

NEAS UPDATE **WORKBOOK** 2021

CAMPO Northeast Area Study Update

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Northeast Area Study Update

WAKE & FRANKLIN COUNTIES

DATE May 2021



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Acknowledgements

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PROJECT CONTEXT 01

Project Context

Introduction

This study is an update to the original Northeast Area Study (NEAS) from 2014, which was initiated by the North Carolina Capital Area MPO (NC CAMPO) to identify a cohesive transportation strategy for the growing communities of Wake Forest, Knightdale, Raleigh, Wendell, Zebulon, Rolesville, Bunn, Franklinton, and Youngsville. The NEAS region encompasses 435 square miles with a unique mix of a large metropolitan area, small towns, suburbs and farming communities stretching across a broad expanse of rural tapestry in both eastern Wake and southern Franklin counties. Wake County is the seventh (7th) fastest growing county in the United States (+210,700 population added since 2010), and Franklin County has proved similarly attractive due to resources and proximity to major metropolitan employers as well as the Research Triangle. In this instance, population growth is both a problem to manage and an opportunity to shape the region's future.

This study update reviewed land use and development patterns initially, followed by transportation scenarios that considered an array of factors to find the best, most cost-feasible set of recommendations. The people in these communities brought their concerns, initiative, needs, and innovation to a comprehensive vision for the Northeast Area. One day you will be able to walk safely on a sidewalk to your bus stop; travel safely on the roadway without undue congestion; bicycle to school with your child; and experience the plan that was created through your efforts. From surveys and interactive maps to computerized transportation models to rendered visions of "hot spots," this plan wove together concepts and strategies that will bring health, vitality, and opportunity to all citizens and attract employers to the region.

NEAS Project Area:

435
Square Miles

Communities Involved:

Wake Forest
Knightdale
Raleigh
Wendell
Zebulon
Rolesville
Bunn
Franklinton
Youngsville
Wake County
Franklin County

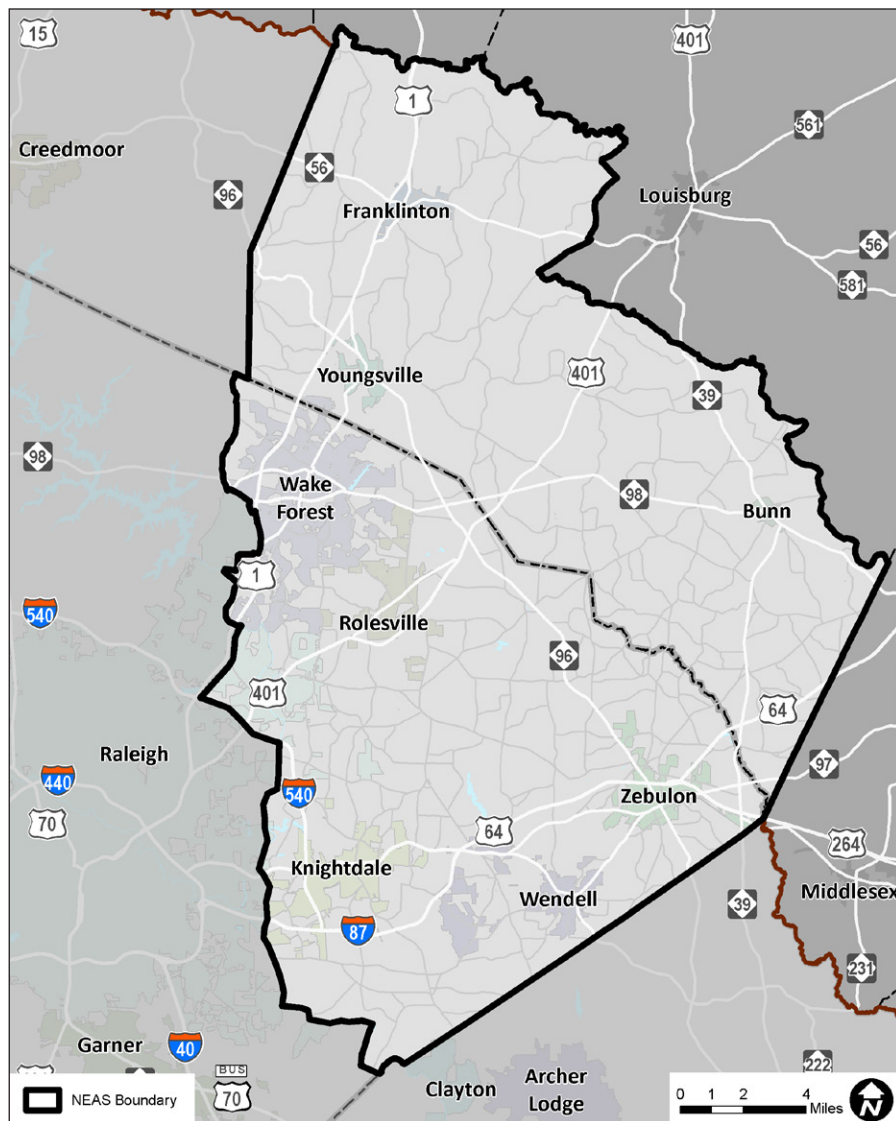


Figure 1.1: The NEAS study area.

Study Area & Partnerships

The NEAS study area encompasses the following communities in Wake County: Wake Forest, Knightdale, Raleigh, Rolesville, Wendell, and Zebulon; and in Franklin County: Youngsville, Bunn, and Franklinton. It is a large area – over 435 square miles, larger than 44 of North Carolina’s 100 counties. The diversity of the area in terms of its people may be even greater: 11% of the study area are Hispanic and 33% are minority, for example. Figure 1.1 displays the study area and municipal framework.

This project was initiated and funded primarily by the Capital Area Metropolitan Planning Organization (CAMPO) and completed in partnership with local municipal partners, GoRaleigh and GoTriangle, North Carolina Department of Transportation (NCDOT), and other transportation and land use regulatory agencies and their stakeholders.

Important Contexts Influencing the Shape of the NEAS Project

Recommendations from the Northeast Area Study Update will be considered for evaluation in the Metropolitan Transportation Plan document and process required of all metropolitan planning organizations (MPOs). This document becomes the guiding document for projects that receive federal and state funding across all modes of travel, which are the principal sources of financing for major transportation projects in this region.

This being said, the NEAS and the CAMPO Metropolitan Transportation Plan (MTP) are long-range planning documents looking out 30 or more years. In the context of timeframe, the recommendations should not be closely aligned with short- or medium-term policy decisions enacted

at any level of government. Instead, the priorities, policies, and project evaluations conducted in this document represent what was thought to be the most reasonable blending of current contexts and what the communities in our study told us that they wanted to see happen over this generational span of time. An important aspect of the MTP is that it has to be updated at least every five years – hence, any changes in direction can be accommodated readily. Things change, and they will do so again and again.

The following sections of our Project Workbook describe the basic project planning framework as well as key modal recommendations stemming from this comprehensive process.

"We need to prioritize people being able to use sustainable transportation options."

— Survey participant

"It would be nice to have public transportation between outlying towns without going to Raleigh"

— Survey participant

"Congested, congested, congested!"

— Survey participant



Existing neighborhood features of NEAS cityscapes.

PLANNING FRAMEWORK 02

Planning Framework

Regional Planning Guidance

Communication was the most important part of this study. Listening to stakeholders helped us gauge priorities and visions from residents, elected officials, and many different people across a very large geographic space. Not only was the process challenged by geographic space, but also by a global pandemic that limited physical interactions and events. Virtual outreach, described further in the next section, served a key role for gathering feedback. A key question in every long-range planning process is how to get people to “see” beyond what they encounter while driving to a store, to work, or to school that day. In order to make this communication happen at a meaningful level, the project team used a variety of outreach techniques.

Second, the project team wanted to ensure that technical components of the work were addressed in such a way that the layperson could access the same information as the consultant and staff. The project team used a variety of graphics, presentations, and performance measures to distill “heavy” content into something that was useful to people with a non-technical background.

Third, the project team and the steering committees (Core Technical Team and Stakeholder Oversight Team, or CTT and SOT, respectively) recognized that coordinating regional policies for corridors (e.g., US Highway 1, US 401, and US Highway 64) and counties, were critically important over the long term in creating the recommended projects and environments that people said that they wanted to see happen in their future. Policies have an especially important role if/when large-scale capital infusion from state and federal governments are generally unlikely or in a declining trend.

The following sections of the report discuss in greater detail what was discovered through the public process, both externally and through the two steering committees. A separate document – the Best Practice Policy Guidebook – specifically describes excellent practices that the NEAS municipalities and counties can follow in order to achieve some of the goals people described to the project team throughout the life of the study.

“Thank you for allowing citizen input!”

— Survey participant

“PLEASE create a passenger rail service!”

— Survey participant



CTT Meeting 1 March 10th. Issues & Identification Exercise.

Public Outreach Methods

As mentioned, the design of NEAS intentionally worked to create many opportunities for different segments of the public to participate in the planning process. This section names the outreach methods and provides some information about the appropriateness of each one to reaching certain segments of the public as well as the level of detailed input it provided to the process. Each method is briefly described in the following paragraphs.

Surveys

Traditional surveying was used, both online with QuestionPro and paper, to gain input both from the CTT and the public to identify issues, concerns, and hotspots for more detailed analyses. Surveys were deployed both in the initial round of engagement between May and June 2020, as well as to vet draft recommendations for multiple modes of travel in the second round of engagement in February and March 2021. There were 695 survey participants.

NORTHEAST AREA STUDY (NEAS) UPDATE-- Online Survey

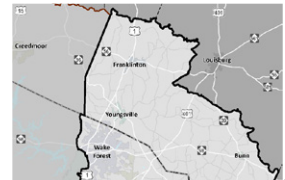
INTRODUCTION We'd like to hear from you! Please share your thoughts on how to improve transportation in your community by taking this brief survey.

The study area includes parts of Franklin and Wake Counties, the City of Raleigh, as well as the Towns of Bunn, Franklinton, Knightdale, Rolesville, Wake Forest, Wendell, Youngsville, and Zebulon. It will involve an evaluation of transportation projects, policies, and priorities that may have evolved or shifted since the original study in 2014. Your responses will be strictly confidential and data from this research will only be reported in the aggregate. Demographic and location questions are used to verify outreach is representative of the area population. For more info, visit www.NEASupdate.com.

How long have you lived in the study area?

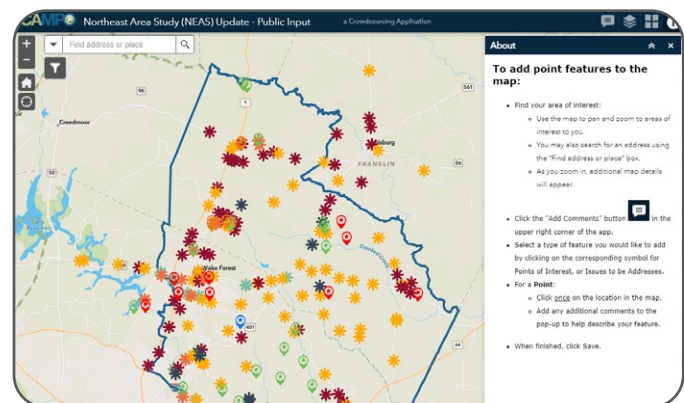
- ☐ Less than one year
- ☐ 1-5 years
- ☐ 6-10 years
- ☐ 10+ years
- ☐ I do not live in the study area

What is your zip code?



Interactive Maps

Utilizing the ArcGIS Online platform, citizens were asked to identify destinations or conservation areas within the NEAS study area, as well as report problematic intersections or barriers to walking/biking within their community. Residents left 342 unique comments, which greatly aided in analyses, reviewing potential Hot Spot locations, discussing future land use strategies, and identifying roadway network improvements.



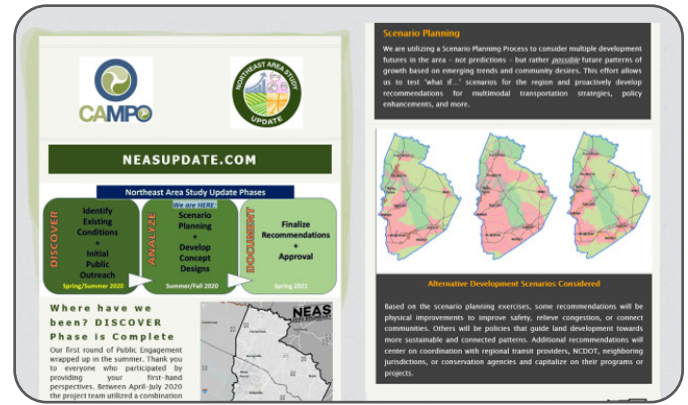
Project Website

The project website, www.neasupdate.com, served as the clearinghouse for all project information. Featuring the online survey and interactive map, the site provided the primary means of engagement for the public. The Project Team recorded over 5,000 page views and 2,200 unique visitors over the 14-month study.



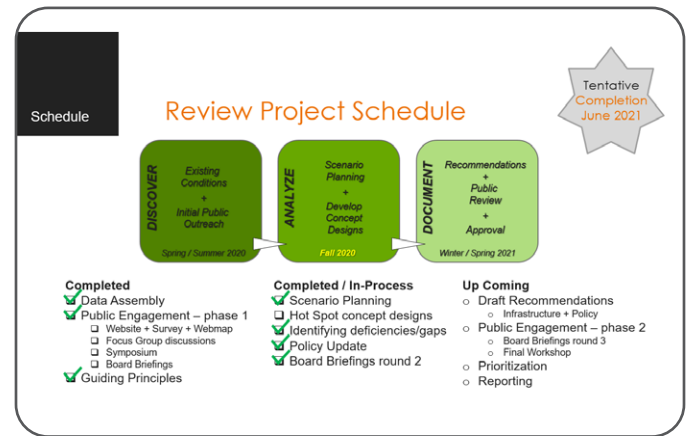
e-Newsletters

Three newsletters were generated and distributed digitally throughout the project. These newsletters provided overall status updates, notified recipients of upcoming opportunities for engagement, drove traffic to the project website for additional context or links, and set expectations on when the team would be reaching out again.



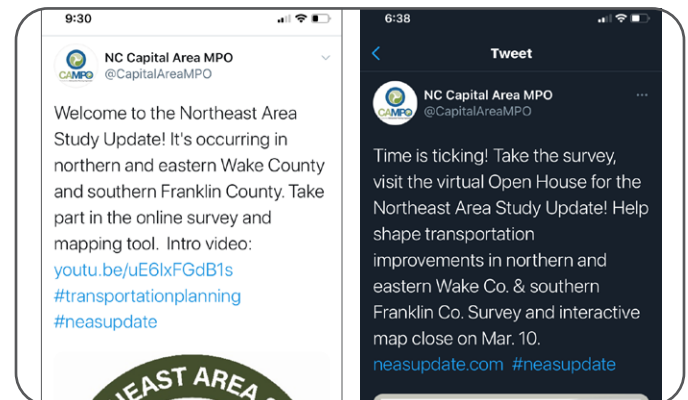
Board Briefings

Three rounds of board briefings were conducted for the NEAS Update Project, either through a written summary update or virtual presentation, to communicate with elected officials. The first gathered information on issues and presented the NEAS framework; the second summarized public engagement feedback and provided guiding principles; and the third presented the draft recommendations. A total of 33 board briefings were conducted for each municipality and both counties across all rounds either through a virtual presentation or written summary update. The CAMPO Technical Coordinating Committee and Executive Board also received periodic updates.



Social Media

Social Media is ubiquitous today, and its use in this update was important to its success. Engagement opportunities were advertised with social media posts via the Capital Area MPO's accounts on Facebook, Twitter, Nextdoor, and Instagram. Towns and counties posted events to their Facebook sites as well. Over the 14-month study, the Capital Area MPO social media account generated content for each event.



You will find the outcomes of each of these engagement strategies throughout this workbook as well as a separate Public Engagement report. Feedback was synthesized into themes that generated our project Guiding Principles, which were then referenced during the development of land use and transportation strategies. We incorporated feedback to gather input on the strategy ideas and generate refinements to create this final report.

Points of Concern

The people of NEAS identified a variety of key concerns expressed in the following bullet points.

- **Most survey respondents live within the NEAS boundary (90%), but only 55% work here**, suggesting that the remainder must commute to work outside of the NEAS study area
- Perspectives of existing traffic congestion were evenly split among those experiencing minor congestion (51%) or heavy congestion (49%) on a typical day
- When asked about growth and development in the NEAS, **twice as many people agree that it's moving in the right direction (43%)**, as opposed to 20% who believe its heading in the wrong direction
- Quality of Life amenities were identified as needing more, including **restaurants, recreational facilities or dog parks, open space protection, and shopping/retail**; more housing options were identified less often (though Affordable Housing options topped the residential choices), suggesting that residents would like to slow the trend of rapid population growth
- **Lack of sidewalks/trails, quality transit service, and safety** were among the most critical transportation problem(s), with traffic congestion (37%) identified most often
- In terms of future development areas, two-thirds of respondents desired **more density within downtowns or currently developed areas (infill)**

In addition to these issues raised by the public during our outreach efforts, there were a number of additional issues that helped evolve the various modal considerations described in subsequent chapters. The Regional Snapshot in the next chapter provides the contextual overview of the complex NEAS project and its people.

"Too many transfers needed between busses to get from Wake Forest to places in Raleigh"

— Survey participant

"Eagle Rock Road in Wendell is too narrow and has very little shoulder."

— Survey participant

REGIONAL SNAPSHOT 03

Regional Mobility



Rural sign in the Northeast Area Study region.



Evening PM commute conditions.

Roadways

The Northeast Study Area, which encompasses north-eastern Wake County and Southern Franklin County, is mostly comprised of rural two-lane roadways with posted speed limits of 55 miles per hour. There are a few major corridors and state routes that cross the area. This synopsis details the highest AADT on each corridor and location. All Average Annual Daily Traffic (AADT) counts were collected by NCDOT in 2018. AADT's are measured in vehicles traveled per day (vpd), both directions. For many people and even users of this document, the roadways and their capacity serve as the primary basis for decision making in a transportation plan – this aspect is important to NEAS as well, but we will discuss how roadways and their “completeness” (or lack thereof) work with other modes of travel besides the private automobile.

I-540

I-540 is an interstate highway that forms the southwestern border of the Northeast Study area. This facility is a six-lane, median-divided, access controlled facility with a 70 mph posted speed limit. Interchange ramps within NEAS provide access to I-87/US 64/264, US 64 Business (Knightdale Boulevard), Buffalo Road, and US 401 (Louisburg Road). **AADT: 72,000 vpd** (between US 401 Louisburg Road and Buffalo Road).

I-87/US 64/264

I-87/US 64/264 (Knightdale Bypass) is an east-west corridor that recently has been upgraded to interstate highway standards and assigned I-87. This facility is six-lanes west of its interchange with US 64 Business, median divided, access controlled, and posted at 70 mph. East of this interchange, the corridor is four-lanes and drops its interstate designation (considered US 64/264). This corridor connects Raleigh to Knightdale, Wendell, and Zebulon and points east. **AADT: 90,500 vpd** (west of Hodge Road). The non-interstate portion supports 66,000 vpd east of Rolesville Road.

US 64 BUSINESS

US 64 Business (Knightdale Boulevard) is an east-west commercial corridor from Raleigh to Zebulon. Portions of this roadway are four-lanes or six-lanes, with a planted median and many signalized intersections. **AADT: 37,000 vpd** near I-540 interchange. Further east of the NC 97 intersection near Wendell, the US 64 Business corridor narrows to a two-lane, 45 mph posted speed limit that supports closer to 12,000 vehicles per day or less.

US 401 (Louisburg Road)

US 401 (Louisburg Road) is a northeast-southwest route that connects northeast Raleigh to Rolesville and southern Franklin County. US 401 remains in a state of transition and has many different roadway types along its length within the area. US 401 is a six-lane divided highway from I-540 to Mitchell Mill Road with a 50 mph speed limit. North of Mitchell

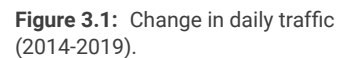
Mill Road, the corridor becomes a four-lane, limited-access divided highway with a 55 mph posted speed limit. Portions of this section feature limited left-turning options and U-turn locations, including the Rolesville Bypass project (TIP R-2814B), which has been constructed since the original 2014 NEAS study was completed. **AADT: 55,000 vpd** (near Perry Creek Road).

North of NC 96, the corridor narrows back to a two-lane roadway, with a posted 55 mph speed limit to the northern border of the area. Widening of this segment is currently under construction (TIP project R-2814C) to extend the four-lane divided highway cross-section to Flat Rock Church Road. The final segment (R-2814D) has been designed and awaits funding for construction to widen all the way to Louisburg, NC. **AADT: 26,000 vpd** (near Forestville Road), reducing to 16,000 vpd near NC 96 (Zebulon Road).



Typical rural highway.

A US 1 Council of Planning was set up to encourage local governments and transportation agencies within the corridor to coordinate existing and anticipated land use and transportation issues. The US 1 Council of Planning has been meeting since 2007 serving as an advisory group to review and discuss all land use and transportation projects of regional significance, as well as any changes to the US 1 Corridor Plan, or local land use plans within the study area.



NC-98

NC-98 runs from west to east through the Northeast study area, connecting Wake Forest with Bunn and eastern Franklin County. Along its corridor, NC-98 intersects with US 1, US 401, NC-96, and NC-39 in Bunn. Predominantly a two-lane highway throughout, NC-98 widens to become a four-lane divided highway at the Wake Forest Bypass. **AADT ranges between 3,400 vpd** (near downtown Bunn) and **30,000 vpd** (Wake Forest Bypass, near US 1), with greatest volume increases occurring west of Bunn.

NC-97

NC-97 runs from west to east through the Northeast study area, beginning just west of Wendell as it splits from US 64 business and continuing through downtown Zebulon to the eastern NEAS boundary. A two-lane highway throughout, NC-97 supports **AADT volumes ranging between 1,900 and 13,000 vpd** (in downtown Zebulon).

NC-96

NC-96 is a north-to-south corridor in the Northeast study area connecting Youngsville, Wake Forest, and Zebulon. Along its route, it intersects with each of the major corridors in the NEAS boundary: US 1 and US 401, NC-98, I-87/US 64/264, and US 64 Business/NC-97. It is the principal north-south corridor for the town of Zebulon. **AADT volumes range from 4,800 vpd** (near US 1 and Youngsville) to **22,500 vpd** (near I-87 intersection in Zebulon).

NC-39

NC-39 runs north-to-south through the eastern third of the Northeast study area and connects Bunn with Louisburg to the north and eastern Wake County to the south. It intersects with US 64 in southern Franklin County and US 264 in eastern Wake County, along with NC-98 in downtown Bunn. **AADT volumes range from 4,200 vpd to 9,100 vpd** (in downtown Bunn).



Level of Service

While the majority of roadways within the NEAS study area operate at a relatively high level of service (LOS) throughout the day, the distribution of congestion throughout the network is not uniform with respect to time or location. Figure 3.2 depicts level of service during both AM and PM peak hours overlaid with areas with higher density of development permits (certificates of occupancy) between 2010-2018.

Traffic congestion has increased from the 2014 NEAS study, **particularly in the areas of highest development density**. Segments of US 401 and US 1 operate at LOS D or F during both AM and PM peak hours. Apart from the major corridors, Forestville Road operates at LOS C to LOS F during peak hours, reflecting the development pressures placed on the existing road network there. This represents a significant change from the 2014 update, where Forestville Road operated at LOS B during both AM and PM peaks. Until such time as a new base year network is generated (planned for 2021), this figure represents the best available LOS evaluation and high development areas.

