pedestrian Prioritization

Composite Score

- Low
- Medium
- High

- Roads
- Railroads
- Waterbodies
- Protected Lands
- Municipalities
- County Boundaries

0 3 Miles



Source: ESRI, NCDOT, NCDNR, USFW, CAMPO

Implementation Considerations

In practice, the primary constraint for the implementation of any transportation project is the procurement of funding for design, purchase of right-of-way, and construction. Traditionally, major transportation projects have been primarily led by NCDOT, but other avenues of funding and completing transportation improvements exist. Given the tremendous rate of growth expected in the North Falls Lake study area, all member jurisdictions and their planning and implementation partners should pursue all avenues of funding as aggressively as possible. Below is a brief description of some primary funding sources and key considerations for each.

NCDOT's STIP and SPOT Process

As described previously, NCDOT chooses the projects it obligates funding for in the next ten years through its SPOT process. This process collects projects submitted by MPOs, RPOs, and NCDOT Division Engineers and ranks them on a series of evaluations that include technical analysis and local priorities. Projects can compete at the Statewide level (for major routes including interstates and other freeways), the Regional level (generally for other US and NC highways), and/or the Division level (generally for other functionally classified roads).

Most of the projects included in the North Falls Lake Area Study would likely be included at either the Regional or the Division level. In the last SPOT process, the region that these projects would compete in was able to fund less than 10% of the projects submitted (by cost). In the Division that these projects would compete in, less than 2% of the projects submitted were included in the STIP. These trends are expected to continue in the immediate future unless significant changes in statewide transportation funding and/or construction costs occur.

North Falls Lake study area communities should still pursue NCDOT funds for major projects, but should be strategic about which projects are submitted. Submitting agencies are limited on how many projects they can submit, so projects should be evaluated against the criteria used by NCDOT so that only those projects that are expected to be most competitive are included in this process. In many situations, shorter segments or specific intersection improvements may score better than long widening or new location roadway projects. Project segments shown in this report document should be evaluated and repackaged for SPOT to be most competitive.

Other NCDOT Programs

NCDOT also provides smaller amounts of funding for specific project types through programmatic divisions. The Integrated Mobility Division (IMD) provides grants for bicycle and pedestrian planning, including multimodal acceleration grants, which create concept designs of selected, high priority bicycle and pedestrian improvements within a community. NCDOT's Spot Safety program and Highway Safety Improvement Programs (HSIP) offers design and construction funding to address historic safety problems on state roadways. Member communities should work closely with their NCDOT contacts to identify appropriate programs such as these for many of the smaller projects included in this study.

Federal Grants

USDOT provides a wide range of usually competitive, discretionary grant programs that can provide funding for different stages of a transportation project's development and implementation. Local agencies – in North Carolina, primarily municipalities – are able to apply for and lead these grant applications. NCDOT has historically been open to providing support and technical leadership for these projects if awarded, often as long as the project is included in an adopted plan. Municipalities in the study area should review these opportunities as they appear and pursue those that can support highest priority projects. These grants typically come with a local match obligation that would need to be met by the applying agency; strategies for municipalities to have these funds are discussed later.

BUILD (formerly RAISE/TIGER)

The BUILD grant is a competitive, federal discretionary program that funds surface transportation infrastructure projects with significant local or regional impact. It supports roads, bridges, transit, rail, and port projects, often focusing on multi-modal, multi-jurisdictional efforts.

Safe Streets and Roads for All (SS4A)

The purpose of the SS4A grant program is to improve roadway safety by significantly reducing and eventually eliminating roadway fatalities and serious injuries. The program focuses on the development of a [comprehensive safety action plan](#) and its implementation for all users of our highways, streets, and roadways. The program provides funding to develop tools to strengthen a community's approach to roadway safety and save lives.

Infrastructure for Rebuilding America (INFRA)

An INFRA grant is a competitive federal funding program that provides grants to multimodal freight and highway projects of national or regional significance, aiming to improve safety, efficiency, and reliability for moving people and goods.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

The TIFIA program provides federal credit assistance, not grants, in the form of direct loans, loan guarantees, and standby lines of credit for large-scale surface transportation projects. It helps state/local governments and private entities finance up to 49% of project costs with low-interest, flexible repayment terms, often used for roads, bridges, and transit.

Regional Funding

For projects that are planned within CAMPO's planning area boundary, CAMPO's Locally-Administered Projects Program (LAPP) can provide funding for design, right-of-way, and construction phases of a project. LAPP is an administration of multiple federal funding programs, so projects must be eligible for federal funding, and are also required to be "shovel ready" with strict timelines on completion. Projects within CAMPO's footprint should consider this funding source, especially for design and environmental review, to better position those projects for federal and other funding opportunities.

County and Municipal Funding Support Strategies

While local jurisdictions typically do not have sufficient revenue to fully fund major infrastructure projects, there are steps that counties and municipalities can take to support accelerated implementation of transportation improvements.

Local jurisdictions can pursue many of the federal and other funding programs described above, but most have a local match requirement. For federal transportation grants, usually at least 20% of the total project cost must be supplied from non-federal sources. Many communities struggle to integrate budgets for this local match. Some communities have established flexible funding pools that are designated to be used as local match for any grants awarded. This approach ensures that there is financial backing to pursue grants, but does not obligate the funds towards a specific grant until it is awarded meaning the funding can be used to apply for multiple grants. This adaptive approach enables more grant applications.

Local communities should also consider using local, general funds to advance projects past the planning stage into early design and development. Many federal and regional funding programs prioritize projects that already have some portions of design, right-of-way acquisition, and/or environmental review completed. These project phases can be undertaken by locals to make these projects more appealing to funding.

Local communities also have input into the Transportation Impact Assessment (TIA) process when new developments are proposed. These often represent one time only opportunities to secure private investment in the transportation system. Local communities should continue to be aggressive in asking for reasonable investment from private partners during these processes.