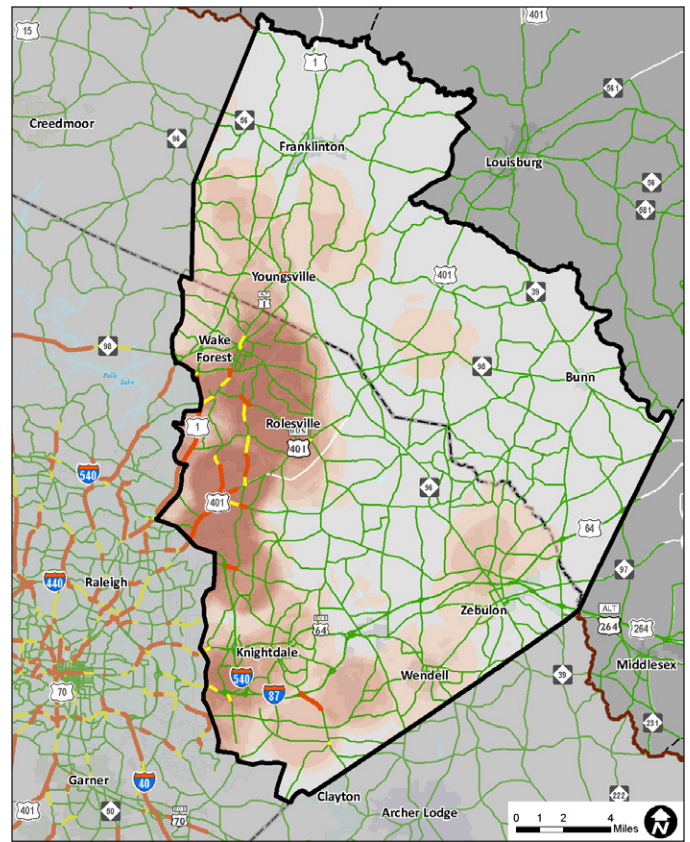
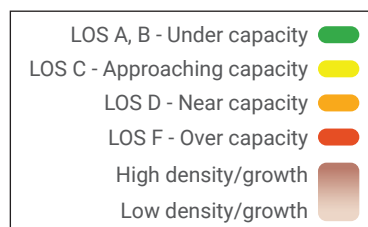
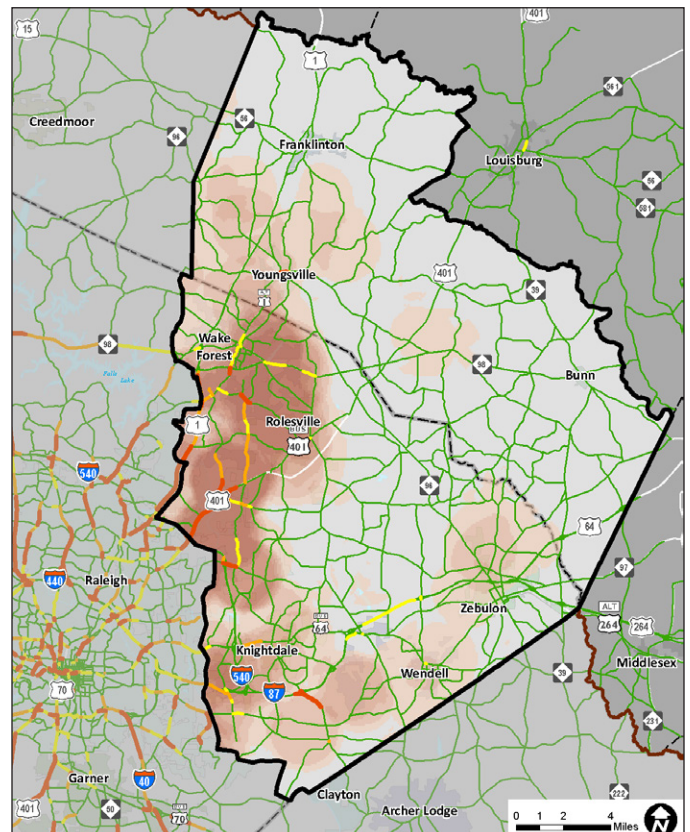


Figure 3.2: AM (above) and PM (below) peak period traffic congestion for the base year model network, and new development intensity (2010-2018).



Safety

Table 3.3 depicts intersection crashes by severity for the five-year period between 2014-2018. Comparison with the five-year period between 2008-2012 indicates a decreasing trend. Possible explanations for this trend may include enhanced vehicle safety features, driver behavior modifications, increase in non-intersection crashes, or reporting criteria changes. Crash severity has remained relatively constant, with non-injury crashes accounting for more than 70% of intersection crashes.

The top 10 intersection crash locations are displayed in Table 3.4, representing 20% of the 6,421 total intersection crashes. Five of these intersections were also in the top 10 from the previous study.

Crash Severity	2008-2012 Crashes		2014-2018 Crashes	
	Crashes	Percent of Total	Crashes	Percent of Total
Severe Injury	135	1.5%	68	1.1%
Injury	2,581	28.3%	1,809	28.2%
Non-Injury	6,404	70.2%	4,544	70.8%
Total Crashes	9,120		6,421	

Table 3.3: Intersection Crashes by Severity within the Northeast Study Area.

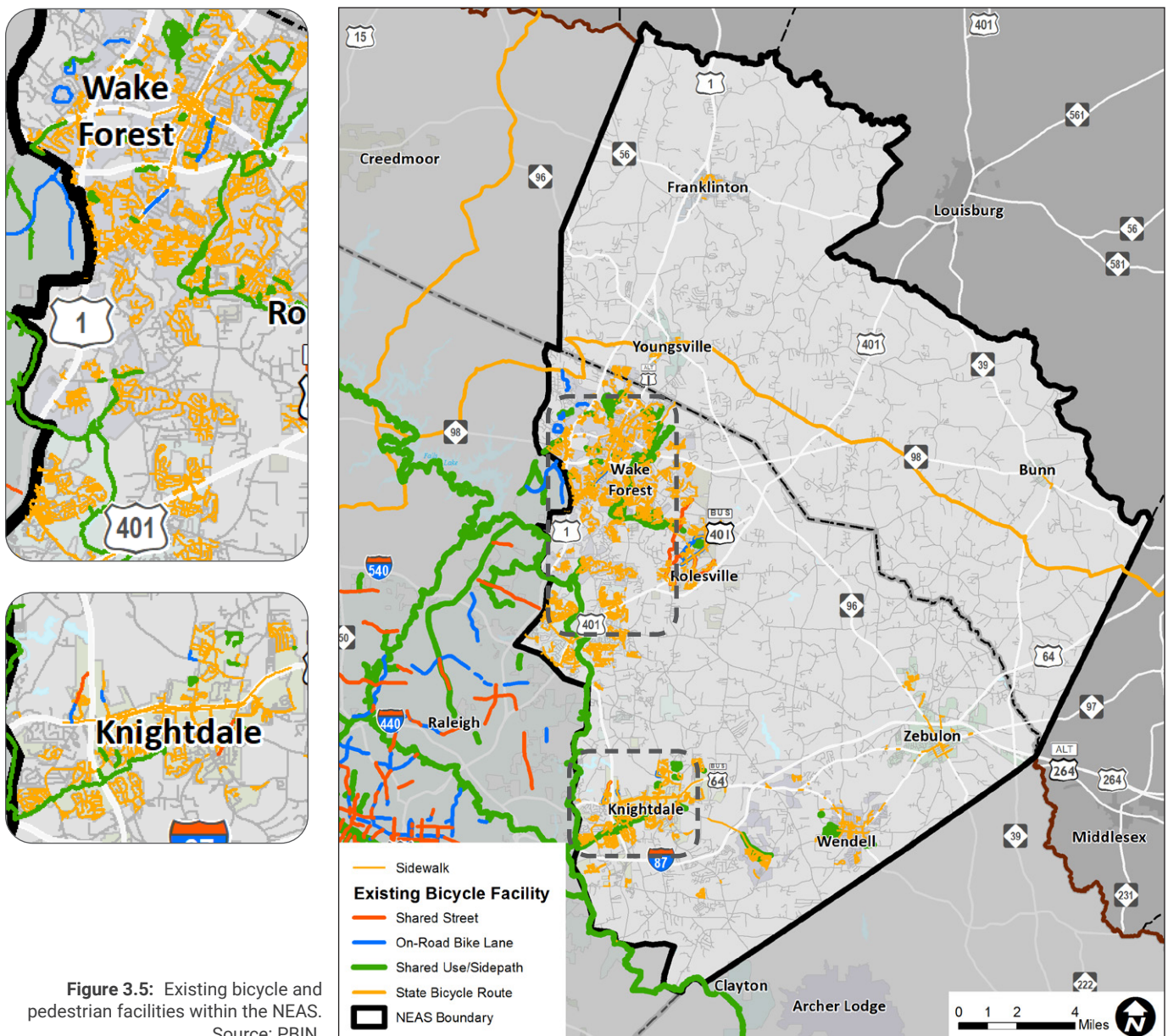
Intersection/Interchange	Location	Crashes	Severe Injury	% Total Crashes within NEAS	NEAS 2014 Rank
I-540 @ US 64 Business	Knightdale	240	0	3.7%	1
US 401 near Perry Creek Road	Raleigh	163	3	2.5%	2
US 1 @ US 1 Alt/Falls of Neuse Rd	Raleigh/ Wake Forest	163	0	2.5%	n/a
US 64 @ US 64 Bus/NC-96	Zebulon	136	1	2.1%	4
US 401 @ Forestville Rd	Raleigh	119	2	1.9%	n/a
US 401 @ Ligon Mill/Mitchell Mill Rd	Raleigh	116	1	1.8%	3
I-540 @ Buffaloe Rd	Wake County	110	1	1.7%	5
US 64 Bus @ Widewaters Parkway	Knightdale	78	0	1.2%	n/a
US 1 @ Holden Rd	Youngsville	75	1	1.2%	n/a
US 1 @ NC-96	Youngsville	75	2	1.1%	n/a

Table 3.4: High Frequency Crash Intersections 2014-2018, Northeast Study Area.

Bicycle & Pedestrian

The amount of bicycle facilities has increased since the 2014 NEAS Study. The construction of the Mingo Creek Trail in Knightdale and the construction of bicycle lanes in Wake Forest and Rolesville feature prominently. Sidewalk facilities have increased as well, with Wake Forest and Knightdale constructing new sidewalks since the previous update. Jurisdictions within the NEAS have successfully advanced bicycle and pedestrian projects recently, obtaining funding through Locally Administered Projects Program (LAPP) for Wendell

Boulevard sidewalks, Main Street improvements in Youngsville, the Beaverdam Creek Greenway in Zebulon, and the Rolesville Main Street Complete Streets Plan. However, while pedestrian and bicycle improvement projects have been implemented, gaps in the existing network remain. This is particularly true for bicycle lanes, where facilities do not extend to adjacent jurisdictions. While shared use paths (SUPs, also known as greenways) are more common and in high demand, these facilities lack connectivity both within the communities where they are found as well as between the municipalities that constitute the study area.



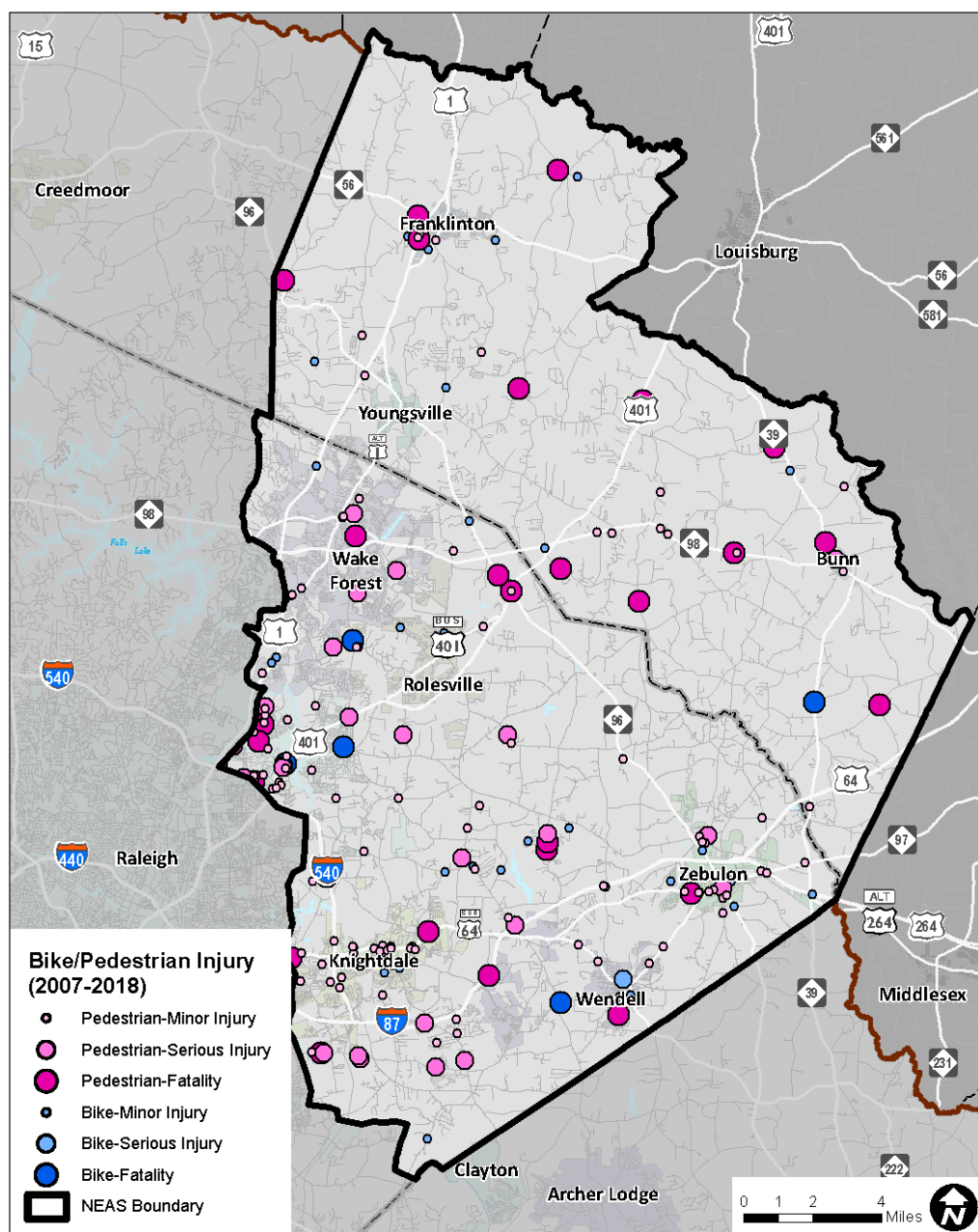


Figure 3.6: Bicycle and Pedestrian Injuries within the NEAS, 2007-2018. Source: NCDOT.

Safety

Bicycle and pedestrian crash data provide insight into existing activity, as well as potentially deficient facilities. Figure 3.6 depicts crashes involving bicyclists or pedestrians within the Northeast Study Area between 2007 and 2018. A total of 343 crashes are reported, 81 of which involved bicyclists and 262 of which involved pedestrians. Greater numbers of pedestrian- than bicycle-involved accidents likely reflects the greater amount

of pedestrian activity, however, it should be noted that many bicycle and pedestrian incidents go unreported.

The 2014 NEAS noted that, relative to population, a disproportionate number of bicycle and pedestrian incidents (148 of 343, 43%) occurred in rural areas where no pedestrian or bicycle facilities exist, and this trend continues into the current update. Reported crashes in these areas typically occur on two-lane roads with minimal shoulder widths.

Rail & Transit

Rail

The North Carolina Railroad Company owns a rail corridor known as the S-Line that extends from Raleigh to Norlina through Franklin County, passing through the downtowns of Wake Forest, Youngsville, and Franklinton along its path. CSX Transportation currently operates the railroad along this line, which currently operates as a freight route. The S-Line is a part of the **Southeast High Speed Rail Corridor**, which is a long-term objective for the NCDOT Rail Division. Right-of-way for the railroad along this corridor varies between 60 to 100 feet.

Transit

Fixed-route transit service is provided by GoTriangle and GoRaleigh to Wake Forest, Rolesville, Knightdale, Wendell, and Zebulon. Service is primarily provided along the major corridors of I-87, US 1, US 401, and US 64 Business, connecting with Downtown Raleigh along Capital Boulevard (US 1), New Bern Avenue/Knightdale Boulevard. Development patterns along these routes have continued to support express bus service since the release of the 2014 NEAS. Transit route service for the aforementioned destinations is summarized below.

Wake Forest. Two routes are offered connecting Wake Forest residents to the metropolitan area via transit.

1. The Wake Forest-Raleigh Express (WRX), operated by GoTriangle, departs Wake Forest from the Park-and-Ride lot at Elm Avenue and White Street, with stops at the Triangle Town Center and GoRaleigh Station in downtown Raleigh. With headways of 35 minutes, the WRX route operates for three hours in the AM peak, and three hours in the PM peak.
2. The Wake Forest Loop (WFL), operated by GoRaleigh, is a circulator route that connects key destinations in Wake Forest. The loop operates in both clockwise and counterclockwise directions, with major stops in Downtown Wake Forest, Wakefield Commons, and Wake Forest Crossing at Capital Boulevard. The Loop connects to the WRX route at the Park-and-Ride lot at Elm Avenue and White Street. Service span covers the hours of 6:00 AM to 8:30 PM, with reduced hours on Saturday.

Rolesville. GoRaleigh offers one route connecting Rolesville to Raleigh, the Rolesville Express (401X). This express bus service is a peak service route only, with service span of three hours in the AM peak and three hours in the PM peak weekday evenings. A one-way fare is \$1.25, with stops from Rolesville including Wake Tech Community College and the Triangle Town Center.

Knightdale. The Knightdale Route (33), operated by GoRaleigh, is a regular service bus route connecting Knightdale to Raleigh at the New Hope Commons Shopping Center. With headways of one hour, service span covers the hours of 6:00 AM to 10:00 PM. Key connections include Forestville Road Elementary School, Knightdale Town Hall, Harper Park, and numerous commercial retail centers.

Wendell & Zebulon. Wendell and Zebulon are both serviced by the GoTriangle Zebulon-Wendell Express Route (ZWX), a peak service express line connecting the two towns to downtown Raleigh at the GoRaleigh Station. One-way fares are \$3, and key connections include the WakeMed Campus at New Bern Avenue, and Park-and-Ride lots in Wendell and Zebulon.

In addition to these fixed-route services, GoTriangle, GoWake Access, and the Kerr Area Transportation Authority (KARTS) operate on-demand paratransit service for Wake and Franklin Counties, respectively.

Demographics

Population growth within the Northeast study area has been steady and significant throughout the 21st century, and this has not changed since the initial study was completed. North Carolina has seen substantial growth in its Hispanic and Latino population, and the Northeast study area mirrors this trend. White continues to be the largest racial group, with over 63% of residents identifying as such; Black and Hispanic/Latino populations increased, at 25% and 39% rates respectively. Growth projections for the coming decade suggest that the Hispanic or Latino population will continue to grow within the study area.

Population growth has outpaced projections of even the previous NEAS, with overall growth of

more than 50% occurring within the study area since 2010. New housing unit growth has largely kept pace with this trend, growing by nearly 48%. Of the nine communities within the study area, four (Knightdale, Rolesville, Wendell, and Zebulon) are among the **top 11 fastest-growing in North Carolina**, with Knightdale experiencing the fastest year-over-year growth at approximately 10%.

A majority of the area's population uses a car to travel to and from work, whether alone (81%) or carpooling (10%).

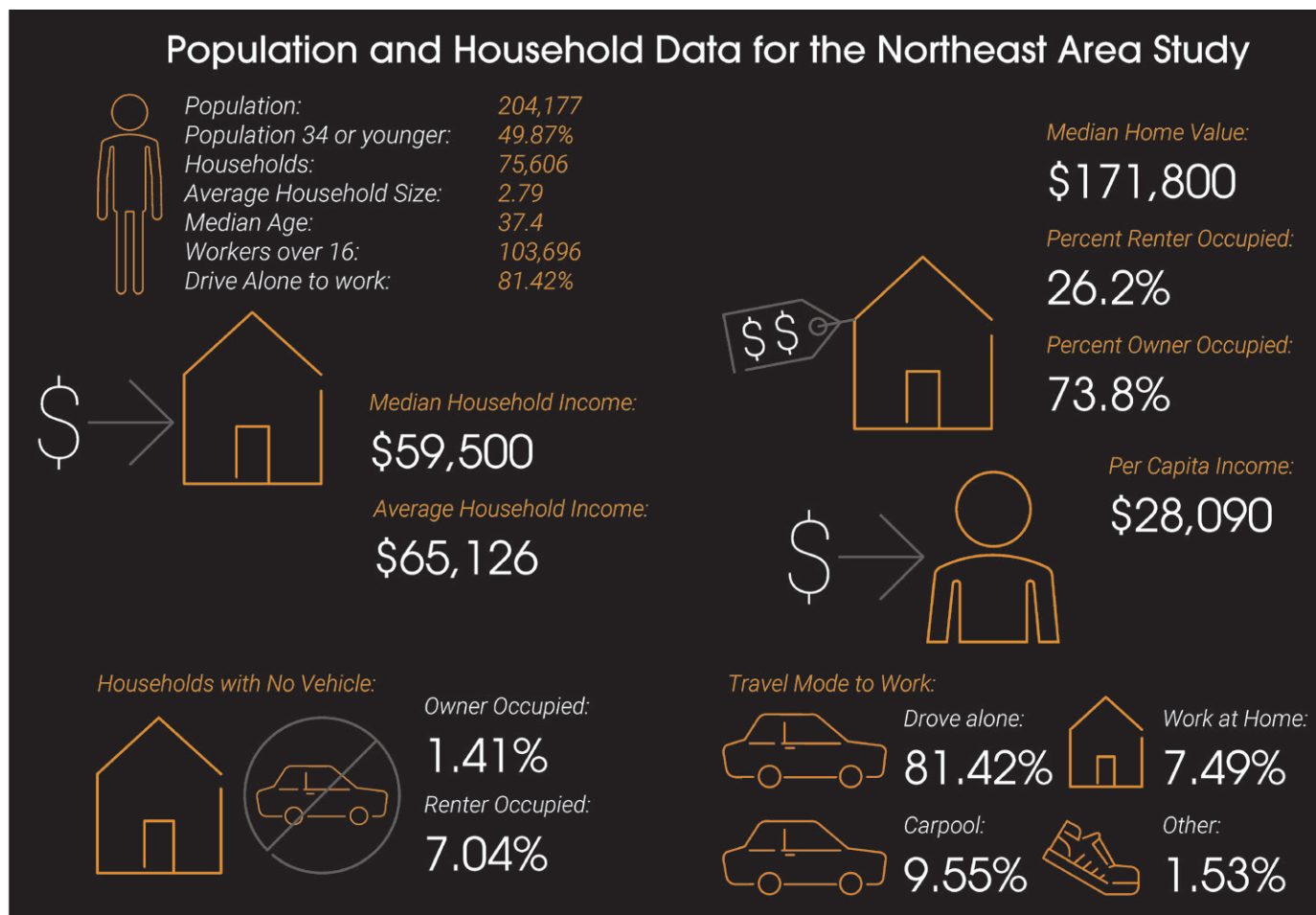


Figure 3.7: Demographics infographic. Source: American Community Survey (ACS) 5-year average 2015-2019.

Economic Vitality

The economic forecast for the NEAS remains strong, as the Research Triangle Park continues to play home to major employers for the region and adjacent communities' benefit. In Wake County alone, nearly 50 companies have more than 1,000 employees; in Franklin County, while Franklin County Schools remains the top employer with over 1,000 employees, only three of the county's top ten employers are publicly funded. Public institutions, including the State of North Carolina and Wake County Public Schools, are among the largest employers, while WakeMed Health and UNC Rex Healthcare also employ over 6,750 each.

Household income and home values have increased across the Northeast study area since the 2014 update. Median household income grew by 21% since 2010 to \$72,614, while median home value increased by 56% to \$228,299. These increases are likely a result of the continued shift in resident employment towards the technology and business sectors outside of the Study area. **Among residents of the NEAS, 86% are employed outside of the area.** An additional 27,800 employees work within the NEAS but live outside.

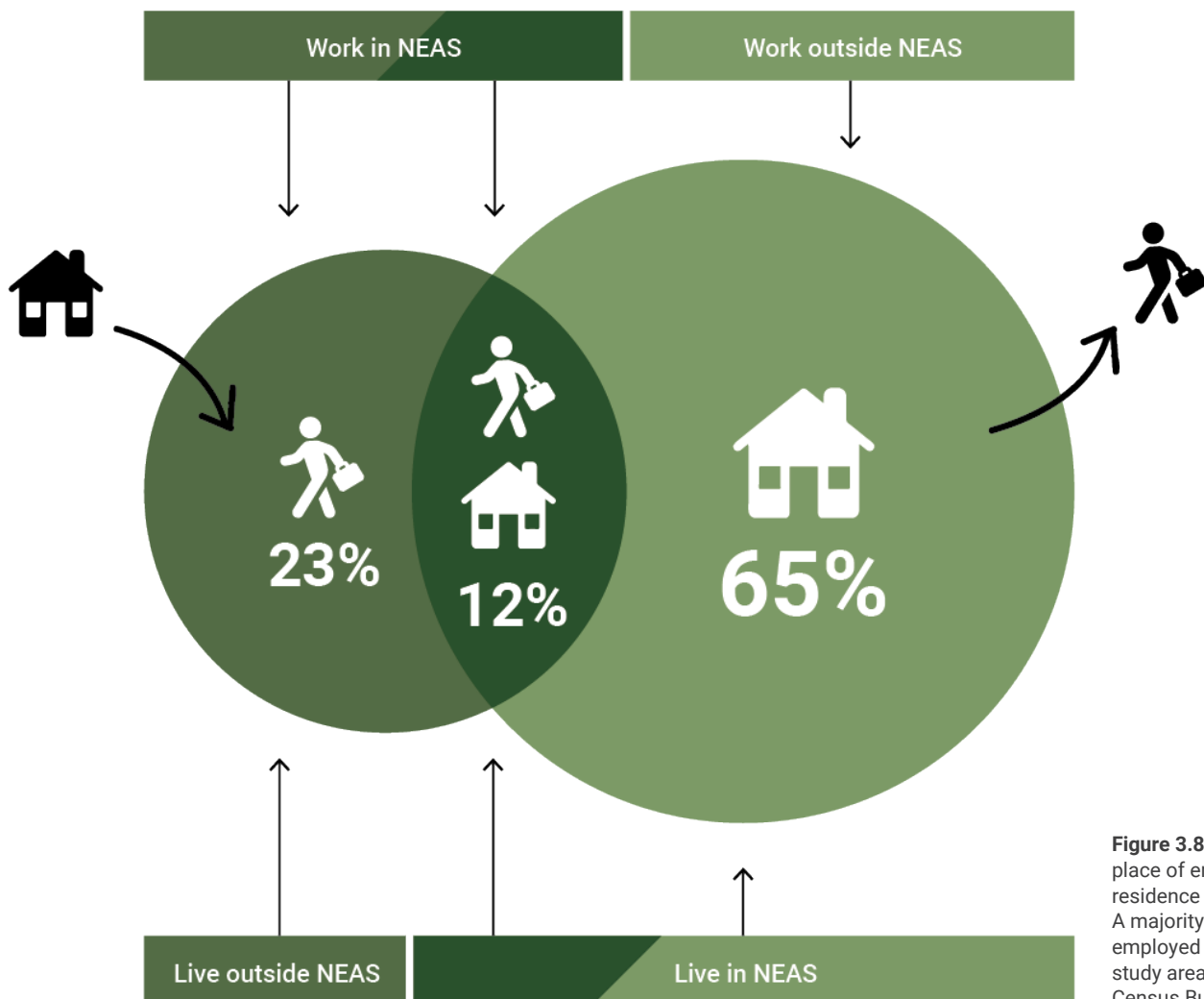


Figure 3.8: Worker's place of employment and residence within the NEAS. A majority of residents are employed outside of the study area. Source: U.S. Census Bureau.

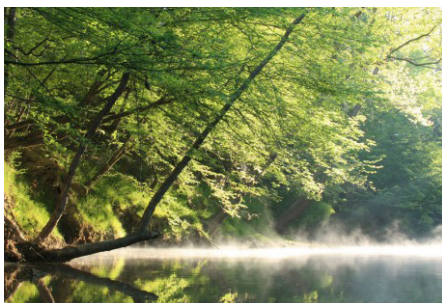
Natural Environment

The NEAS study area is bounded by water bodies: the Neuse River along a portion of its western boundary, while the Tar River and its tributary, Cedar Creek, make up portions of the northeastern boundary. The NEAS study area sits near the headwaters of both the Neuse and Tar Rivers, with much of the Wake County area lying in the Neuse watershed while Franklin County areas lie in the Tar watershed. Other major bodies of water lying within the study area include Poplar Creek, Marks Creek, and the Little River in Wake County, and Cedar Creek, Moccasin Creek, and Crooked Creek in Franklin County.

The Little River Watershed, overlapping both Wake and Franklin Counties, is a central hydrologic feature within the NEAS study area, occupying over 25,000 acres in Wake and Franklin Counties. Development occurring along its western edge in Rolesville, Wake Forest, and Knightdale means that the Little River watershed serves as the transition boundary from the urbanized, metropolitan area to the rural lands in the north and east. The “green heart” is just over 40,500 acres, representing 15% of the total land area within the NEAS boundary is subject to development constraints.



The Neuse River. Source: VisitRaleigh.



The Tar River. Source: Tar River Land Conservancy.

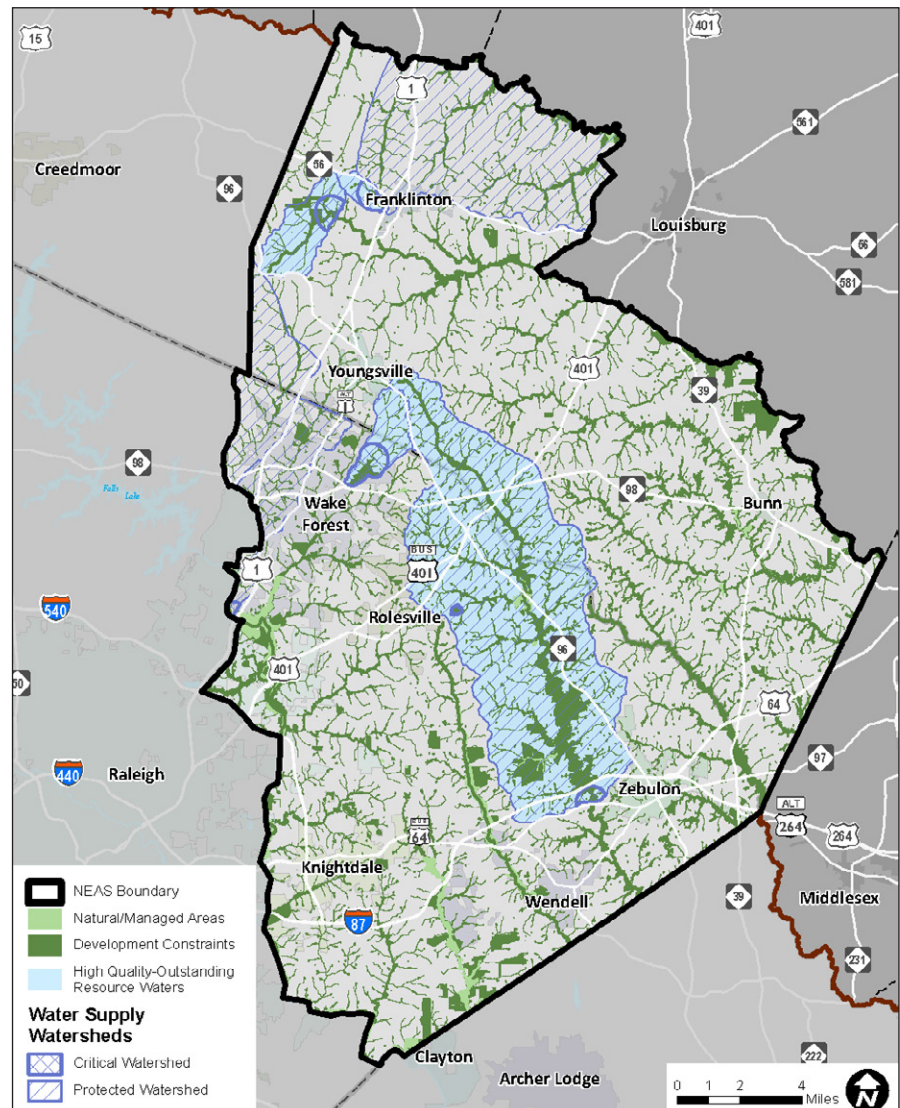


Figure 3.9: Environmental resources and natural managed areas.

The 2014 Study noted that the area retained its rural character despite continued population growth, and that characteristic remains in this update. Of the 435 square miles composing the study area, approximately 37% are dedicated to agricultural use, while a further 15% are categorized as open space, which includes surface waters and permanent open space. This represents a decline in total agricultural lands from the 2014 study, wherein 43% of total land area was classified as agricultural.



This change is likely a result of new residential construction, as residential development has increased substantially from 2014. Whereas developed lands, inclusive of commercial and residential properties, encompassed approximately 23% of the study in 2014, today residential uses alone constitute over one-third of the total land area at nearly 36%. These residential uses have grown across the entirety of the Northeast study area, but most substantially in the areas surrounding Knightdale, Rolesville, and Wake Forest.



Health

The physical and non-physical health of a community is affected by on- and off-road transportation facilities, as well as barriers to transportation.

Community Health Needs Assessments (CHNAs) for Wake and Franklin Counties identified transportation as a priority topic.

Both Wake and Franklin Counties demonstrate challenges with respect to transportation that affect the health and well-being of their residents. In both counties, a disproportionately high percentage of residents face long, solo commutes to work; this is particularly the case for Franklin County, where over half the population reports

long commutes alone. Lack of adequate transit service and a disconnected bicycle and pedestrian network also means that a smaller percentage of both counties' residents walk to work or take public transportation. Franklin County also faces challenges with respect to accessibility of healthcare services and other needs due to lack of vehicles.

Nearly 7% of the county's population are zero-car households. In a transportation network where alternative options are lacking, this poses challenges for those needing access to healthcare, jobs within the region, and other activities of daily living.

Measure	Franklin County (county-wide)	Wake County (county-wide)	North Carolina
Workers who drive alone to work	83%	80%	81%
Solo drivers with a long commute (> 30-mins)	54%	33%	31%
Workers commuting by public transportation	0.2%	1.1%	1.1%
Workers who walk to work	1.5%	1.3%	1.8%
Workers who work from home	4.8%	7.6%	4.8%
Households without a vehicle	6.6%	4.3%	6.3%

Table 3.10: Comparison of travel to work by mode. Source: American Community Survey (ACS) 5-year average 2015-2019.



SCENARIO PLANNING 04

Planning Scenarios



Land use and transportation are directly related, as viewed through traditional development patterns and single-occupied vehicle commuting.

Generally, long-range planning studies similar to the Northeast Area Study have focused on a narrowly defined set of evaluation tools, typically related to a time-based level-of-service analysis. For this update, the steering committees and professional staff wanted to reflect some of the core concerns of these groups as well as what the general public indicated in our surveys and in-person discussions. People understand that transportation systems don't simply move people and goods from one place to another with greater or lesser efficiency; the way that this service is delivered has major implications for how people will likely make their trip (mode), when they choose to make it (time of day), and how long it will take them (travel time). Even further, **the transportation network ultimately is only part of a feedback loop that influences the very environment that creates the demand for trip-making in the first place.** For example, a transportation system that features very high capacity streets that move as many cars as efficiently as possible will likely result in a lower level of service for other modes of travel (excluding, perhaps, some forms of public transportation) and ultimately creates a physical environment that reinforces that method of travel. Hence, we have seen the rise of "strip" commercial development, large office parks, and far-flung tract subdivisions.

The historical prevalence of these development types is not an accident, nor even purely market-driven. Lending institutions, municipal zoning codes, public expectations, construction practices, and other forces have moved the ball in this direction for at least the past five to six decades. However, as more people find themselves facing increasing levels of traffic, difficulty with aging in place, or find the expenses involved in maintaining private cars increasingly infeasible, this development pattern is changing. The old adage "drive 'till you qualify," where people move to the most square footage for their money, no longer rings true. Younger people are waiting longer to get their driver's licenses, and many would prefer to live in places where driving is infrequent – or even optional. Where large suburban-style home developments are still occurring, the variety of housing types is increasing, as is the number of amenities and design features aimed at improving walking and biking conditions.

Some of this knowledge helped to guide the project team towards **suggested planning scenarios (total of four)**, used initially to collect input from many people as well as guidance offered by the professional planning and design staff employed by the towns, city, and counties in the Northeast study area. The following are the primary scenarios that were used to help shape the final, preferred (blended) land use scenario. A demand assessment was created and applied to the transportation network to gain an understanding of where improvements were most crucial. These scenarios were evaluated using the performance metrics described later on.

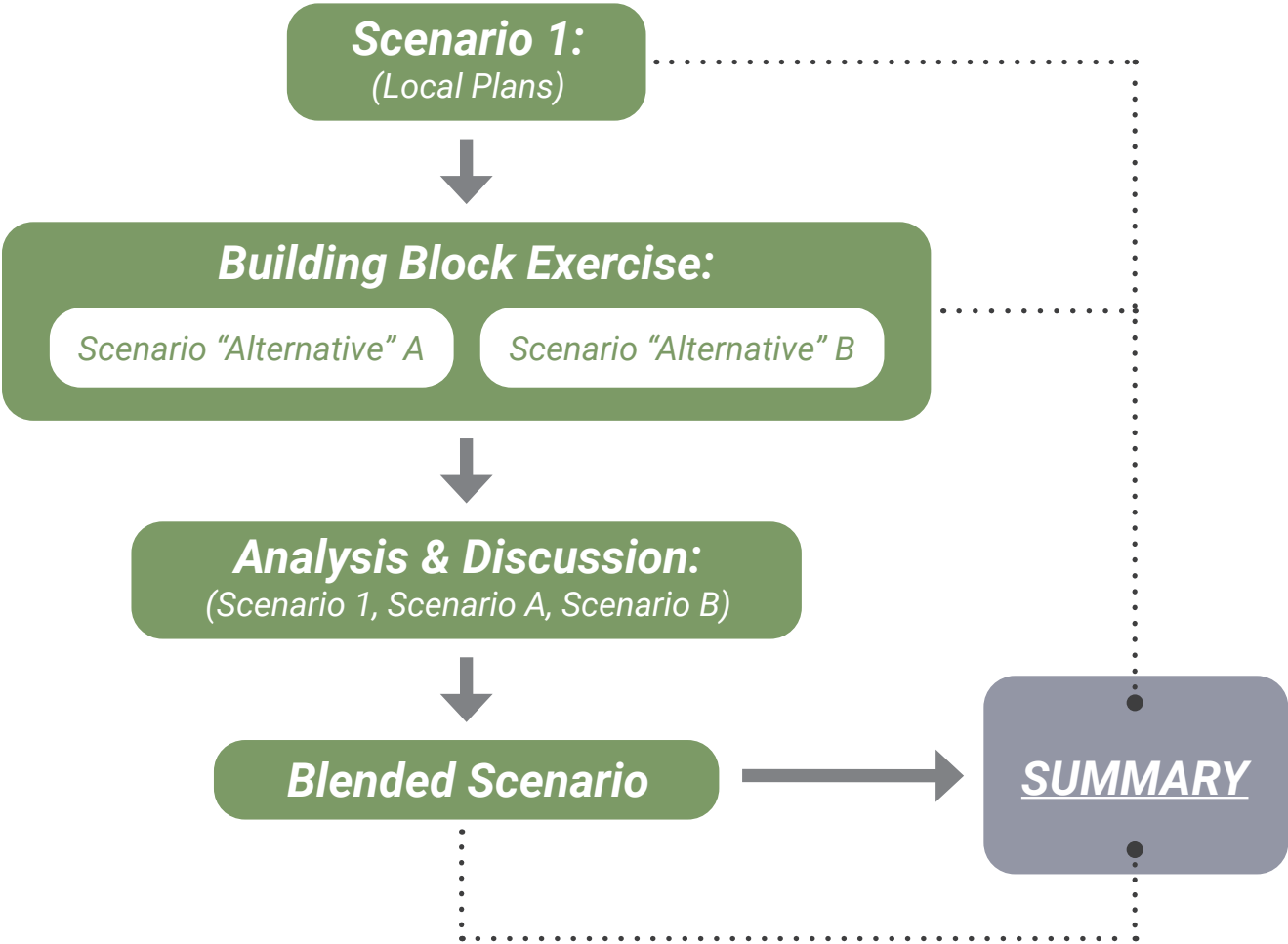


Figure 4.1: Summary of Scenario Planning Process.

LOCAL PLANS SCENARIO

The Local Plans scenario is precisely what its name suggests: the growth scenario resulting from the compiled plans and policies of each jurisdiction within the Northeast study area. Plans from every municipality were gathered and expressed through a set of land use categories. In addition to representing the projected future year growth, this scenario served a second, important function: it served as the baseline against which subsequent, alternative scenarios would be evaluated.

SCENARIO A: "DECENTRALIZED GROWTH"

Scenario A features a more decentralized growth pattern. It supports concepts from the public symposium and Stakeholder Oversight Team feedback such as "city flight" (a shift in population away from the city centers as people look for more affordable and spacious housing options). This scenario would also support recent trends such as people telecommuting from home or working remotely from nearby coworking centers. While work and shopping is primarily accessed via automobile in this scenario, it imagines an expanded shared use path system providing options for cycling and walking to destinations such as parks, schools, and shopping. Nonresidential development mixes less with residential development and would occur at lower densities. Conservation efforts are integrated into elevated standards for neighborhood and subdivision design. Scenario A does not envision expanded or enhanced transit options into the metropolitan center.

Key Concepts:

- Complete communities are oriented around short, 10-15min driving distances to activity centers
- Decentralized growth pattern
- Supports perceived trends such as increased city flight
- Neighborhoods are connected via networks of collector roads and multipurpose trails.
- Maintain open space through infill development and using concepts such as conservation subdivisions and low impact development
- Less mixed-use development

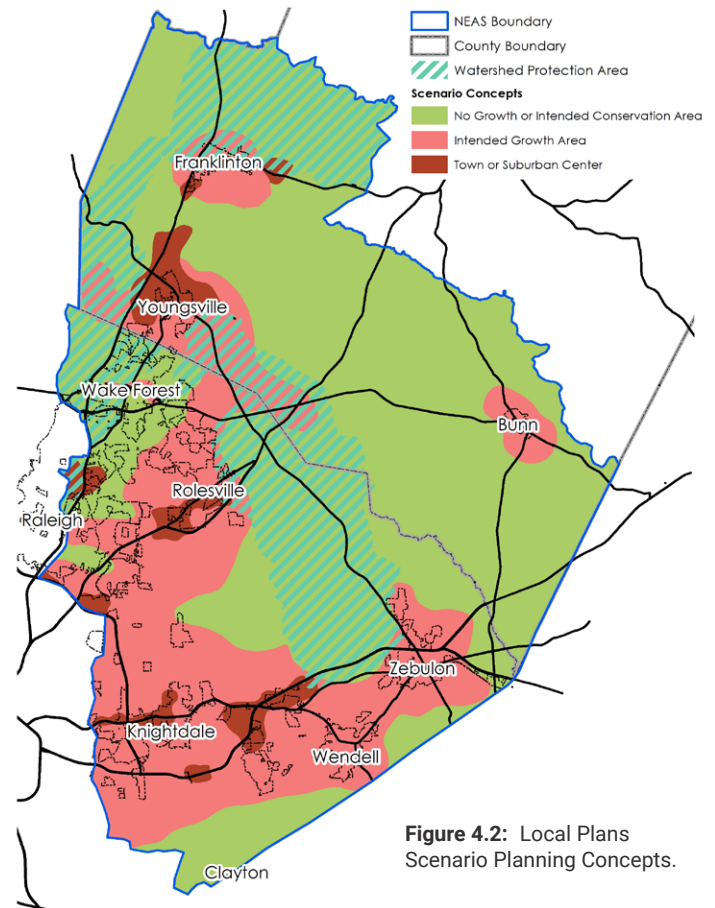


Figure 4.2: Local Plans Scenario Planning Concepts.

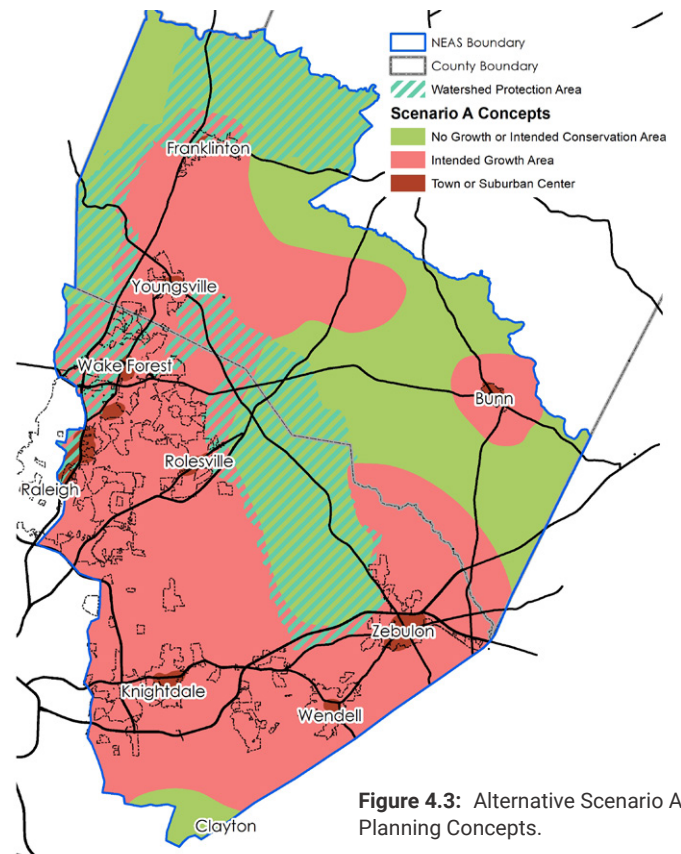


Figure 4.3: Alternative Scenario A Planning Concepts.

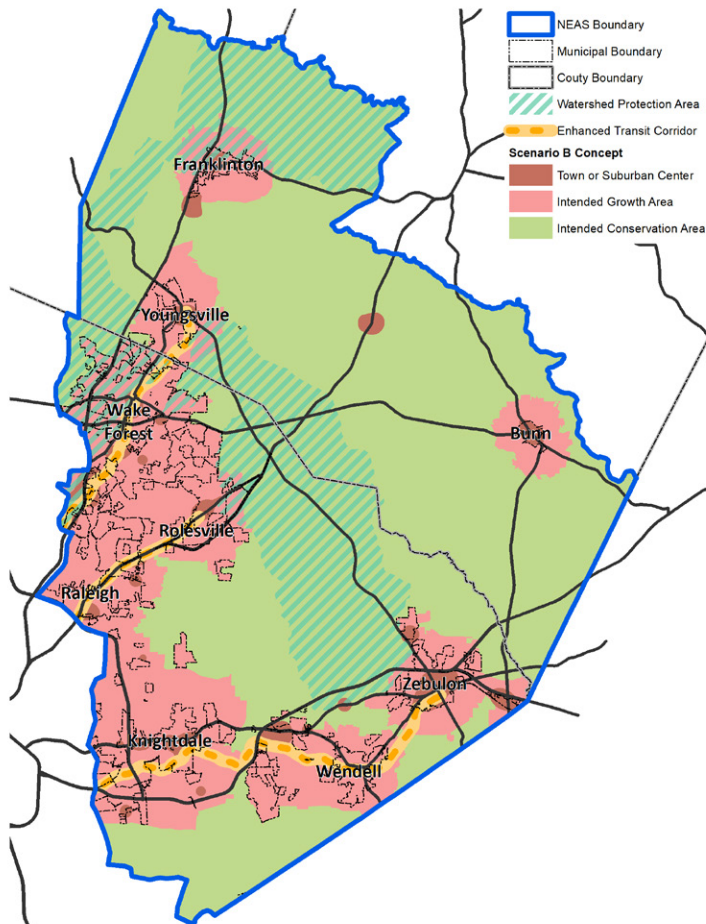


Figure 4.4: Alternative Scenario B Planning Concepts.

SCENARIO B: "CENTRALIZED GROWTH"

Scenario B features a more centralized growth pattern, focusing on new and revitalized walkable activity centers like downtowns and suburban centers. Walkability was viewed as very important in the public symposium and meetings with the steering committees. This scenario supports concepts from outreach such as interest in Transit-Oriented Design (TOD) and mixed-use centers, drawing inspiration from developments like Raleigh's North Hills. This scenario envisions higher density nodes along corridors with enhanced transit along US 64/264 and US 1.

Key Concepts:

- Complete communities are oriented around short, 10-15min walking distances to shopping and work destinations
- Centralized growth pattern around walkable activity centers
- Expanded and strengthened transit options provide transportation alternative to the auto and provide strong linkages to the metro center.
- Conservation efforts continue to accelerate. Development is minimal in rural areas.
- More mixed use, especially in town centers and new mixed-use activity centers.

Development of a Preferred Scenario

Based on the results of the alternative scenario testing and feedback received from the online survey, focus group meetings, virtual meetings, public workshops, the Stakeholder Oversight Team (SOT), and the Core Technical Team (CTT), a Preferred (Blended) Scenario was created. The Preferred (Blended) Scenario, or preferred land use concept, is meant to be a conceptual plan that outlines a development pattern that advances major ideas that the majority of participants in the Northeast study area supported. Through a visual-preference survey exercise, relative preference was determined for each scenario and its components. A Building Block exercise was also facilitated using ArcGIS Online to allow local land use planners to place development types according to the alternative scenario themes. The Preferred (Blended) Scenario is a “blended scenario” that uses components of each of the alternatives to create a conceptual plan that compliments infrastructure investment, improves transportation choice, and maintains quality of life in the Northeast study area.

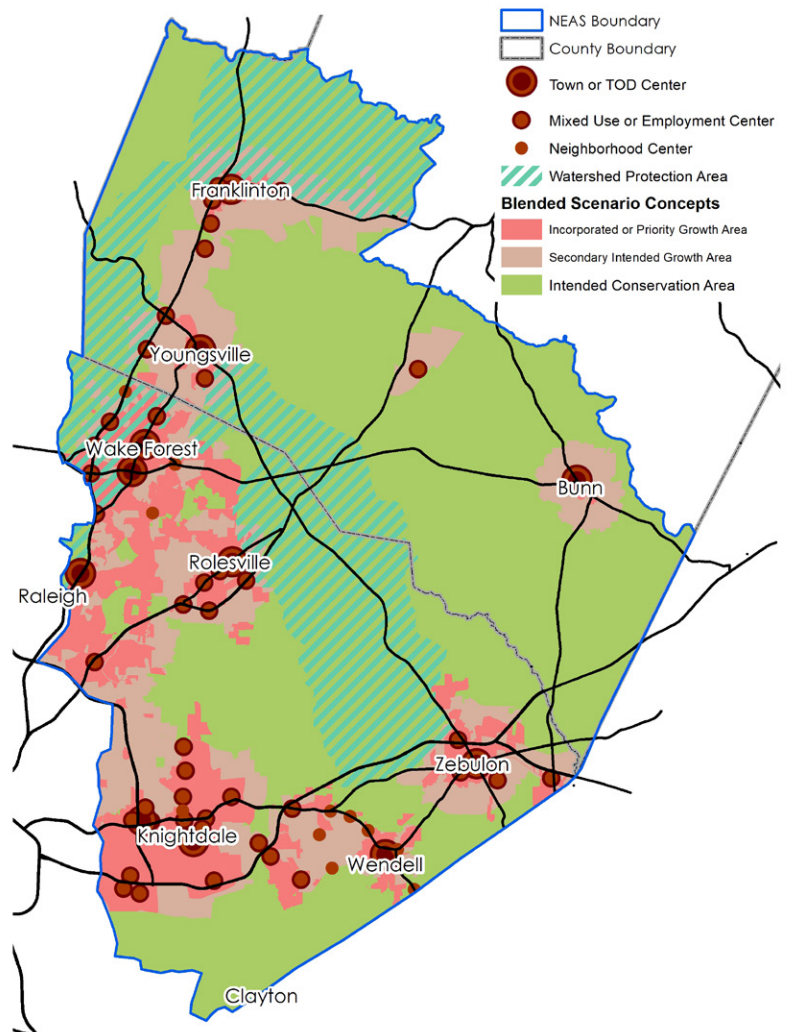
Throughout the planning process it became evident that there were certain themes that most participants could agree on. In general participants wanted:

- Reduced traffic congestion
- Increased walkability
- More shopping and employment opportunities in the region,
- Re-invigorate established downtowns
- Protection of farmland and other natural resources for economic and aesthetic reasons

The Preferred (Blended) Scenario addresses these themes. The Local Plans scenario was used as a basis for the Preferred (Blended)

Scenario, but elements of the Local Plans and other two alternative scenarios were incorporated. In the Preferred (Blended) Scenario, growth is prioritized in priority centers and intended areas. Priority centers incorporate place types from the centralized growth scenario, focusing on community downtowns, as well as areas of mixed-use development and employment centers. Intended areas incorporate place types from the decentralized growth scenario. Also included in the preferred (blended) scenario is recognition of the importance of the “Green Heart” of the region—the area of agricultural land that includes key natural features like the Little River

Figure 4.5: Blended “Preferred” Scenario Planning Concepts.



water supply watershed and the Mitchell Mill State Recreation Area. The scenario planning process demonstrates that impacts to the Green Heart can be reduced by encouraging slight reductions in overall density and encouraging growth where not in conflict with this resource.

The Preferred (Blended) Scenario is meant to guide, but not replace, local planning and decision-making. Local governments should interpret and implement the ideas included in the Best Practices Policy Guidebook accompanying this report, which provides strategies that support this vision, including the preferred land use concept.

All of the alternative scenarios substantially increased walkability (number of homes in walkable environments), primarily due to the attention paid to posting anticipated population growth in towns and mixed-use centers. The Centralized Growth

scenario saw greatest improvements in new homes in utility service areas, walkable areas, and places near transit, expected due to its emphasis on concentrated growth in activity nodes. The Preferred (Blended) Scenario generates a smaller reduction in vehicle miles traveled (VMT) and congestion than other scenarios, a logical finding as the travel demand model assumes less additional roadway capacity by generating more trips in higher density areas (trips that may be walking or bicycling), however this regional model does not measure local-level activities with such precision). All of the alternative scenarios significantly reduce the amount of development in the “Green Heart” of NEAS. Table 4.6 provides a conceptual representation of key (measurable) aspects of the Preferred (Blended) Scenario.

Metric	Local Plans	Decentralized Growth (Scenario A)	Centralized Growth (Scenario B)	Preferred “Blended”
New Homes in Utility Service Areas	53,475	+19%	+40%	+35%
Average Dwelling Unit Density (DU/Acre)	1.6	200%	350%	320%
New Homes in Walkable Areas	16,489	-18%	+270%	+240%
New Homes near Transit	7,455	+28%	+262%	+233%
Housing Unit Density near Transit (DU/Acre)	1.9	+74%	+267%	+223%
Employment Density near Transit (emp/Acre)	10.6	-28%	-19%	-9%
Impact to Farmlands (acres)	35,432	-52%	-75%	-77%
Impervious Surfaces in Watersheds (acres)	199	-4%	+19%	+22%
Vehicle Miles Traveled	9,552,497	-8%	-6%	-4%
Vehicle Hours Traveled	230,572	-12%	-5%	-4%
Increased Travel Time (minutes)	438	-22%	-9%	-11%
PM Congested Time (minutes)	2,492	-1.9%	-1.5%	-1.5%

Table 4.6: Summary table of performance metrics.



CORRIDOR
CONCEPT DESIGNS 05

Concept Designs

INTRODUCTION

Traditionally, regional and long-range transportation plans focused on broad brush, long-term, and usually very costly recommendation that addressed basic capacity shortfalls, usually through roadway expansions. Today, however, these plans also examine more localized or location-specific problem areas, sometimes called “Corridor Concept Designs,” in an effort to address transportation issues through more low-cost, relatively quick-to-implement improvements or mitigation strategies that improve mobility.

The following pages include a series of concept designs geographically distributed throughout the study area. The intent of the Corridor Concept Designs are to identify priority investment strategies to alleviate or address these problems through low-cost, but effective improvements. These concept designs represent a 20% design detail, and should be used to *guide the next phase* of planning and design.

Corridor locations were chosen by considering both qualitative and quantitative sources, including traffic, crash, and public input data gathered during the planning process. The project team reviewed and suggested locations, and staff considered if project locations had recent design or reconstruction work performed that might reduce the benefit from further conceptual levels of study.

An initial data screening of more than 380 intersection locations were considered. Geospatial analysis using ArcGIS Desktop was performed to help narrow the list down through six rounds of refinement down to a list of 25 of the ‘*worst performing*’ intersections. Each of the 25 intersections were reviewed and discussed in coordination with the Core Technical Team (CTT). The five selected locations represent different challenges and site context, spread over the large NEAS region, and are supported by a data-driven evaluation process that may be repeated in the future.

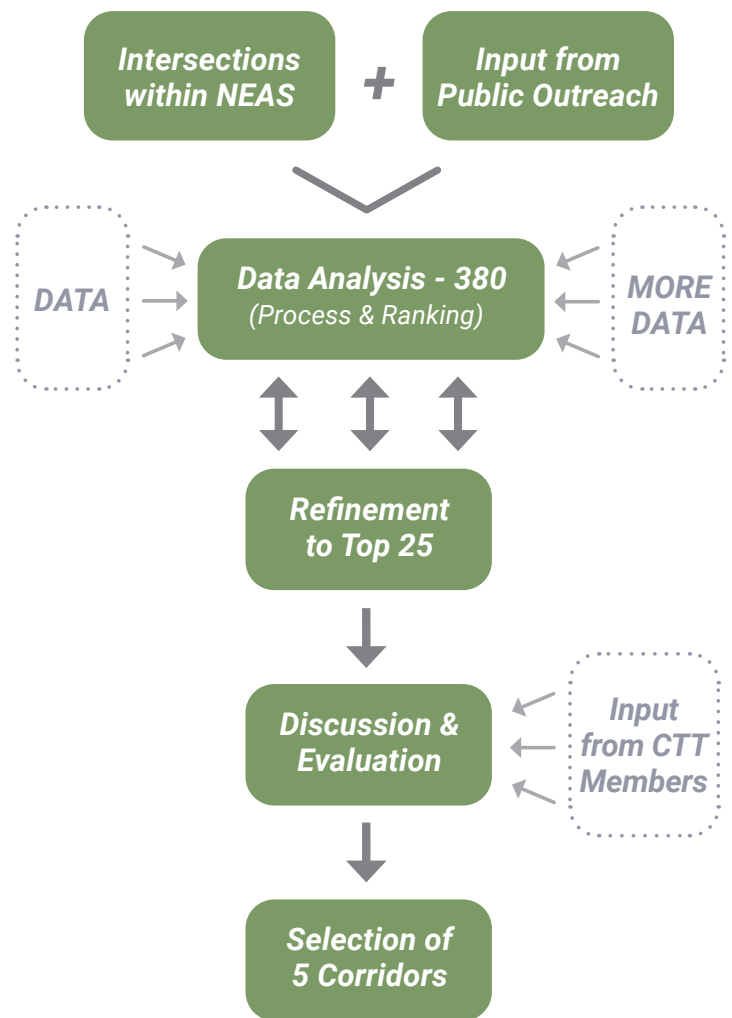


Figure 5.1: Prioritization Summary.

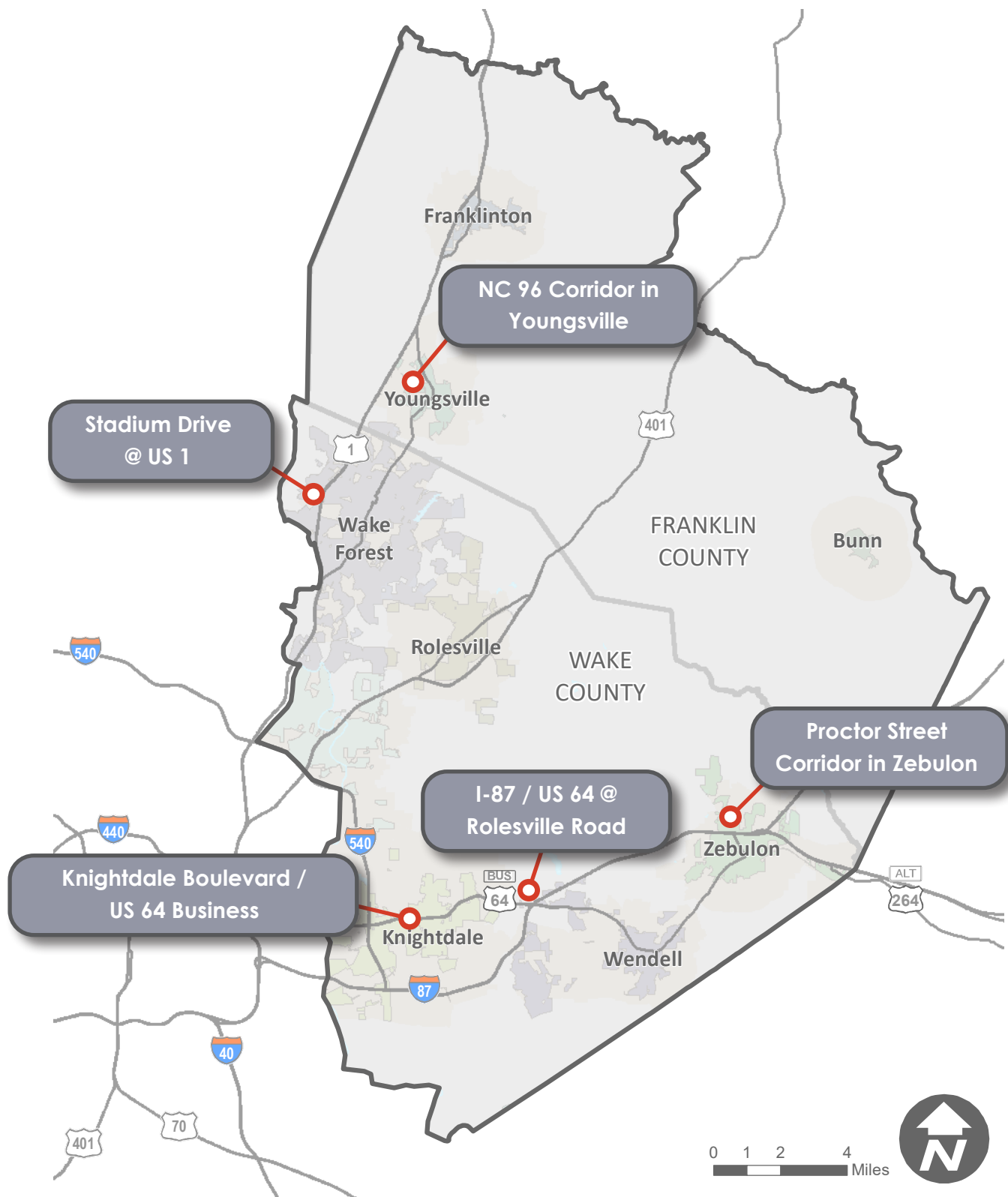


Figure 5.2: Concept Design Locations.

Proctor Street Corridor in Zebulon

Concept Overview

The project team looked at an interim design for the Proctor Street corridor, considering the long-term plan to convert it to a four-lane divided roadway (A402e). The interim solution involved widening to 3-lanes with pocket medians, realigning two driveways, construction of a shared use path (north side), sidewalks, and constructing a roundabout at Pearces Road (where most crashes occur).

The crash rate along this road is six times the state average, even with low average daily traffic volumes (2,900 vehicles per day). The corridor lacks bicycle and pedestrian facilities, no pedestrian-level lighting and adequate shoulders for vehicles. Zebulon Elementary School is situated in the middle of this corridor. To encourage safe passage to and from the school for pedestrians, Rectangular Rapid Flash Beacons (RRFBs) are called out at two locations to help pedestrians safely cross Proctor Street.

The Town of Zebulon is rapidly growing and expects over 500 new residential lots built within one mile of the corridor. The Town currently has plans to redesign the Shepard School Road and Proctor Street intersection, adding additional turn lanes and a traffic signal. The project team included this redesign of Shepard School Road and Proctor Street intersection in their concept design with additional high-visibility crosswalks.

Design Considerations

2045 MTP (A402e) Proctor Street widening project from NC 96 (North) to Shepard School Road
NCDOT reviewing potential roundabout at Pearces and Proctor Street
Proposed residential development near corridor
6x the statewide average crash rate (1 fatality)
Elementary school access
Large residential development (300 lots) at northeast quadrant of Shepard School Road and Proctor Street

Recommendations

One lane roundabout with 100' inscribed circle (long term improvement). Interim improvement could include 4-way stop control
10' multi-use/sidepath on north side of roadway
Driveway realignment/consolidation
Rectangular Rapid Flashing Beacon (RRFB) proposed near Zebulon Elementary School and Wakefield Missionary Baptist Church
Proposed traffic signal at Green Pace Rd @ Arendell Ave (0.25 miles west of this corridor)
Proposed traffic signal and laneage improvements at Shepard School Road

Cost Estimate: \$8.4M
(planning level)

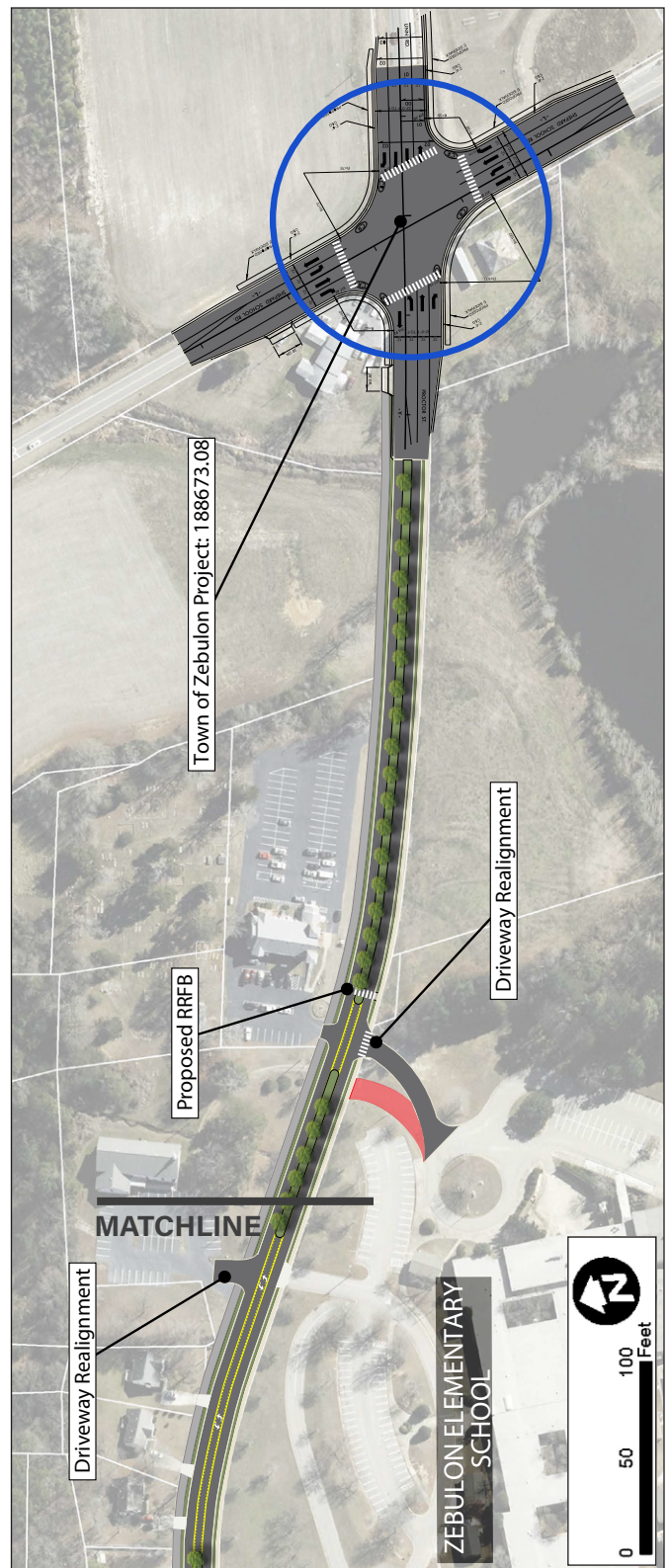
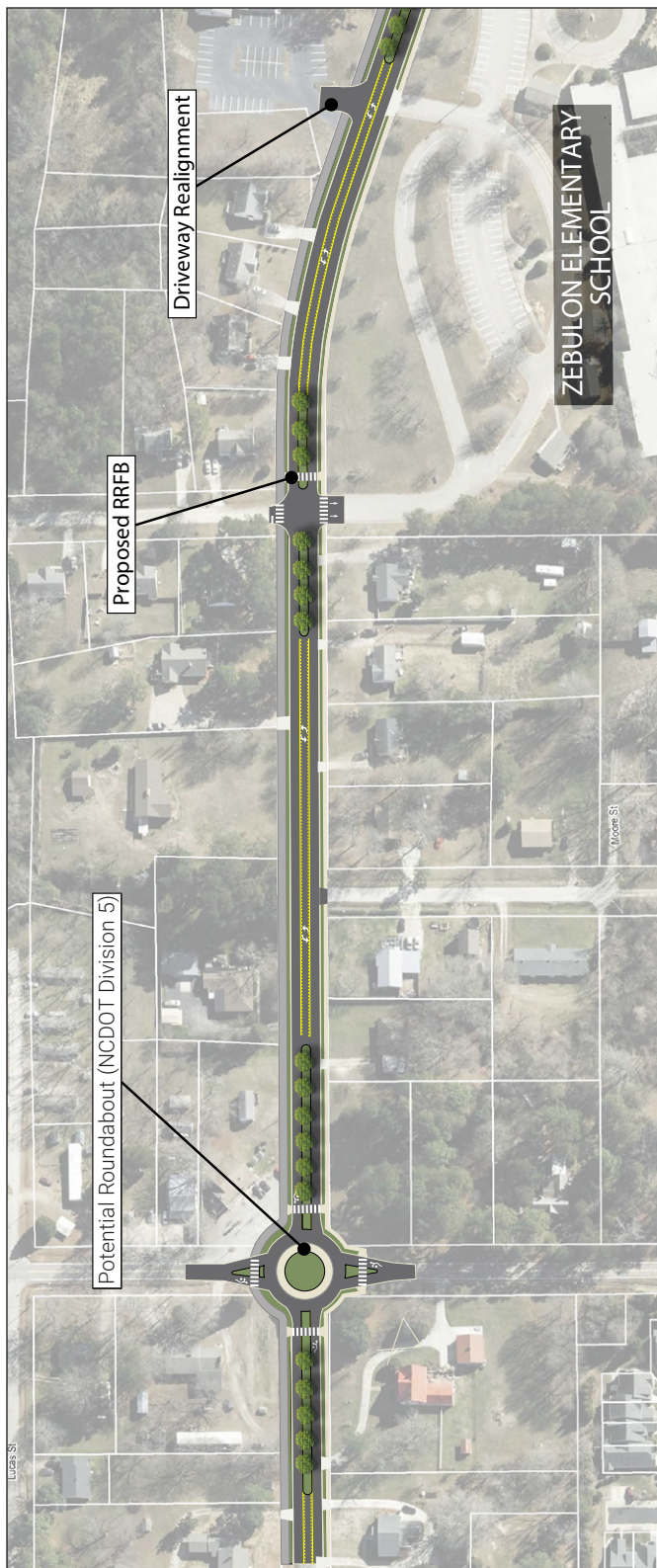


Figure 5.3: Concept Design for Proctor Street in Zebulon.

I-87 / US 64 @ Rolesville Road

Concept Overview

The current Rolesville Road and US 64 interchange includes off ramps for southbound vehicles and on ramps for northbound vehicles, but does not include the opposing directions (two ramp movements). The project team and stakeholders desired full-access ramps for both directions along US 64.

An interesting factor in the concept design was the proposed Wake Tech East campus in the south-east quadrant (currently shown as master plan concept). The Rolesville Road corridor concept design addresses the current lack of bi-directional ramp access, and incorporates bicycle and pedestrian facilities, roadway widening (4-lane divided), and beautification to Rolesville Road.

East Wake High School is connected by way of a proposed shared use path and sidewalks, which provides opportunities for students to safely traverse the Rolesville Road corridor. The current roadway volumes (3,900 vehicles per day) are anticipated to increase as the area around it continues to develop.

The project team also discussed and added a proposed Continuous Flow Intersection (CFI) at Wendell Boulevard and Rolesville Road.

Converting Rolesville Road into a full-access interchange was an important discussion topic during our three concept design meetings. Adding ramps for I-87 eastbound travel would directly impact the Wake Tech campus development plan. The project team chose to move forward with this concept for the NEAS update, noting its potential impact and allowing further study to explore feasibility among property owners, the Town of Wendell, and NCDOT.

Cost Estimate: \$14.3M
(planning level)

Design Considerations

2035 MTP project (A148a1): Eagle Rock Road widening to 4-lanes
2045 MTP project (A594): Rolesville Road widen to 4-lanes
2045 MTP project (A639b): I-87/I-495 Bypass widening to 8-lanes (lack of access to US 64)
70 MPH posted speed limit on US 64
Future Site of Wake Tech East Campus
105 acres-1,000 new parking spaces
677,000+ new building gross square footage
Connection to East Wake High School
Future connection with Wendell Valley Boulevard (south)
Lack of bicycle and pedestrian facilities
Potential weave movements on US 64
Potential center-loaded Bus Rapid Transit route (future)

Recommendations

Redesign interchange for full movement, including NB exit loop and SB entrance ramp
Proposed signal at Kioti Drive and Rolesville Rd at new on/off ramps
Four-lane, median-divided cross-section (with plantable median)
10' shared use path/sidepath along south side of Rolesville Road
High quality intersection treatments, including high visibility crosswalks, pedestrian countdowns, ADA compliant ramps and pedestrian level lighting

Further Study

Continue to work with the Town of Wendell and Wake Tech to accommodate NB loop in master plan and avoid potential conflicts
Conduct traffic analysis to determine feasibility of CFI at Wendell Boulevard and Rolesville Road

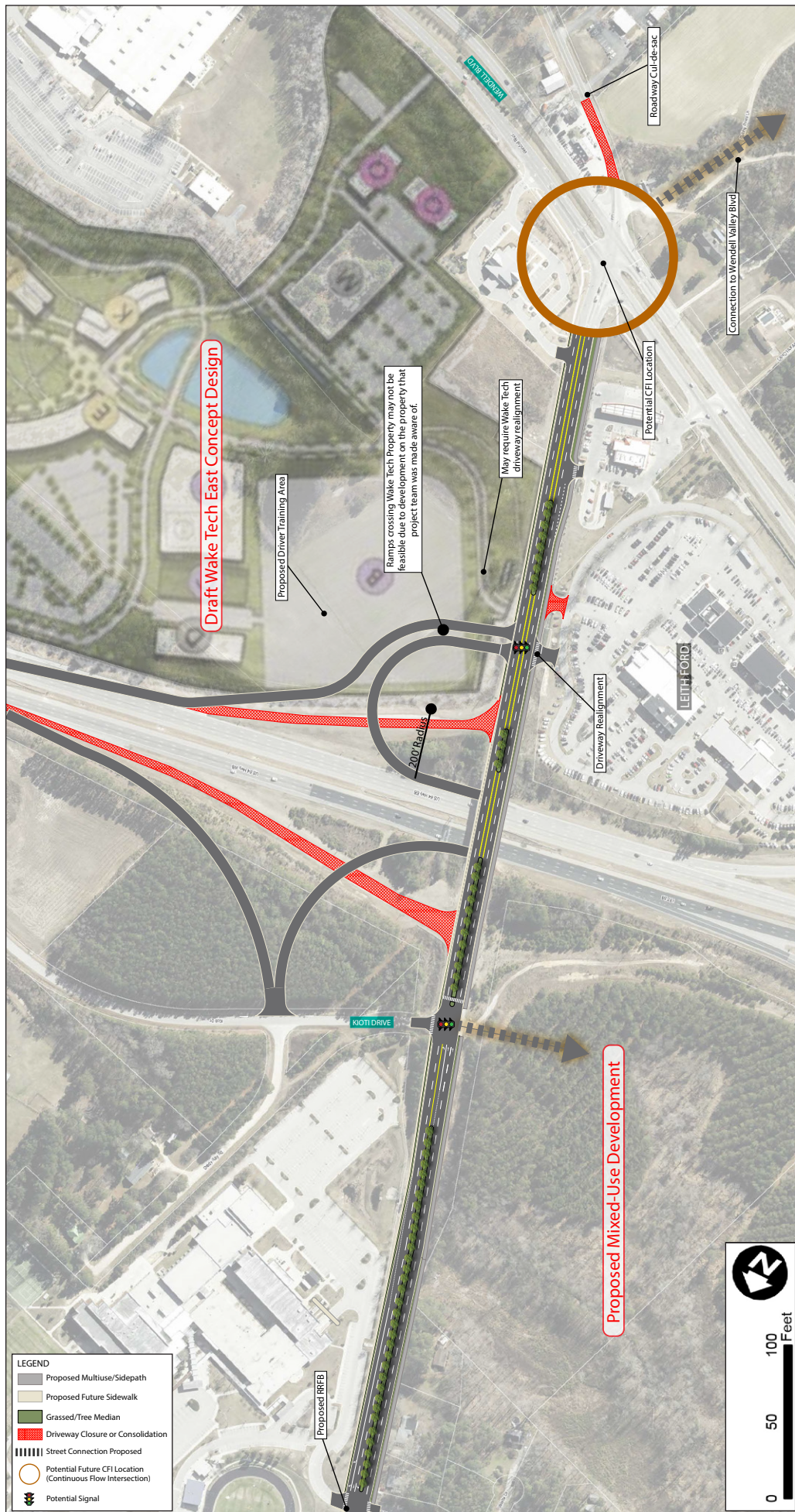


Figure 5.4: Concept Design for US 64 West @ Rolesville Road.

Stadium Drive @ US 1 in Wake Forest

Concept Overview

The US 1 Corridor project (U-5307D) plans to convert the Stadium Drive @ US 1 into a grade-separated freeway. However, access to the Wake Forest Crossing shopping center and the future Wake Forest Business and Technology Park would be eliminated, and was therefore not desirable by local stakeholders.

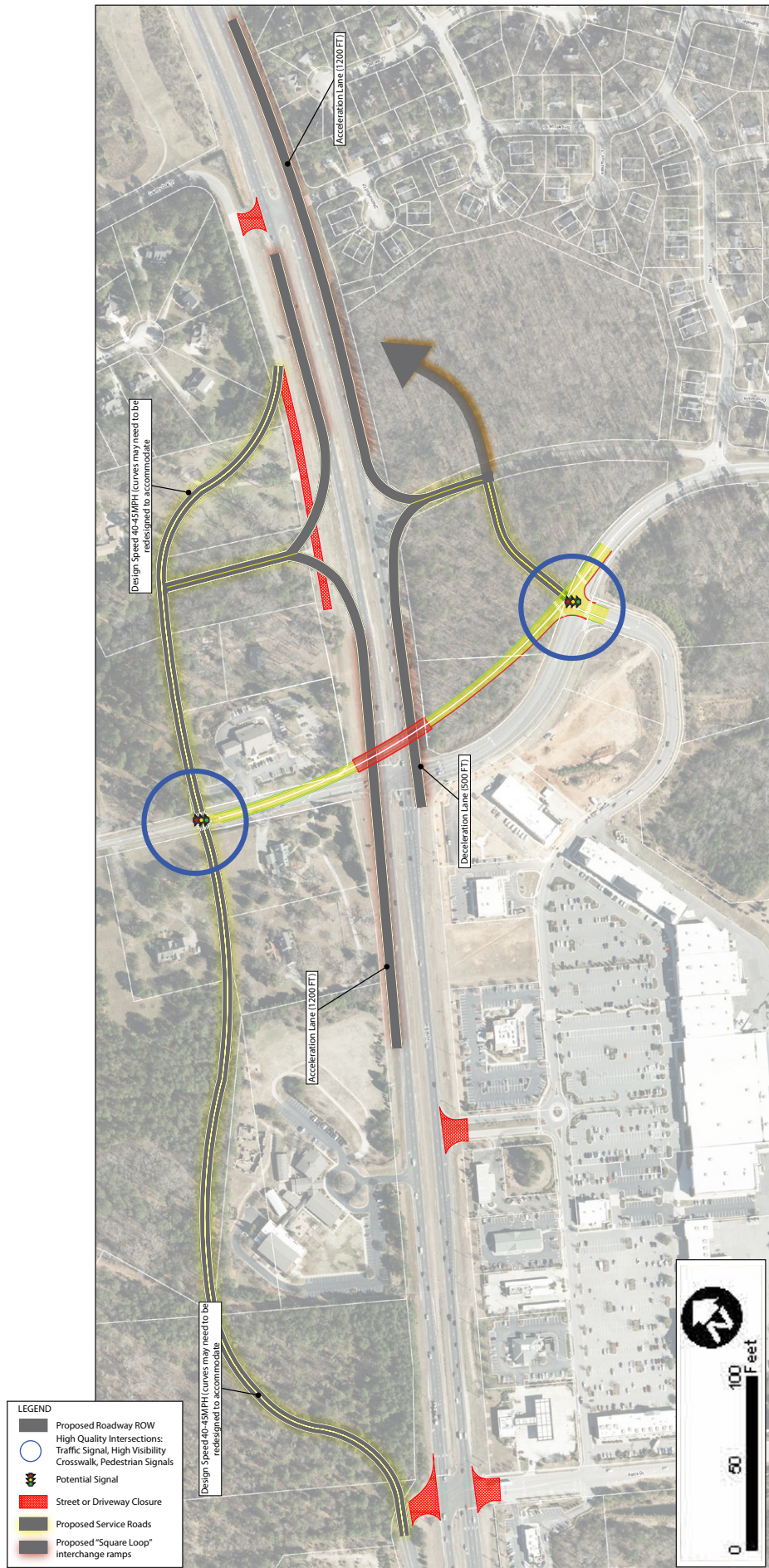
The project team was asked to mitigate the potential impact from this future project by addressing the access issues and improving connectivity to and across the future US 1 upgrades. The concept design involves incorporating a “square loop” interchange, allowing full access to US 1 with connections to future service roads. This would help move traffic efficiently off and on US 1 and to service roads that will provide direct access to adjacent commercial and retail development.

The future Ligon Mill Road extension is planned to connect along the South side of the Wake Forest Crossing shopping center.

Design Considerations
2035 MTP Project (F11-1e1) US 1 Freeway Conversion
2025 MTP Project grade separation intersection at Stadium Drive
Recently completed TIP project (U-5515) along Stadium Drive
Connect with existing shared use path
Future development opportunities
Existing transit service (WFL) through shopping center

Recommendations
Square-loop interchange design utilizing service roads
Limiting access of existing service roads connecting to US 1
Deceleration (500') and Acceleration (1200') lanes providing access to US 1
High-quality intersections at Stadium Drive/Wake Forest Crossing and Jenkins Road/Future Service Road

Cost Estimate: **\$25.7M**
(planning level)



Knightdale Blvd / US 64 Bus in Knightdale

Concept Overview

US 64 Business, also known as Knightdale Boulevard, is a heavily traveled thoroughfare that connects Knightdale to I-540, I-440 and Downtown Raleigh. Smithfield Road separates the corridor into two sections. To the east is a less commercialized and developed section with lower traffic volumes (23,000 vpd). To the west, volumes are much greater (37,000 vpd) due to the higher density development and convenience of the interstates to the west.

The corridor has inconsistent laneage, which may add to driver confusion. **The crash rate along this road is two-and-one-half times the state average.** In the past five years there have been two fatalities, one at Parkside Commons and one at First Avenue. Currently, there are no planned bike facilities along the corridor. The KnightdaleNext Comprehensive Plan calls for more walkable development along this corridor.

The concept design addresses multimodal safety issues for pedestrians and cyclists and signalization improvements for vehicles. To better protect pedestrians, the addition of the concept design suggests Leading Pedestrian Intervals (LPI) improvements at select traffic signal locations.

The project team also looked at incorporating future Bus Rapid Transit (BRT) transit along the median of the corridor. The team also recognized the need for better cross-access between complementary uses on the north side of the corridor.

Design Considerations

No planned MTP projects along US 64 Business
Cars are getting trapped in middle of median between major signals at Parkside Commons Drive
Topography challenges along corridor
Current transit route: lack of transit amenities (e.g., shelters) at stops
Major sidewalk gaps
Access management needed
Speeding along corridor
Redevelopment along the corridor is envisioned (KnightdaleNext Comprehensive Plan)
Connectivity and cross access improvements needed
Potential BRT corridor

Recommendations

Widen to 6 lanes from Parkside Commons to N. First Avenue
Extend and widen right turn lane to Bozeman Drive intersection on west end of corridor
Incorporate cross access and future proposed roads (walkable spine streets) with new development
Shared use path on southside of corridor, replacing sidewalk
Signal coordination to prevent traffic delay at Parkside Commons
Traffic signal syncing recommended for the entire Knightdale Boulevard corridor
Mid-block crossing with HAWK signal at Forest Drive

Cost Estimate: \$24.0M
(planning level)

NC 96 Corridor in Youngsville

Concept Overview

NC 96 carries between 7,000 and 11,000 vehicles daily. However, with current volumes it has a **crash rate of 3 times the state average**. NC 96 is a major truck route as well. The 2045 MTP recommends a future Youngsville bypass to the east of the corridor with a connection to NC 96 at Park Avenue and NC 96. Most of the crashes occur at the intersection of US 1 and NC 96, where US 1 is in the third phase of planning study.

This concept design recommends bridging NC 96 over US 1 and constructing a new interchange with on and off ramps. This includes backage roads in coordination with the US 1 corridor study, and including a connection to the Food Lion shopping center. This concept design includes a combination of multimodal enhancements and vehicular safety improvements. Multimodal enhancements include a shared use path, sidewalk, high visibility crosswalks, pedestrian-level lighting, ADA compliant ramps and a roundabout with turbo slip lanes at Park Avenue. The proposed sidewalk will tie into the approved development on the northeast corner of NC 96 and Wolfpack Lane. Part of these improvements would include entry signage and wayfinding improvements from the east and west into town to improve driver awareness of bicycle and pedestrian activity. Proposed streetscape improvements would fit well within Youngsville's current Bicycle and Pedestrian Plan recommendations.

Design Considerations

2045 MTP Project (A418) NC 96 Bypass widen to 4-lanes
2035 MTP Project (F11-1e2) US 1 widen to 6-lanes + interchange
Truck route bypass project MTP 2045
Future commercial and residential development and growth in the area
Lack of pedestrian and bicyclist facilities
Add additional connection to US 1 frontage road from shopping center
Control access with median placement
The conceptual roundabout is designed (125-foot inscribed circle) to handle the turning radius of a WB-50 tractor trailer
US 1 Study in Phase 3- frontage road, half-diamond interchange design
NCDOT: Alternate to add continuous median with additional potential future roundabouts (5 locations)
Consistent with Youngsville's Bicycle and Pedestrian Plan

Recommendations

Proposed half-clover (full access) interchange
Widen NC 96 to five lanes with pocket medians (planted)
Install shared use path (sidepath) on northside and sidewalk on southside
Mountable median curb suitable for heavy trucks
Construct 1-lane roundabout (with turbo slip lanes) at the intersection of Park Avenue
Right-in/Right-out for Park Avenue business driveway, and closure of ~80' portion connecting NC 96 with US 1 Alt

Cost Estimate: \$19.3M
(planning level)

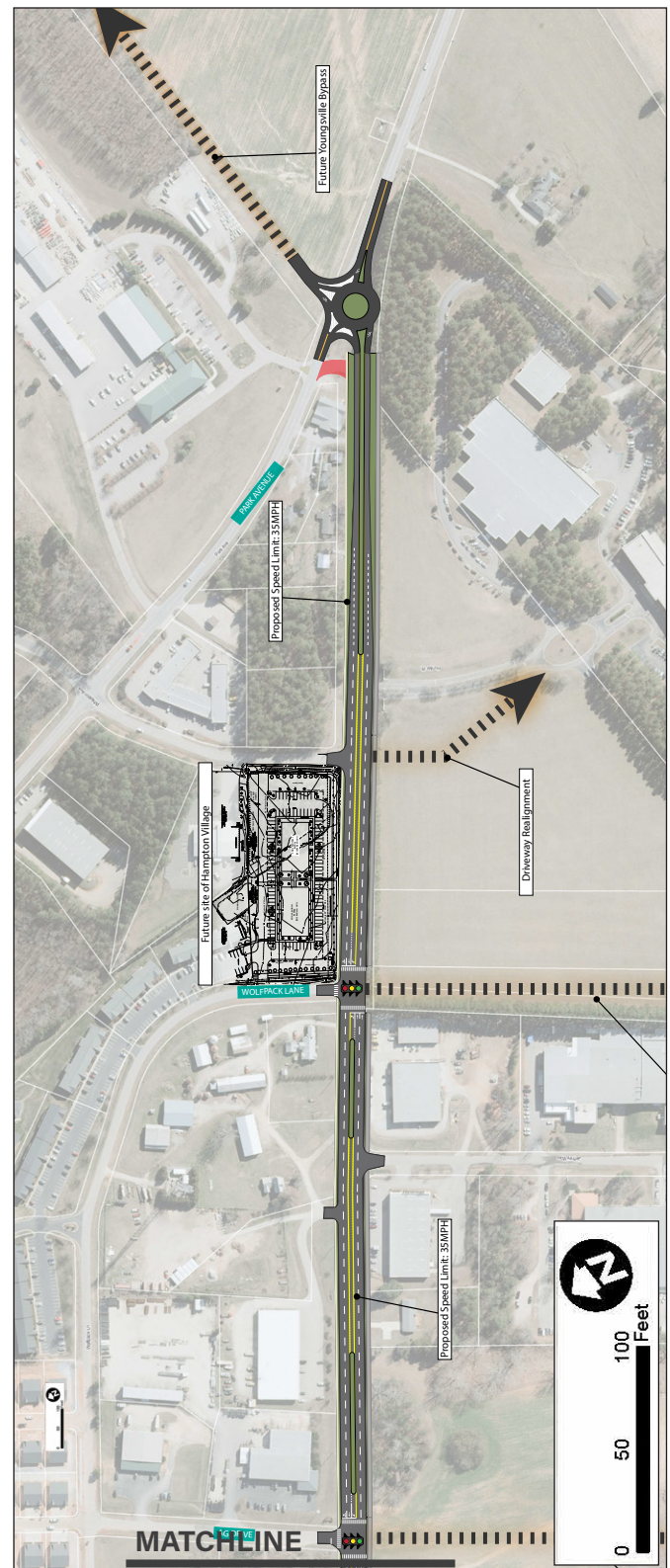


Figure 5.7: Concept Design for NC 96 in Youngsville.

FREIGHT & ROADWAY MOBILITY 06

FREIGHT & ROADWAY Mobility

Background

Triangle Regional Freight Plan (2018)

The Regional Freight Plan is the most recent study to date examining freight movement in the Triangle region, and making recommendations for its improvement. The Plan noted that:

1. The Triangle Region handled **82 million tons** of freight worth \$116 billion in 2012.
2. The next three decades are forecasted to see freight tonnage **increase by one-third**, yet the value of that freight will more than **double**.

This difference relates to goods manufactured in the region's technology sector (relatively compact items such as technology or pharmaceuticals), and to the growth in consumer products entering the region. Both sets of goods are time-sensitive, with fast, reliable delivery a fundamental requirement and service standards climbing. The availability of same-day delivery for some products ordered online is an obvious example of the trend. However, the reliability of service is subject to overcoming the delays and higher costs associated with traffic congestion, and to the ability to locate logistics facilities where they are needed.

High crash rates were a source of concern in the Plan, noting that population and employment growth could not account for the high proportion of truck-involved crashes (43%) in the region. In the NEAS, one such concentration of crashes is found along US 64 Business in Knightdale.

Three major drivers of freight mobility in the Triangle impact the NEAS:

1. The dominance of trucks, accounting for **91% of all freight tonnage originating within the Triangle**, and 68% of freight with Triangle-area destinations;
2. Localized centers of freight activity, such as the Lincoln Park industrial site, GlaxoSmithKline, Carolina Distribution, and US Foods in Zebulon;
3. The expected impacts of the **CSX Carolina Connector intermodal facility** in Rocky Mount.

The study recommends the creation of both Strategic Freight Corridors (SFCs) and Freight-Oriented Development Opportunity Zones (Figure 5.1). SFCs are specific corridors, important to freight movement, designated for future investment to attract industry. Freight-Oriented Development Opportunity Zones are locations that are both available and attractive for future freight-related development.

Three locations are identified for designation as Freight-Oriented Development Opportunity Zones. These locations are highlighted below.

- (4) US 1 Corridor in Franklinton;
- (5) NC-56 Corridor in Franklinton; and
- (6) US 64 Business & US 264 Corridors in Knightdale.

The study notes over 11.2 million square feet in buildable industrial parcels; taken in consideration with the SFCs designated above, each of these opportunity zones is in close proximity to a strategic freight corridor.

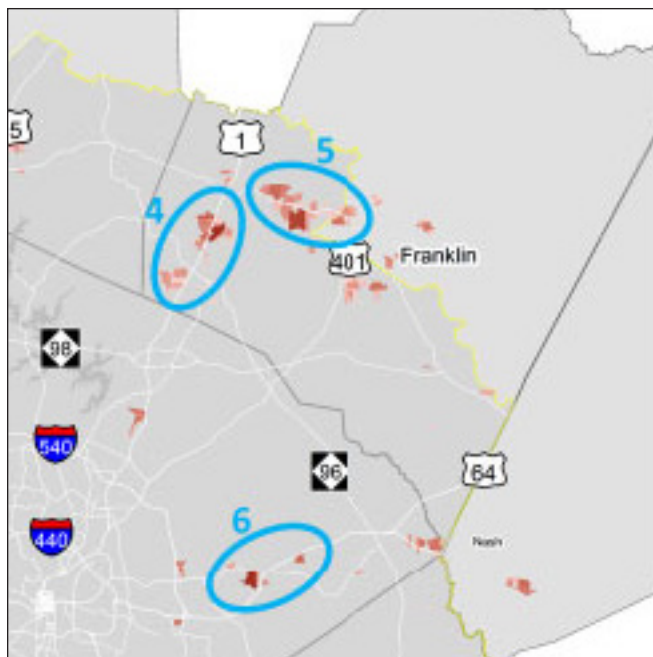


Figure 6.1: Freight Opportunity Development Zones within the NEAS. Source: CAMPO Triangle Regional Freight Plan 2018.

2045 Metropolitan Transportation Plan

While the Regional Freight Plan spells out the future network for freight movement, the 2045 Metropolitan Transportation Plan (MTP) identifies planned roadway improvements over the next 25+ years, throughout the Northeast study area. Importantly, the MTP establishes a priority for regional needs based upon reasonably anticipated levels of funding, and includes those projects for which funding is already committed (Table 6.2).

Committed projects include engineering and design/ construction, or committed by local jurisdictions (private developments), that are moving towards construction. The remaining MTP projects (Figure 6.3) include planned and unfunded (vision plan) improvements that represent long-range, regional mobility needs.

Project ID	Project Name	Project Extent	Proposed Lanes	Length (miles)	Horizon Year	Proposed Investment	TIP No.	Est. Cost
A127a1	Ligon Mill Rd	from US 1Alt to Dead end	4	1.02	2025	Widening	--	\$3,866,000
A127a2	Ligon Mill Rd	from Dead end to NC 98 Bypass	4	0.25	2025	New Location	--	\$1,921,000
A130c	US 401/Mitchell Mill Rd Interchange (New)	from Ligon Mill Rd to Mitchell Mill Rd	2	--	2025	Interchange	U-5748	\$64,620,000
A174c	Martin Pond Rd Widening	from Wendell Falls Parkway to Poole Road	3	0.50	2025	Widening	--	\$4,105,000
A605a	High Speed Rail - Rogers Rd Intersection	from Rogers Rd to Rogers Rd	4	--	2025	Grade Separation	P-5707	\$26,390,000
A90c	US 401 Widening	from US 401 Rolesville Bypass to Flat Rock Church Rd	4	5.98	2025	Widening	R-2814C	\$27,950,000
A90d	US 401 Widening	from Flat Rock Church Rd to Fox Park Rd	4	5.29	2035	Widening	R-2814D	\$16,333,000
F11-1a	US 1 North - Upgrade to Freeway	from I-540 to Thornton Road	8	5.61	2035	Widening	U-5307A	\$124,700,000
F11-1b	US 1 North - Upgrade to Freeway	from Thornton Rd to Burlington Mills Rd	8	5.44	2035	Widening	U-5307B	\$120,100,000
F11-1c	US 1 North - Upgrade to Freeway	from Burlington Mills Rd to New Falls of Neuse Blvd	6	4.77	2035	Widening	U-5307C	\$43,224,022
F11-1d	US 1 North - Upgrade to Freeway	from New Fall of Neuse Blvd to NC 98 (Durham Rd)	6	2.30	2035	Widening	U-5307C	\$20,825,978
F11-1e	US 1 North - Upgrade to Freeway	from NC 98 (Durham Road) to Harris Road	6	5.23	2035	Widening	U-5307D	\$90,112,000
--	S Main St (Rolesville)	from Burlington Mills Rd to Young St	3/4	1.20	2025	Access Management	U-6241	\$6,000,000

Table 6.2: Committed Projects within the Northeast Study area.
Note: This table represents committed projects as of Spring 2021.

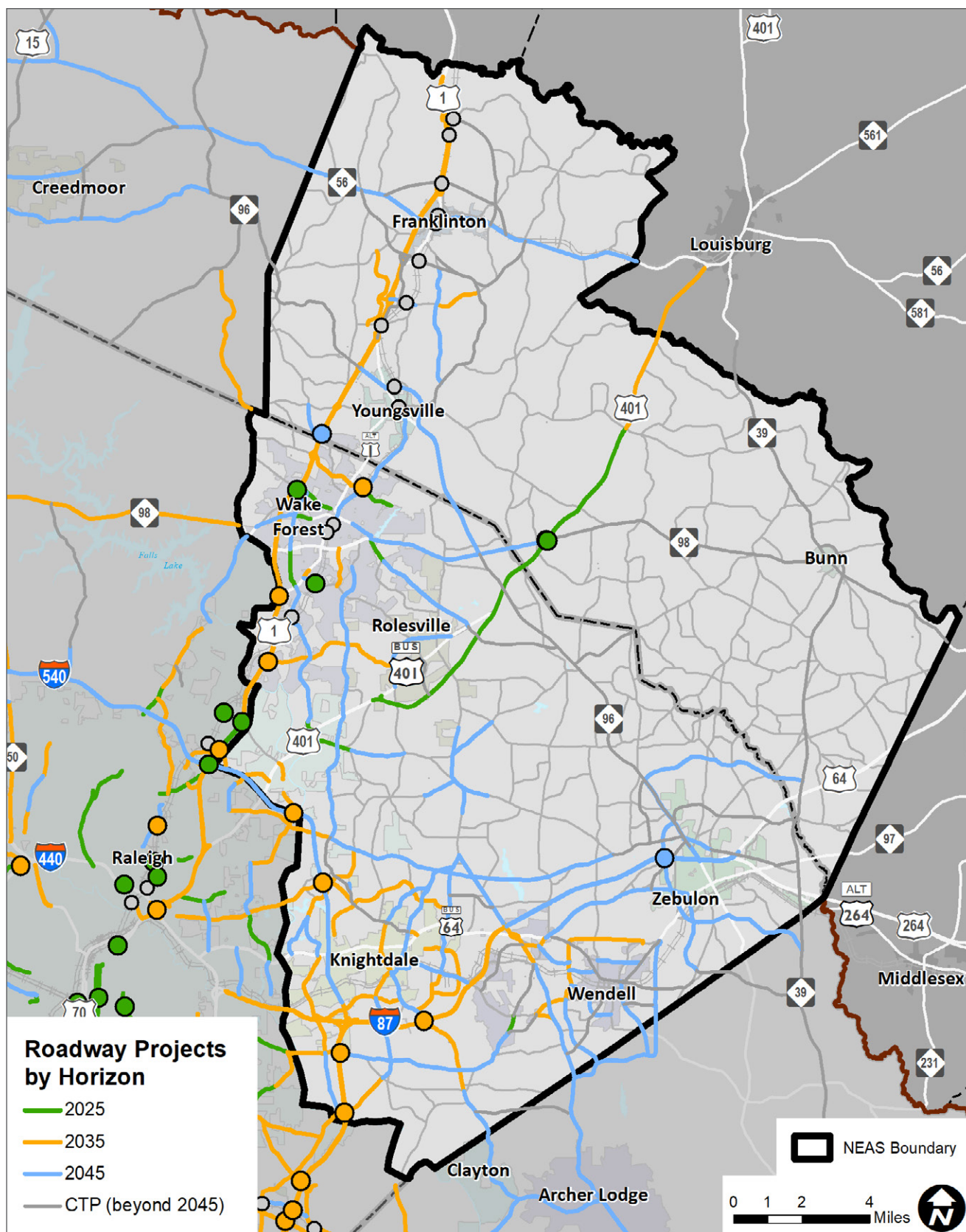


Figure 6.3: Adopted 2045 Metropolitan Transportation Plan roadway projects within the Northeast Study Area, including committed, funded, and vision plan projects. Source: CAMPO.

Performance

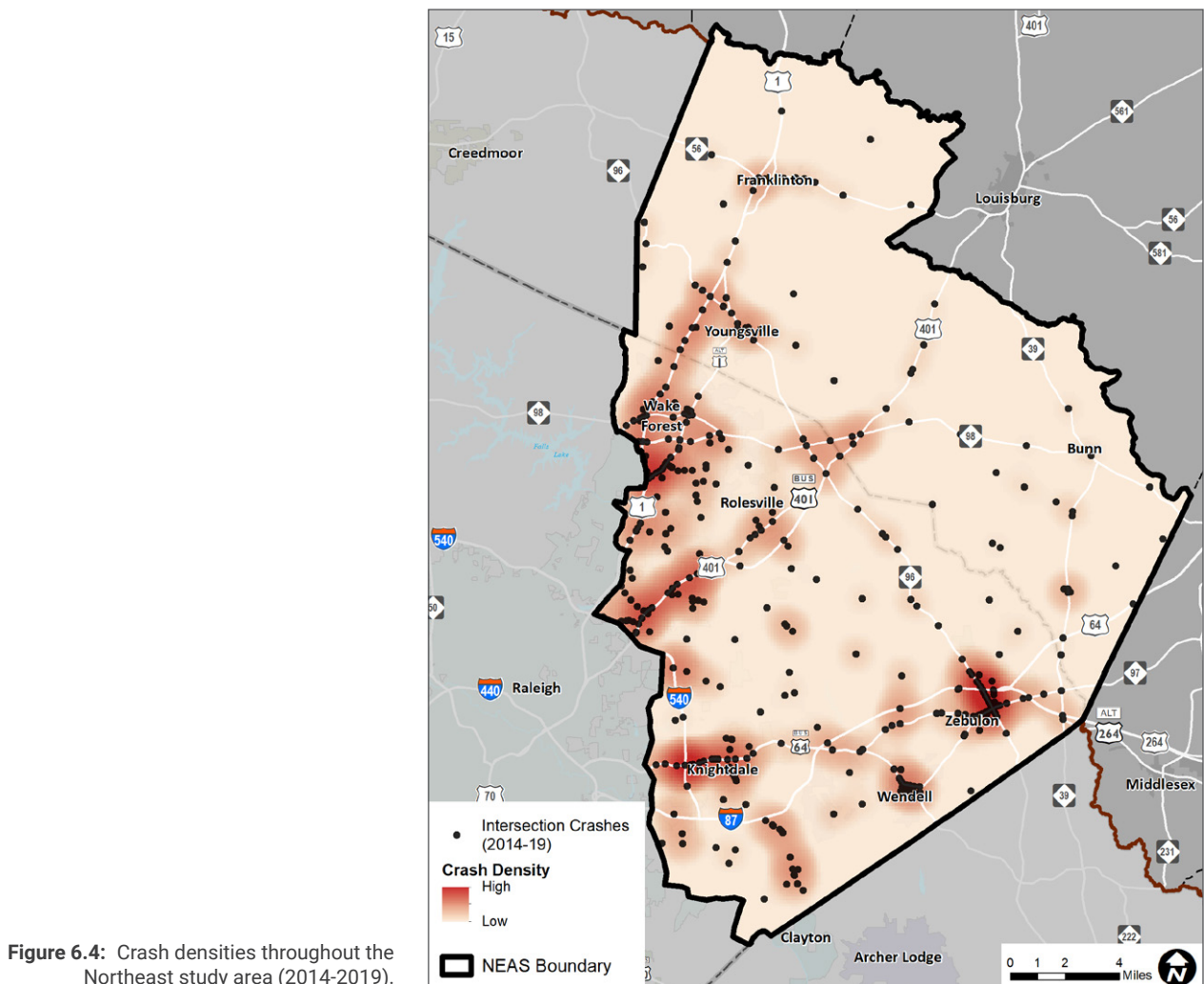
Crash Analysis

While Chapter 3 highlighted the most noteworthy high-crash intersections within the Northeast study area, many more locations still see a significant number of crashes. Understanding where these locations are and their distribution throughout the study area, allows the project team to prioritize needed improvements to address safety.

Figure 6.4 portrays areas of higher crash density within the study area. Not surprisingly, urban communities at the western edge of the Northeast study area appear as hot spots for crashes, and crucial regional corridors such as US 1, US 401, and US 64 Business show

clustered crashes as well. These major arterials, as discussed previously, support greater traffic volumes per day, and while these crash densities may be reflective of this high traffic, it may also point to the need for improvements to geometric design, better interchanges, or a lack of suitable alternative modes of travel.

Corridor concept design locations from Chapter 4 likewise stand out. US 64 Business in Knightdale, as well as NC 96 in Youngsville, both show higher crash densities. Both of these corridors were targeted for redesign in part to reduce crashes and improve safety.



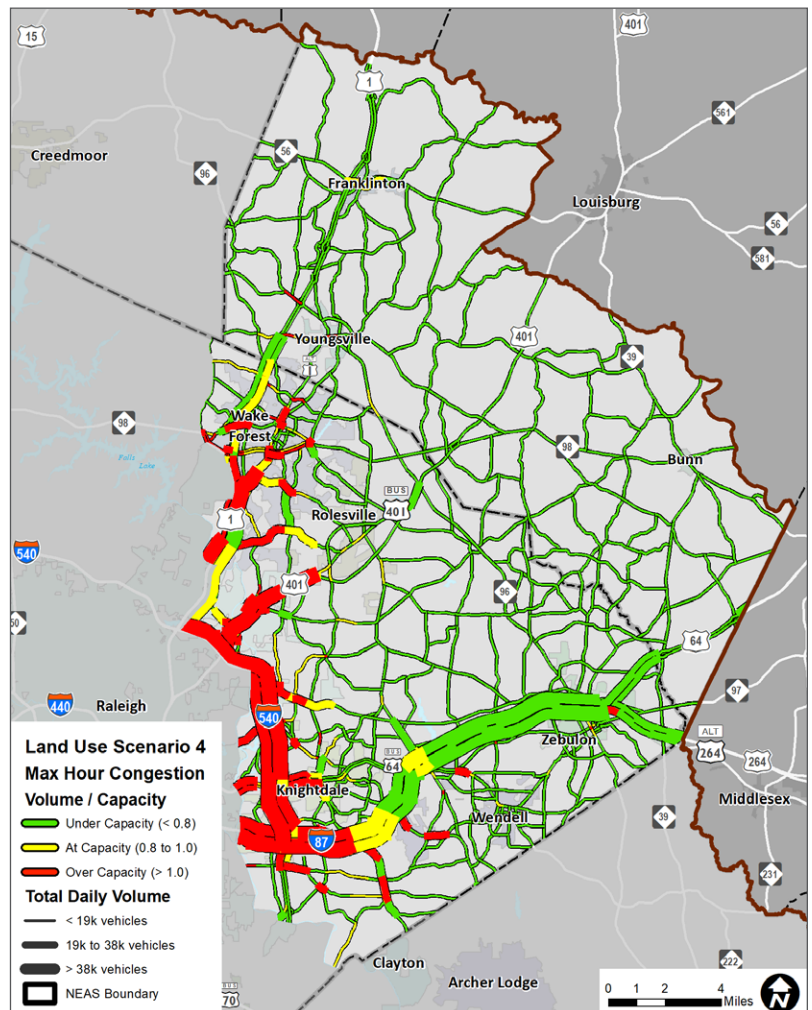
Future Traffic Growth

Based upon the results of the scenario planning exercise, the project team modeled future year traffic conditions throughout the study area to evaluate the four different land use scenarios and their relative impact on future traffic congestion. Figure 5.5 shows the results of this exercise. To arrive at these projections, the model forecasts traffic increases based on population and employment growth, as well as new developments based upon the Preferred Scenario output. Capacity for each road includes the construction of all projects identified in the MTP. Roadways highlighted in red are thus **sections of the existing network with unmet capacity deficiencies** that would benefit from a capacity improvement project (widening, collector street, or access management).

The majority of the Northeast Study area is projected to operate well below capacity (green segments, represent-

ing 84% of total miles), meaning seamless, comfortable operations for users. The I-87/US 64/US 264 corridor likewise operates below capacity throughout much of the study area, with conditions worsening west of the Rolesville Road intersection. However, crucial arteries for the region are expected to operate at or above capacity by 2045. Most significantly, I-540 through the study area shows both high projected volumes and over-capacity operations. Other major congested arteries include I-87 and US 1 south of Wake Forest, US 401 west of Rolesville, and portions of NC 98 around Wake Forest. This increase in congestion may be due to the Preferred Scenario's concentration of new development around existing facilities and promotion of higher-density development. Encouraging multiple modes of transportation, including walking, biking, and transit, will help to mitigate this future congestion which was a recurring theme from community outreach feedback.

Figure 6.5: Future Year (2045) traffic congestion within the Northeast Study area (Triangle Regional Model).





Growth in Freight Traffic

Using the USDOT's Freight Analysis Framework 4.0, future year freight traffic was modeled to better understand expected conditions within the existing transportation network. Figure 5.6 depicts expected growth projections, and reveals where truck traffic may reasonably be expected to grow most quickly between today and 2045.

Although these routes in the interior of the Northeast study area are not heavily utilized by many trucks now, the growth on several roads is notable, in particular NC 96/Zebulon Road, NC 98/Wait Ave, and Riley Hill Road/Proctor Street in Zebulon. Accommodating this increase in truck traffic in a manner compatible with municipal growth plans will be paramount to ensuring continued growth, economic development, and effective system performance.

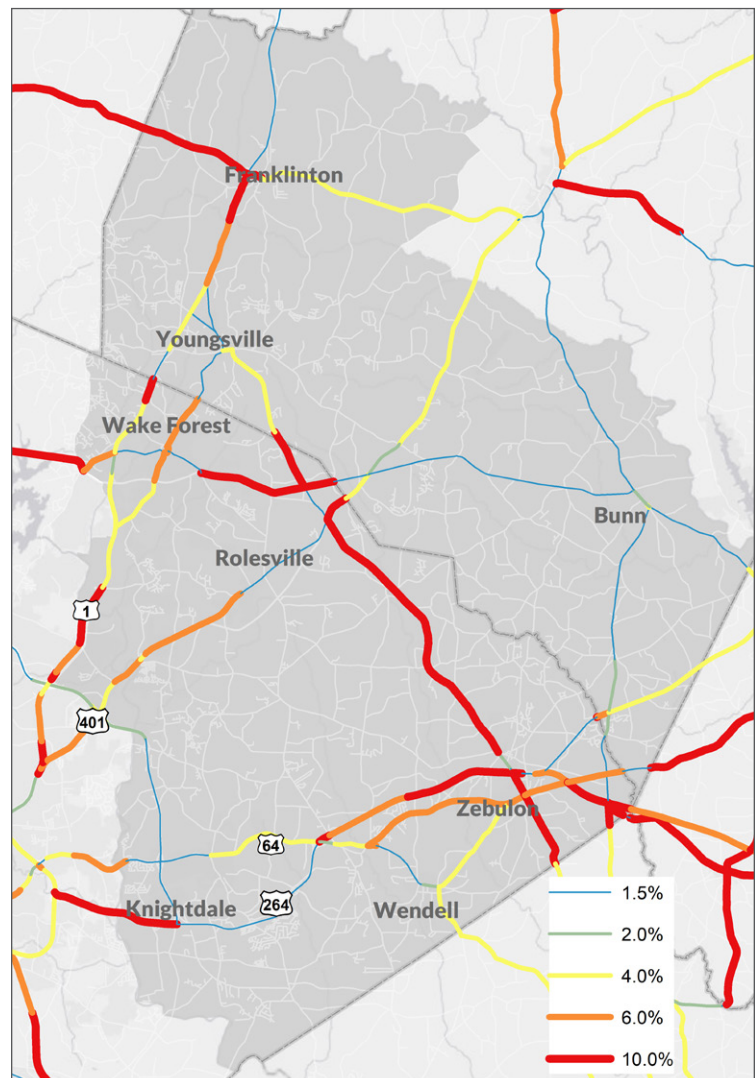


Figure 6.6: Projected growth in truck traffic within the NEAS (2045).
Source: USDOT Freight Analysis Framework.

Recommendations

Roadways Recommendations

Create and Expand Collector Streets Networks

Collector Streets have the potential to dramatically increase overall connectivity in the communities throughout the Northeast Study area, providing increased accessibility and congestion relief while also creating great spaces to live, work, and play. Collector Streets networks provide numerous benefits, including:

- Reduced reliance on major roads for short trips;
- Reduced travel times for all users;
- Greater connections between complementary and nearby land uses;
- Improved network safety and operations without widening major thoroughfares

However, all of the above are achieved only with careful planning, and the development or tailoring of standards and policies to strengthen existing, and promote future connectivity, consistent with community values and goals. While some NEAS communities have taken steps through comprehensive planning to identify a future network, development of these plans throughout the study area – and taking subsequent action to construct such collector streets – will help divert expected congestion into roads intended to accommodate these volume increases.

Develop Complete Streets Plans & Policies

Complete Streets plans and policies embrace the context in which roads are located, creating safe spaces for all users of the network, whether they get around by foot, bike, bus, or car. Having a Complete Streets plan in place can ensure that multimodal transportation elements, such as sidewalks, shared-use paths, bike lanes, and transit shelters, are **constructed as part of roadways projects**, as well as indicate to private development areas of public investment (or reinvestment). The following elements make up a successful Complete Streets Plan:

1. **All users & modes:** a Plan that includes all modes, including walking, biking and transit, as well as those of all ages and abilities.
2. **All projects & phases:** all aspects of transportation projects are covered, whether planning, design, construction, or maintenance.
3. **Cohesive network:** the need for a comprehensive, integrated, connected network for all users is known and articulated through the Plan.
4. **Jurisdiction:** all agencies that oversee transportation activities know the Plan's applicability and are involved in the process.
5. **Design:** the Plan uses current best practices for design criteria and standards, recognizing the need for flexibility.
6. **Context:** the Plan considers a street's surrounding context as part of the planning and design process.
7. **Performance measures:** the Plan incorporates performance standards with measurable outcomes.
8. **Implementation:** clear action steps are identified.

Roadway Projects by Type

Figure 5.7 represents the roadway projects identified by community feedback, data analysis, and regional model outputs. Widening projects are the most common type (green), as well as new location (blue-dashed) connections to be made. Bicycle and pedestrian needs will be considered during the engineering design phase of these project types, in accordance with NCDOT's Complete Streets policy.

Grade separation projects (red) are common along the railroad corridor that parallels US 1 north toward Virginia, and part of the future passenger rail corridor. Intersection realignments (orange) are less numerous, however, several of these realignments would be incorporated into widen projects.

More detail on individual projects is provided in Chapter 8 Implementation.

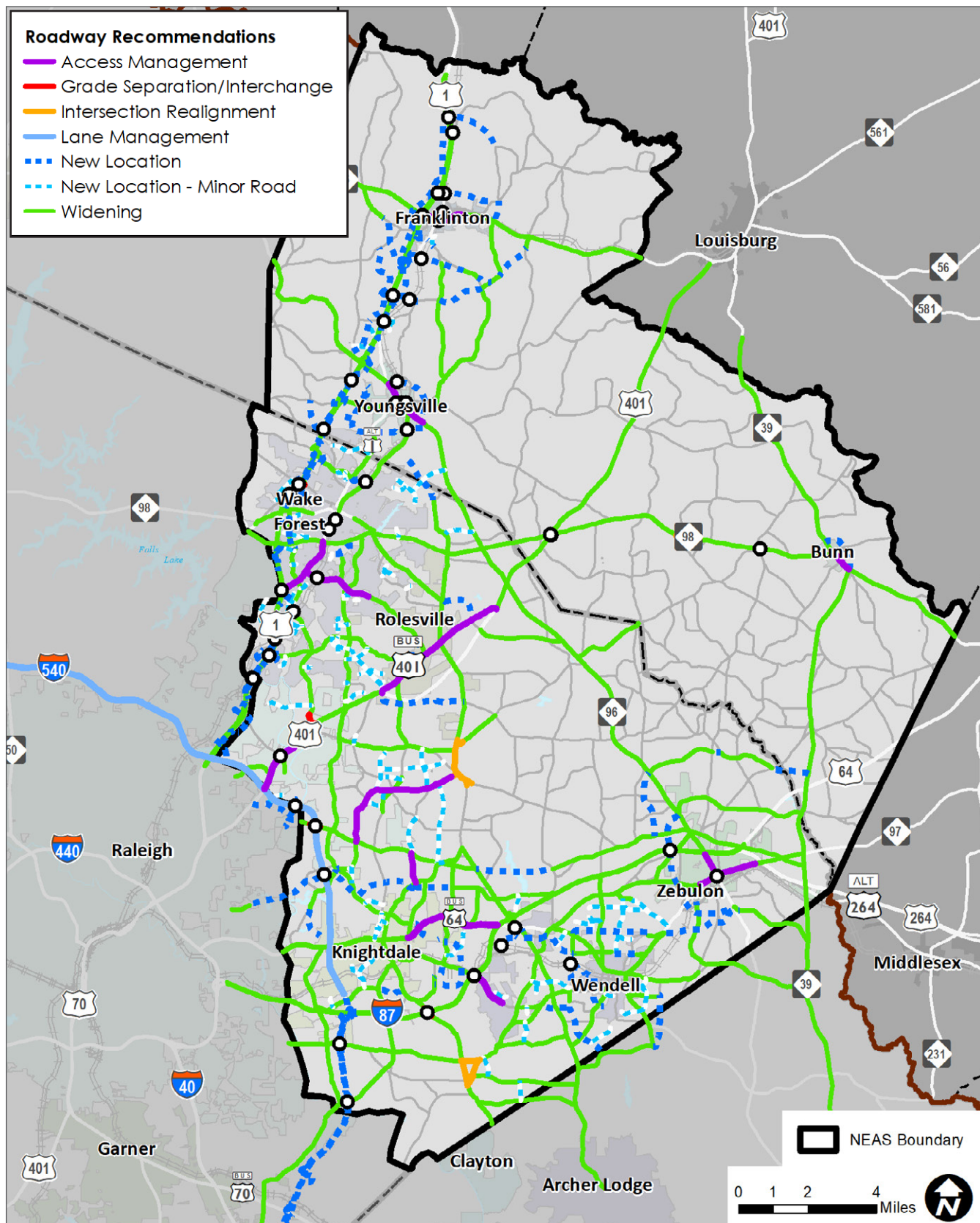


Figure 6.7: NEAS roadway and freight network recommendations.

Freight Recommendations

Forge Partnerships to Secure Grant Funding

The Triangle Regional Freight Study notes the importance of FASTLANE grants, and it may be a good idea for CAMPO and Councils of Government to work with local and state governments to develop several projects that are competitive for FASTLANE grant funding. The transportation funding world has emerged from the 1990's "pork"-driven funding mechanism to one that is based on grants and formula allocations. Forging partnerships and preparing early are keys to securing grant funding – even hiring a grant preparation firm that can perform lobbying services as well (financed through other means than CAMPO, which is not eligible to use federal funds in that manner).

Implement the Triangle Regional Freight Study Recommendations

The Regional Freight Study identifies many freight-related projects (Table 58 of that plan) and includes information on justifications via one or more of the performance measures described in that report. It would be advisable to work through that list and assign a value to projects that coincide with NEAS recommendations.

Consider Localized Distribution Center and Light Industry

The degree to which the global pandemic that was taking place during the NEAS update will influence freight companies and transportation going forward is highly uncertain. However, the vulnerability of "just-in-time" shipping models have been called into question, as has the need to explore localized distribution centers.

KEY TAKEAWAYS - FREIGHT

1. Importance of the Interstate and National Highway System.

Trucks, both originating and terminating within the NEAS, are dependent upon the existing highway system for movement. I-40, I-540, I-87 and US 1 are all critical corridors for current and future traffic.

2. Freight movement from the NEAS is both local and regional.

Freight originating within the NEAS is more likely bound for destinations within the Triangle. Higher proportions of truck destinations are found within the NEAS, although significant concentrations may be found near the Raleigh-Durham International Airport. When accounting for truck density, however, the importance of interstate routes, as well as the geographic extent of such trips, become more prominent.

3. Future growth in the NEAS will test the existing system.

While the current primary road network is critical for existing truck traffic, projects for future truck traffic show highest growth along state routes and other critical corridors within the NEAS. These roads already carry high volumes of non-truck traffic. Planning for this increase in traffic is necessary to ensure freight mobility and economic development are consistent with local and regional plans.

Complete Streets

Principles of Complete Streets

Complete Streets are streets designed for everyone. According to the National Complete Streets Coalition: “They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.” A Complete Street makes it easier to cross major corridors, walk to businesses, and bike to and from locations along the street without feeling unsafe. These improvements would be beneficial to everyone from children and the elderly going to church, neighbors walking to the cemetery to exercise and residents and visitors.

Depending on one’s perspective, Complete Streets may be viewed as welcome relief or pause for concern. Drivers who are accustomed to automobile-dominated development tend to see Complete streets as an idea guaranteed to take away valuable travel lanes for what is perceived to be seldom-used sidewalks and bothersome bike lanes that infringe on their territory between the curb.

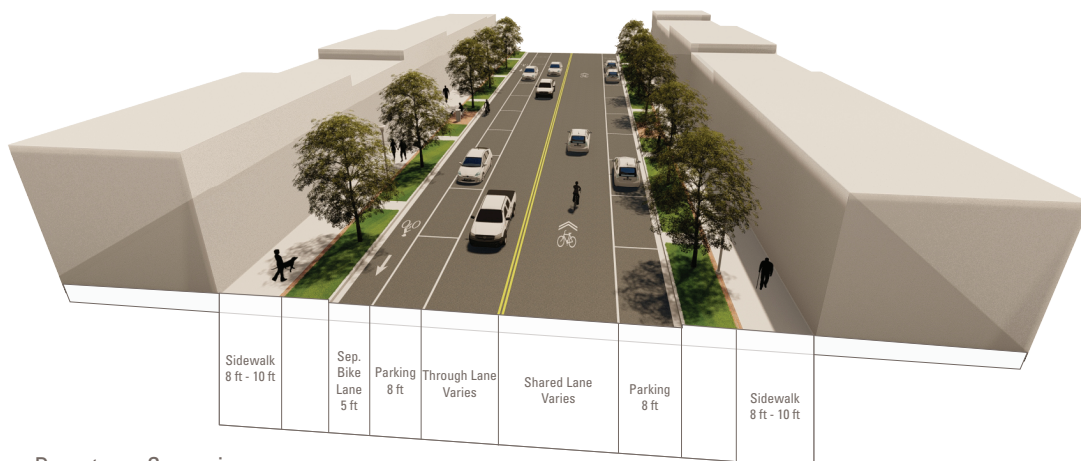
In truth, Complete Streets is not a one size fits all approach; a Complete Street redesign of an existing roadway must be tailored to existing and future travel demands, surrounding development and land use, and to that specific town or community. What an enacted Complete Streets policy might look like in a small coastal town is going to be different from that of a dense, urban center, and it should be. The same can be said for complete streets in the same town or city.

The ideal complete street accommodates every travel mode – pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. However, in many cases, Complete Street applications are limited by existing rights-of-way or design constraints. Therefore, trade-offs need to be assessed to determine the best approach to implementation of Complete Streets. This is most important when an improvement is made to an existing facility (i.e., widening or retrofit).

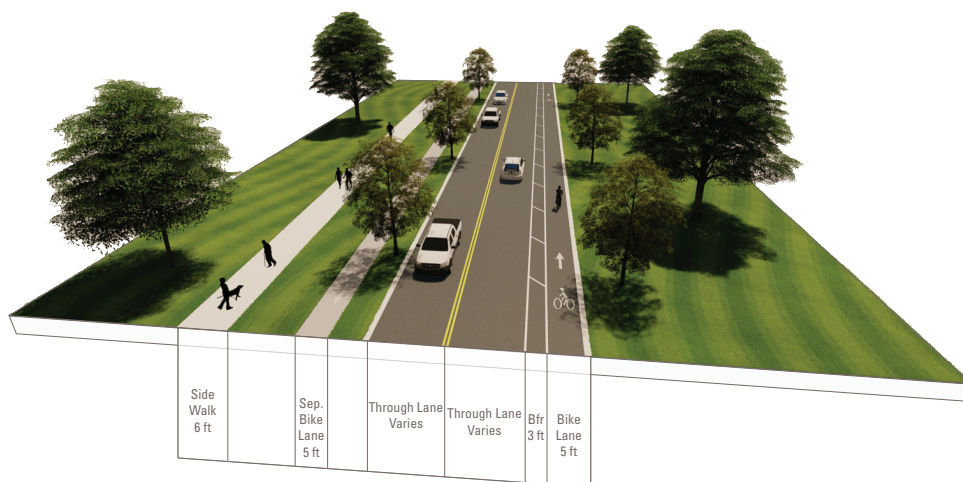
A Complete Street:

- *Accommodates all users and allows for efficient and high quality travel experiences*
- *Provides travel options for users of all ages and abilities that are safe, universally designed, context sensitive, and operable in all seasons*
- *Adapts to accommodate the needs of the present and future*
- *Contributes to the environmental sustainability and resiliency of the city*
- *Considers both direct and indirect costs in planning and design, as well as the value of the public right of way and the adjacent real estate*
- *Is a vibrant, attractive people place in all seasons and contributes to an improved quality of life*

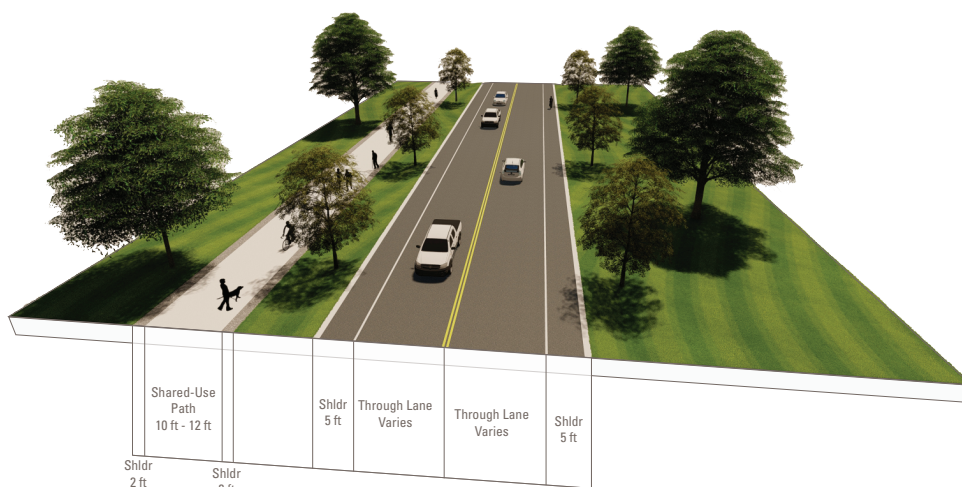
The cross-sections shown on the following pages (Figures 6.8 - 6.9) describe some potential Complete Streets treatments for 2-3-4 lane roadways within the Northeast study area. The dimensions shown accommodate future turning lanes, street plantings, and offer separation of pedestrian and vehicular travel movements; we recognize that these are optimal conditions and that in some locations topography, structures, and other obstacles may make achieving these cross-sections more expensive or even infeasible. However, costs need to be viewed in a longer-term context, since major roadway improvements happen rarely in the life of even the most-used transportation corridors. Making multi-modal improvements is a much easier and usually less expensive proposition during major construction / reconstruction activities, and it is better to inconvenience the public and customers of businesses only once.



Downtown Scenario
Parking Separated Bike Lane and Shared Lane

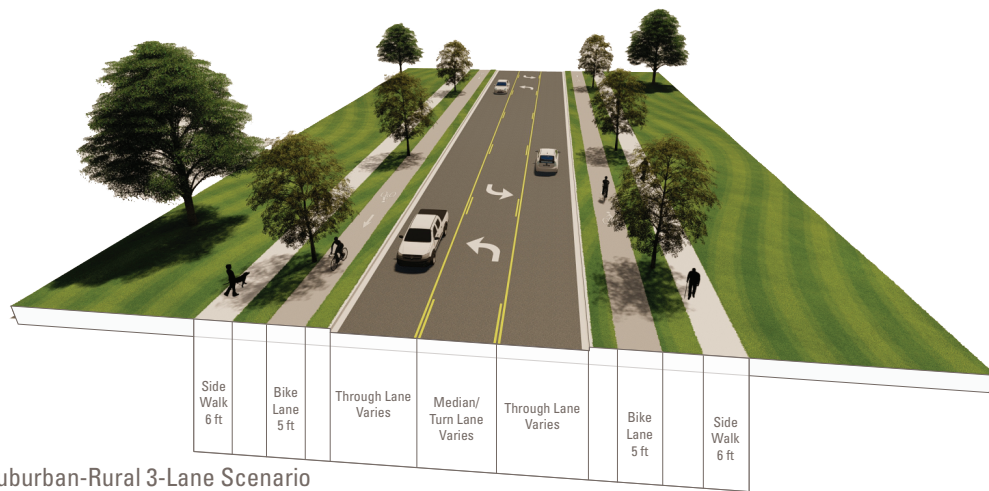


Rural Scenario
Sidewalk with Buffered and Separated Bike Lane

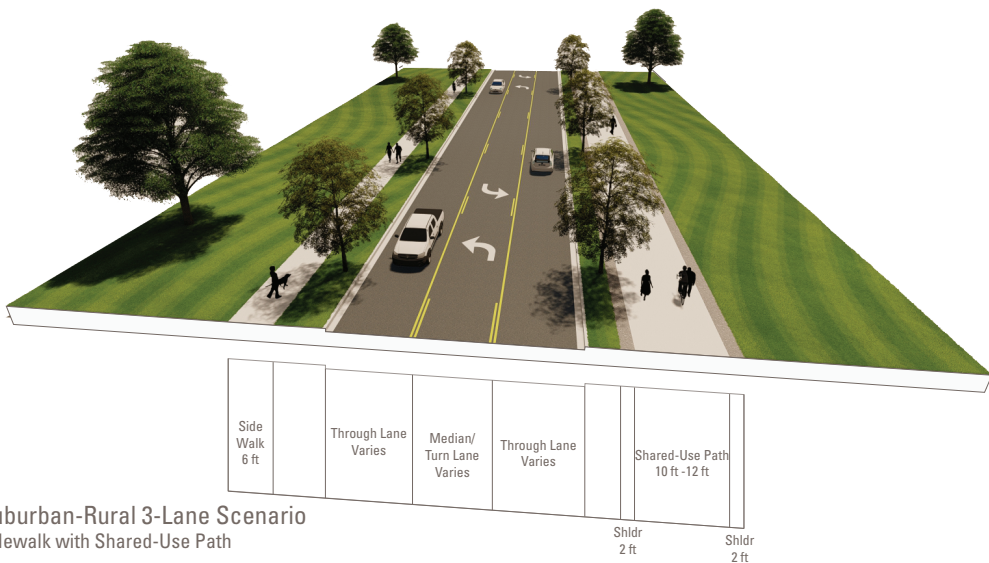


Rural Scenario
Paved Shoulder with Shared-Use Path

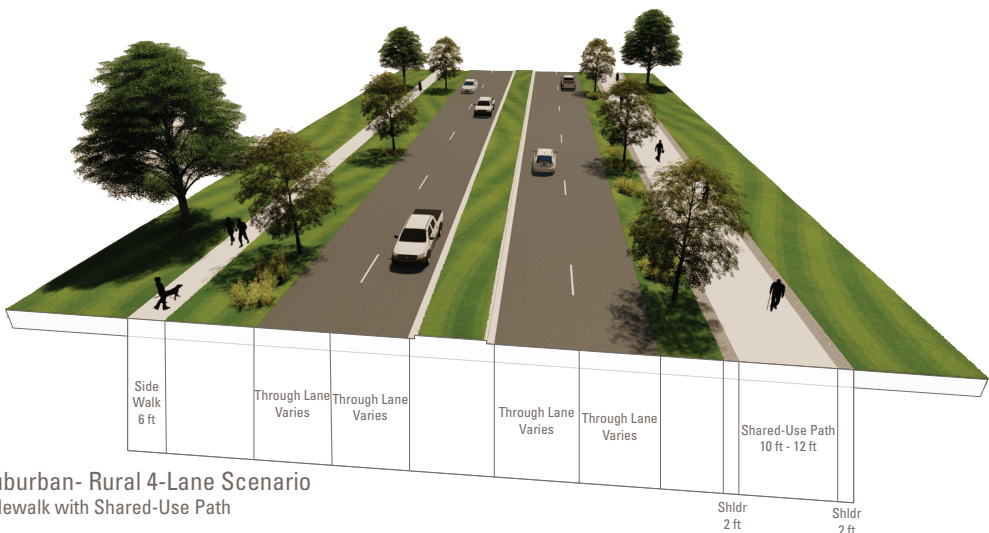
Figure 6.8: Complete Street Typical Cross Sections (2-lane Roadways)



Suburban-Rural 3-Lane Scenario
Separated Bike Lanes



Suburban-Rural 3-Lane Scenario
Sidewalk with Shared-Use Path



Suburban- Rural 4-Lane Scenario
Sidewalk with Shared-Use Path

Figure 6.9: Complete Street Typical Cross Sections (3-lane or more)

BUS, RAIL & **TRANSIT MOBILITY** 07

BUS, RAIL & Transit Mobility

Since the last publication of the Northeast Area Study, some of the local transit providers have undergone several changes. GoTriangle, formally known as Triangle Transit, and GoRaleigh, formally known as Capital Area Transit, have increased operations due to the growth and surge in ridership. Since 2010, the study area population has doubled. This increase has put pressures on transportation service demands within the transportation study area. Measures were taken by local leaders and agencies to increase transit service to meet the growing needs of commuters. Additional areas in the Northeast Area are now serviced by transit more than we saw in the 2014 Northeast Area Study.

Operators

GoTriangle. Go Triangle provides three express bus routes in the study area including the North Raleigh Express, Zebulon-Wendell-Raleigh Express (ZWX) and the Wake Forest-Raleigh Express (WRX). The Express routes run daily Monday thru Friday. Ridership data reviewed defines an increase in transit use since 2016. The ZWX route has historically had the highest ridership of the three routes that service the area. Ridership for ZWX has nearly doubled in 2019. The KRX bus route (now Route 33) averaged 31 riders per month in 2019. Ridership peaked for the KRX route in April 2019 with an increase of nearly 20 percent.

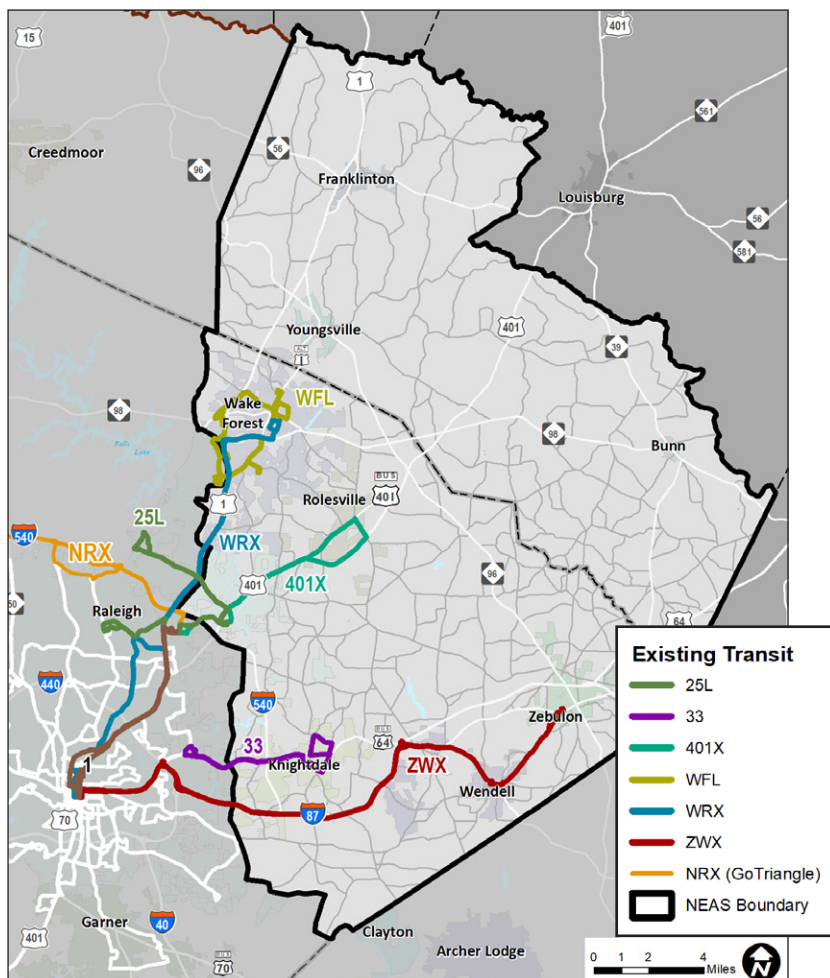


Figure 7.1: Existing transit service to the NEAS. Routes are operated by GoRaleigh, while on-demand transit is provided by several providers.

GoRaleigh. GoRaleigh operates six bus routes in the Northeast planning area including Rolesville 401X (started in October 2019), Knightdale 33 (formerly KRX), Triangle Town Link, Wake Forest Loop and Capital Boulevard (Route 1).

GoWake Access. GoWake Access (formally known as TRACS) provides door-to-door, shared-ride service for Wake County residents who are elderly, disabled and/or who participate in an eligible service. Service is provided Monday-Saturday from 6am-6pm. Fees for the service vary from \$2 to \$4 per trip dependent on the zones visited during the trip.

KARTS. The Kerr Area Transportation Authority is a rural transportation system providing trips for residents of Franklin, Granville, Vance and Warren Counties, Monday-Friday from 8am-5pm. Service requests must be made at least the day before and trip rates are determined by mileage.

Previous Planning Efforts

The following is a list of relevant plans that pertain to the transit context or directly to service recommendations from organizations in the NEAS planning boundary. Note that this list is not exhaustive; several municipalities are in the process of updating relevant plans.

Wake County Transit Plan. The Plan identifies strategies for expanding and improving transit service throughout

Wake County, to provide regional connection, connect all the areas within Wake County, provide reliable urban mobility, and enhance existing service. Since initial implementation in 2017, the following have been completed:

- Additional tax dollars allowed GoTriangle to continue the Zebulon-Wendell and Knightdale-Raleigh Express routes.
- GoTriangle and GoRaleigh expanded the frequency of bus services adding additional coverage and more frequent service routes.
- GoWake Access expanded its service area and increased trips for eligible residents.
- GoRaleigh has started planning for additional bus stop locations and sidewalk projects to provide additional access.
- GoTriangle and GoRaleigh expanded their bus fleet.
- Planning studies were initiated to understand the feasibility for Transit-Oriented Development (TOD) and Bus Rapid Transit (BRT) in Raleigh, Cary, and Garner. New Bern Avenue, Capital Boulevard, South Wilmington Street, and Western Boulevard have been identified as potential BRT corridors.
- Passenger rail studies were completed to understand the benefits of the service in the Triangle area, identifying feasible corridors and necessary infrastructure for expansion.

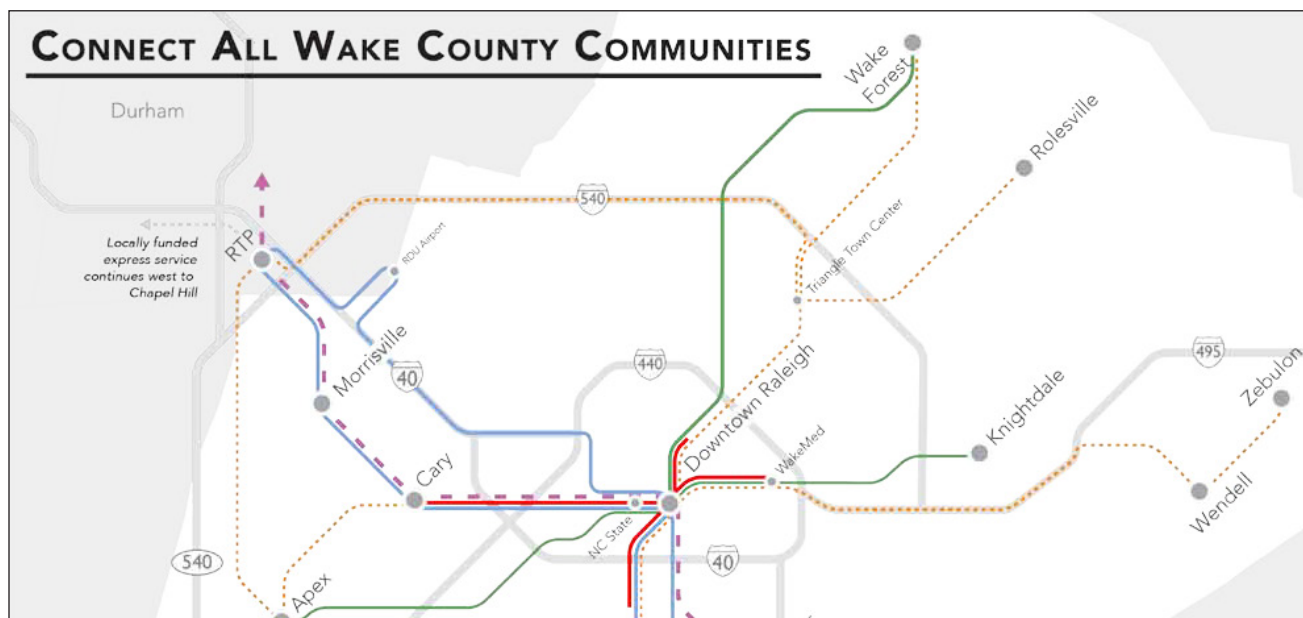


Figure 7.2: Excerpt from the Wake County Transit Plan (2016). Transit service has expanded in the region since this Plan was published.

Knightdale Comprehensive Plan. The Knightdale Comprehensive Plan (KnightdaleNEXT) recommends increasing frequency of peak period bus service into Knightdale from the west, and also plans to redevelop areas to include densities that support more frequent bus trips. The Plan identifies utilizing the existing rail corridor for future passenger rail service and U.S. 64 Business for bus rapid transit.

Rolesville Comprehensive Plan. The Rolesville Comprehensive Plan recommends a future Park-and-Ride service from Rolesville to Raleigh. The Plan also includes recommendations for Rolesville leaders to work with Wake Forest leadership to develop a route that connects the two towns.

Wake Forest Transportation Plan. The Wake Forest Transportation Plan identifies working with GoRaleigh staff to recommend a future transit route from downtown Wake Forest to WakeMed North Hospital and then to downtown Raleigh. Part of this Plan already implemented, is a counterclockwise loop service to complement the existing Wake Forest Loop (WFL). The Plan also incorporates a potential passenger rail service

(S-line) that is under study by NCDOT extending 80+ miles between Sanford and Hendersonville, NC.

Also in development at this time is the Wake County Northeastern Microtransit Service Plan, which will develop a strategy to incorporate microtransit services into rural Northeastern Wake County, including detailed operations, budget, projected ridership, revenues, and implementation plan.

Capital Area MPO RED Lanes Study. The Study, completed during the NEAS Update, examines with potential benefits of R.E.D. lanes - transit priority lanes - for transit corridors within the Triangle region. The study examined other priority treatments in addition to R.E.D. lanes, including transit signal priority, queue jumps, on-street parking, Intelligent Transportation systems, and others, in order to identify best practices for their implementation, applicability in the Triangle Region, and methodology for their prioritization and future implementation. Potential R.E.D. lane corridors in the NEAS include Knightdale Boulevard / Wendell Boulevard, U.S. 401, U.S. 1, and South Main Street in Wake Forest.



GoRaleigh transit operates several routes in the NEAS. Source: GoRaleigh.

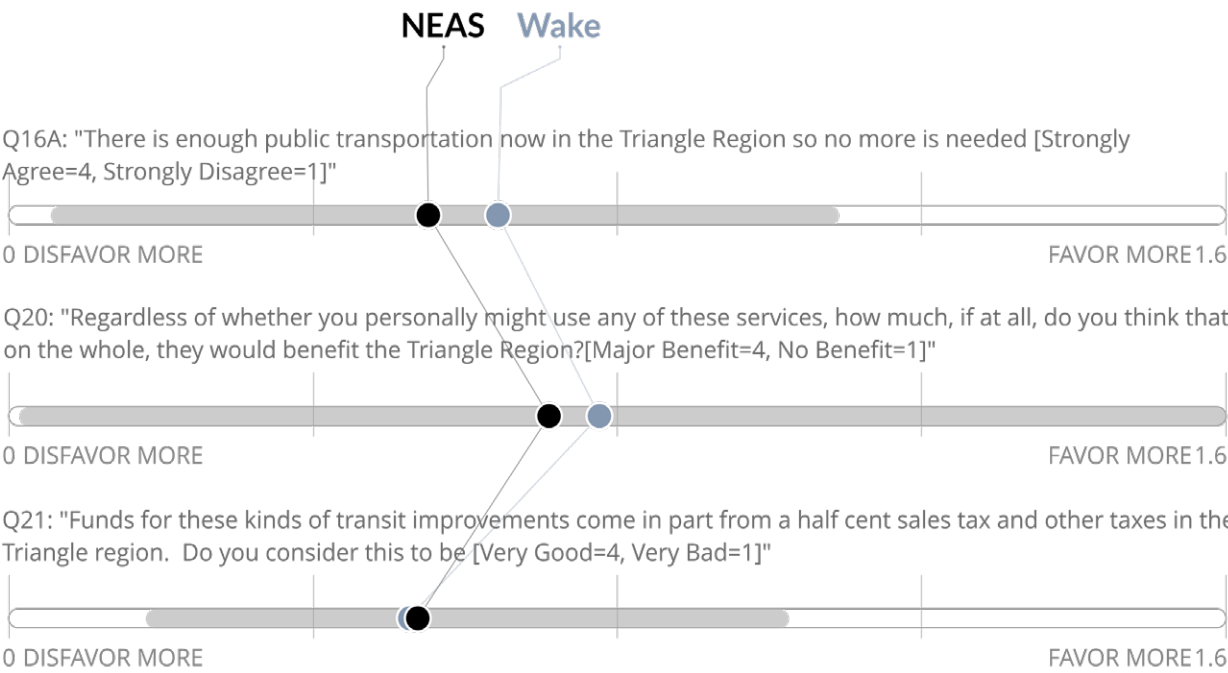
Transit Analysis

A portion of this discussion is based on the Market Analysis: Wake Transit Plan Vision Update (March 12, 2020) and a recent survey of public attitudes towards transit service. In the case of the latter, the “raw” data was obtained from the original consultant and used to help delineate differences between the NEAS planning area and the rest of Wake County. Additional demographic information was obtained to supplement this assessment, along with meetings with transit staff from CAMPO and NEAS communities to discuss future transit needs for the study area.

Demographics & Attitudes Towards Transit

The following infographics portray current demographic characteristics and attitudes relevant to transit use within the NEAS, Wake & Franklin Counties. Not surprisingly, land use densities alone suggest that viable transit service needs to be focused on major corridors or demand-responsive systems. It should be noted that some areas of NEAS exceed 15 or even 30 residents per acre, particularly along major highway corridors within the study area.

Favor or Disfavor Public Transportation Use and Investment (survey responses)



Have NOT used Uber or Lyft in the Past 30 Days

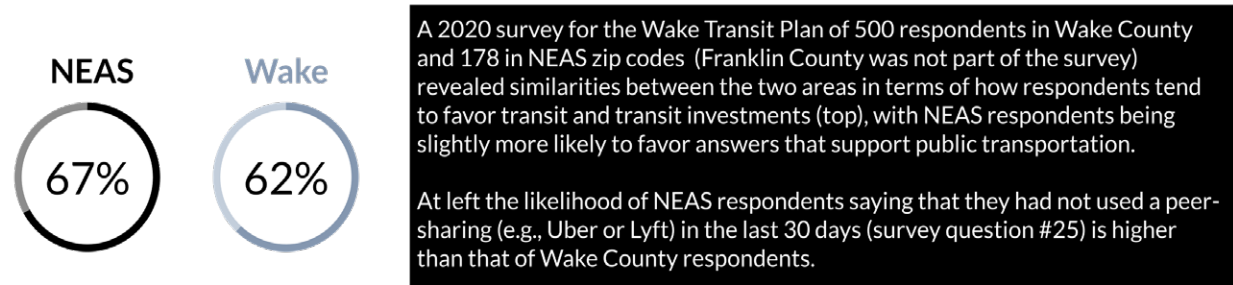


Figure 7.3: Transit survey results.

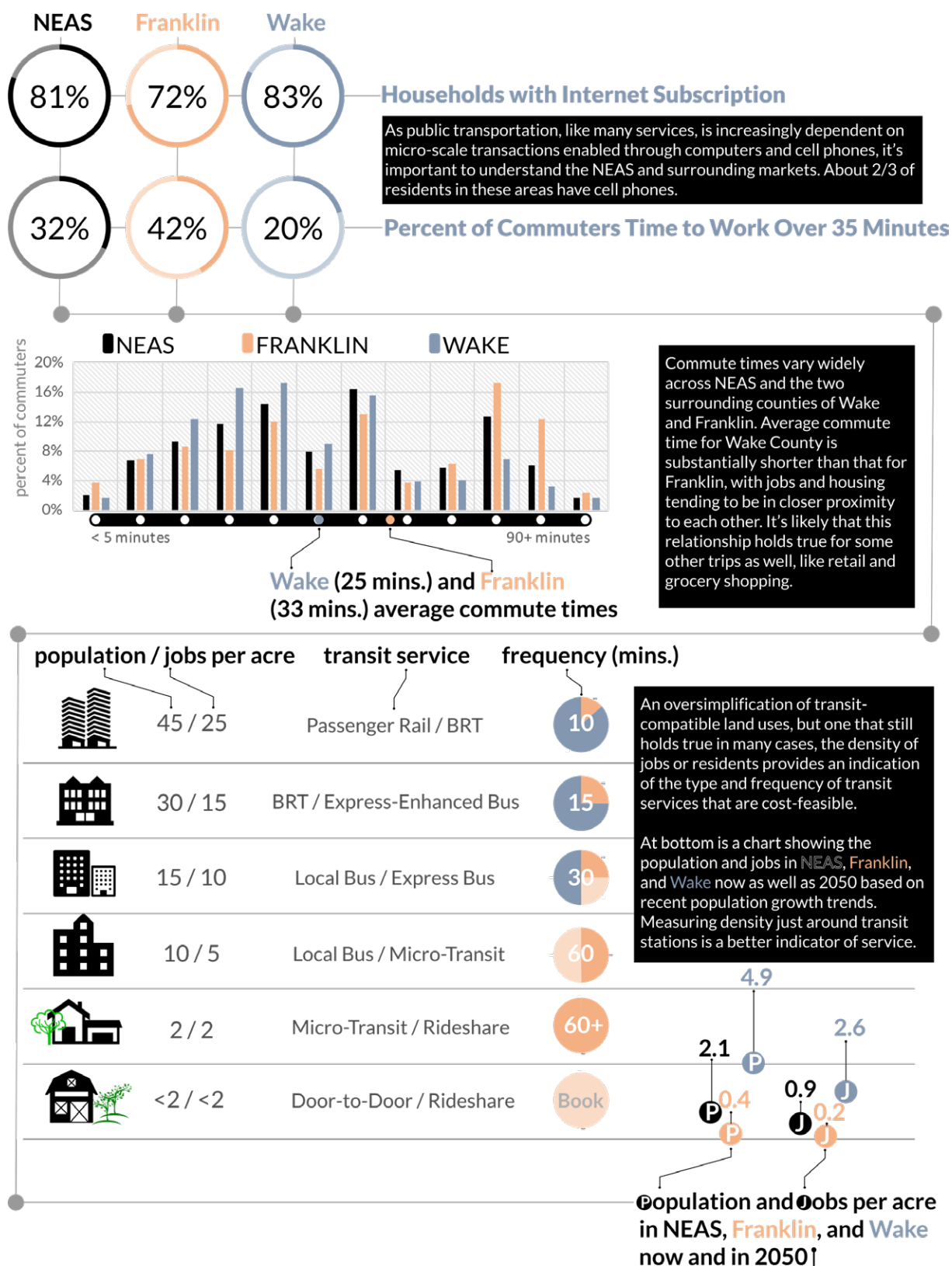


Figure 7.4: Northeast Study area demographics and land use towards transit.

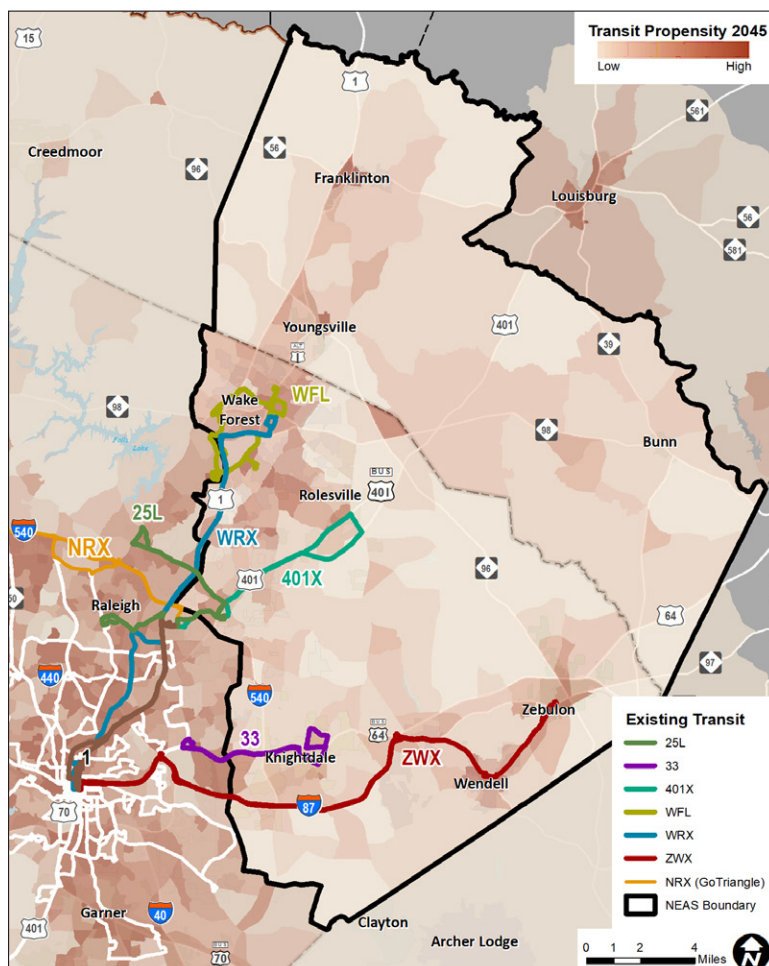
Wake County as a whole and the zip codes that touch the NEAS planning area boundary share similar attitudes about transit, with the **NEAS-area respondents favoring public transportation service and investments** slightly more than Wake County as a whole. Usage of peer-to-peer car sharing services Uber and Lyft were less similar, with more people citing usage of a service in the past 30 days in Wake County as a whole compared to the NEAS-area respondents. **Feedback from community outreach during this NEAS update aligns with these key takeaways**, particularly the need to improve access to existing stops and enhancing or extending service along major corridors (US 1, 401, 64 Business).

Transit Propensity

Transit Propensity measures the likelihood of using public transit as a means of transportation. Grounded in economic principles, it uses socioeconomic factors to measure the likelihood of potential transit system users.

As expected, corridors with high population growth exhibit positive changes for additional transit propensity – although the overall propensity remains low and reflects population and employment growth rates in these corridors. Observations include:

1. Increasing propensity for transit between Wake Forest and Rolesville.
2. Existing transit routes service majority of the higher-propensity areas in NEAS.
3. Corridors are key: high-propensity mirrors US 1, US 401, and US 64 corridors, where residential or employment are more dense than the suburban/rural areas in between.



GoWake Access and KARTS shuttles. Source: RaleighNC.gov and VanceCounty.org websites.

Figure 7.5: Transit Propensity and existing transit service within the NEAS.

Recommendations

The following summarizes a set of directions for developing recommendations based on a review of the current planning and available data obtained from several sources.

Implement the Northeast Wake Microtransit Service Plan

The propensity of NEAS-area residents to have cell phones or support public transportation is not substantially different than Wake County as a whole, and it is likely the same is true for the portion of Franklin County within the NEAS planning boundary, even though recent survey work did not include those residents. The corridor-based services mentioned previously should therefore be supplemented with node-based, on-demand service or demand-responsive services taking advantage of micro-scale interactions with customers and evolving Mobility-as-a-Service (MaaS) concepts that rely on information and seamless multimodal transfers to reach new markets.

Develop facilities that support public transportation and non-single occupancy vehicle transportation

In addition to population and employment densities, how the design of a station area supports access to public transportation or presents barriers is also of concern when evaluating potential transit services. Ideally, a metric that is readily available like Walk Score can be used for a broad-brush examination, but a more detailed look at station areas and how pedestrian, bicycle, and parking accommodations may support fixed-route public transportation services can create additional, micro-scale project recommendations for NEAS. Essentially, municipalities are encouraged to develop for the transit density needed in the future, while planning to extend existing service in the present.

Focus on corridors for fixed-route transit and Measures of Effectiveness (MOE)

The Triangle Regional Freight Study notes the importance of FASTLANE grants, and it may be a good idea for CAMPO and Councils of Government to work with local and state governments to develop several projects that are competitive for FASTLANE grant funding. The transportation funding world has emerged from the 1990's "pork"-driven funding mechanism to one that is based on grants and formula allocations. Forging partnerships and preparing early are keys to securing grant funding – even hiring a grant preparation firm that can perform lobbying services as well (financed through other means than CAMPO, which is not eligible to use federal funds in that manner).

Focus on the building blocks

The large extent of the Northeast Study area (435 square miles), combined with the predominant low-density suburban and rural development patterns, suggest that a few fixed-route services with 60-minute headways is a reasonable goal for the near-term. As the horizon years extend, the **recommendations should support increasing the quality and performance of the fixed-route services**, perhaps to enhanced express and bus rapid transit (BRT) service in major corridors.

Support Southeast High-Speed Rail Corridor Development

Key supporting items as this project moves from planning to detailed design include the following (Figure 6.6):

2020-2030

- Establish minimum operational segment passenger rail service between Raleigh and Wake Forest by acquiring rights-of-way, improving at-grade intersections, station areas, and constructing layover track;

2030-2050

- Support future extension of service to Youngsville and northward by acquiring commuter rail rolling stock, further improvements to station areas, and grade separation of major arterial roadways.

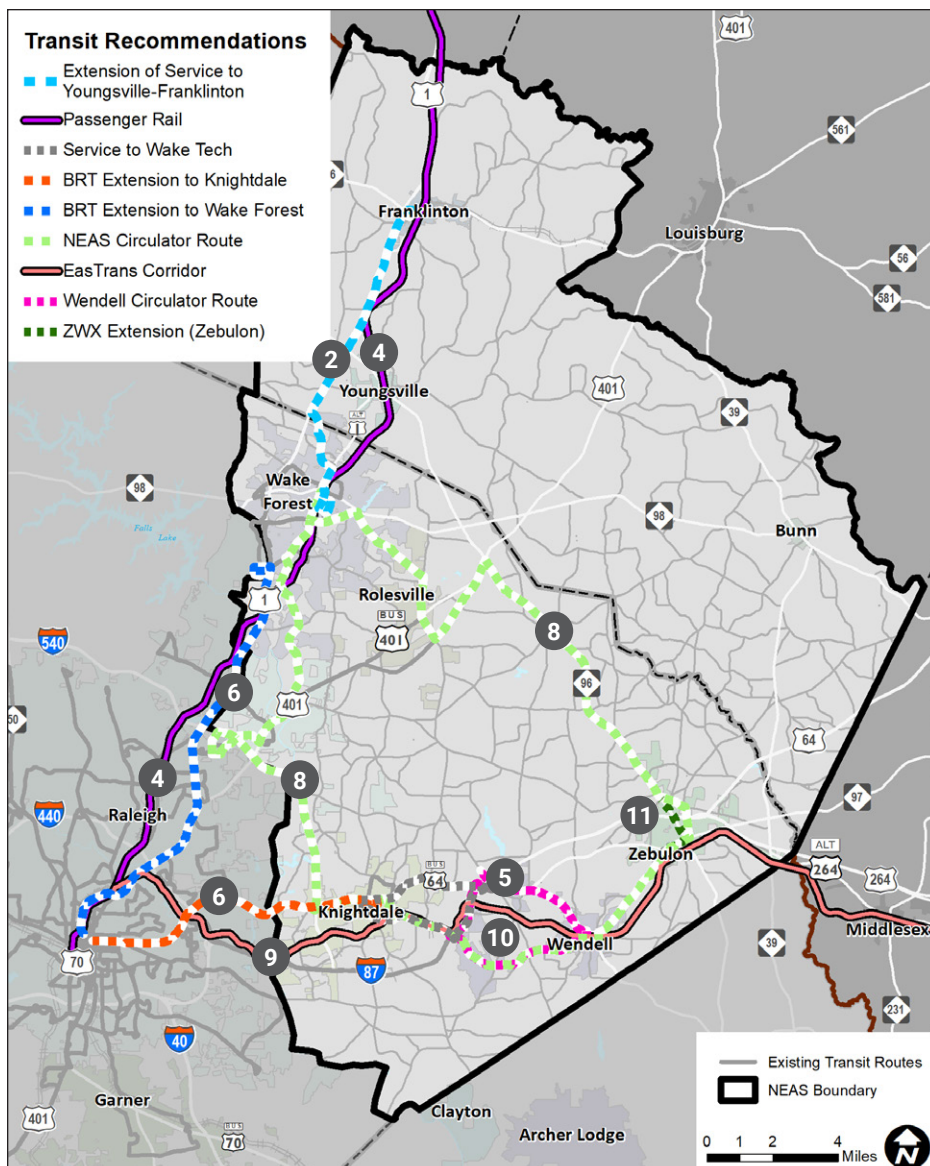


Figure 7.6: Transit recommendations within NEAS include the following:

1. First-/Last-Mile Solutions: including Bike/Walk Connections
2. Extension of Services to Franklinton and Youngsville
3. Incorporate Micro-Mobility, Route Deviation, Car-Sharing (not mapped)
4. Support for SEHSR and Crossing Solutions
5. Service to Wendell Falls and Wake Tech Campus
6. BRT Extensions (2): Knightdale and Wake Forest
7. Frequency/Weekend Service Improvements (not mapped)
8. Circulator Route between NEAS-Wake towns
9. Eastrans Rail on CTP: rail-trail for interim period through leasing arrangement; coordinate with Norfolk-Southern and lessee, CLNA (Coastal Carolina Railway)
10. Wendell Circulator Route
11. ZWX Extension (Zebulon) to Eastern Regional Center

BICYCLE & PEDESTRIAN MOBILITY 08

Pedestrian Mobility

Background

Existing sidewalks are found mostly in the urban areas of the NEAS, and are nearly nonexistent in the rural portions of this region. While sidewalk networks are extensive in the urban areas, gaps in the sidewalk network are still frequent. Over the past decade, most pedestrian fatalities and serious injuries have occurred in areas where pedestrian infrastructure does not exist.

System Performance

Sidewalk Gap Analysis

Existing sidewalks were analyzed along arterial and collector roadways in the NEAS using CAMPO's sidewalk and NCDOT's roadway GIS data. Arterial and collector roadways that are missing sidewalks were selected and are displayed in Figure 7.2.

While sidewalks are mostly found in the urban areas, there are still significant gaps in the urban sidewalk network, especially when considering higher traffic volume and higher speed roads such as the arterial and collector roadways that criss-cross each NEAS community:

- Urban Arterials: 70% are missing sidewalk
- Urban Collectors: 45% are missing sidewalk

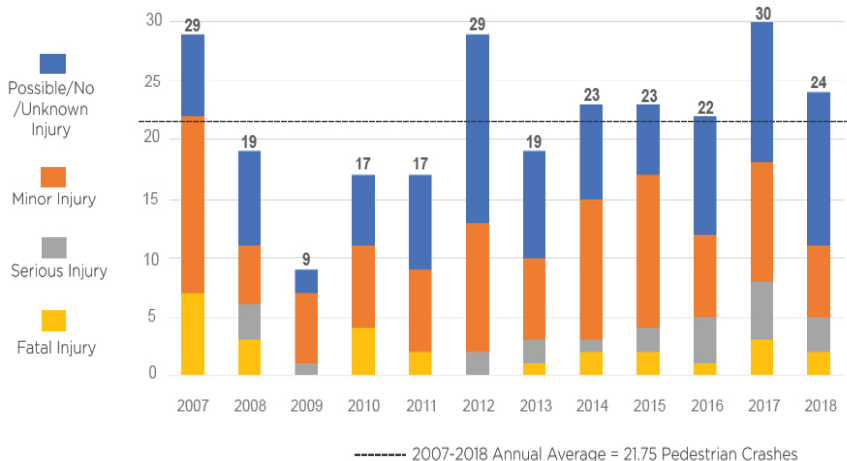
As might be expected, arterial and collector roads in urban areas that are missing sidewalks tend to be found further away from a community's downtown core. Several of these 'sidewalk gap' corridors that could connect multiple neighborhoods or commercial areas of an NEAS municipality are listed below, and should be examined further as potential priority corridors for sidewalk construction:

- NC 98 through Wake Forest (both Durham Rd and the Dr Calvin Jones Hwy bypass)
- Smithfield Rd through the south side of Knightdale
- Selma Rd (NC 231) in the south side of Wendell
- US 401 through the Raleigh suburbs
- US 1 through Youngsville
- NC 56 through Franklinton
- Main St and Jewett Ave in Bunn
- US 1 generally through the northwestern part of the study area

Crash Analysis

Pedestrian crashes were analyzed using NCDOT's pedestrian crash data that is available from 2007-2018. Crashes were analyzed in relation to pedestrian infrastructure as well as roadway type, and are also displayed on the map on the following page.

TOTAL NEAS PEDESTRIAN CRASHES & SEVERITY



While 12% of all roads in the NEAS are arterial roadways, they account for 44% of all pedestrian fatalities and serious injuries. Collector roads are another 12% of the NEAS roadway system, and they account for 24% of all fatalities and serious

Figure 8.1: Pedestrian Crash and Severity for NEAS (2007-2018).

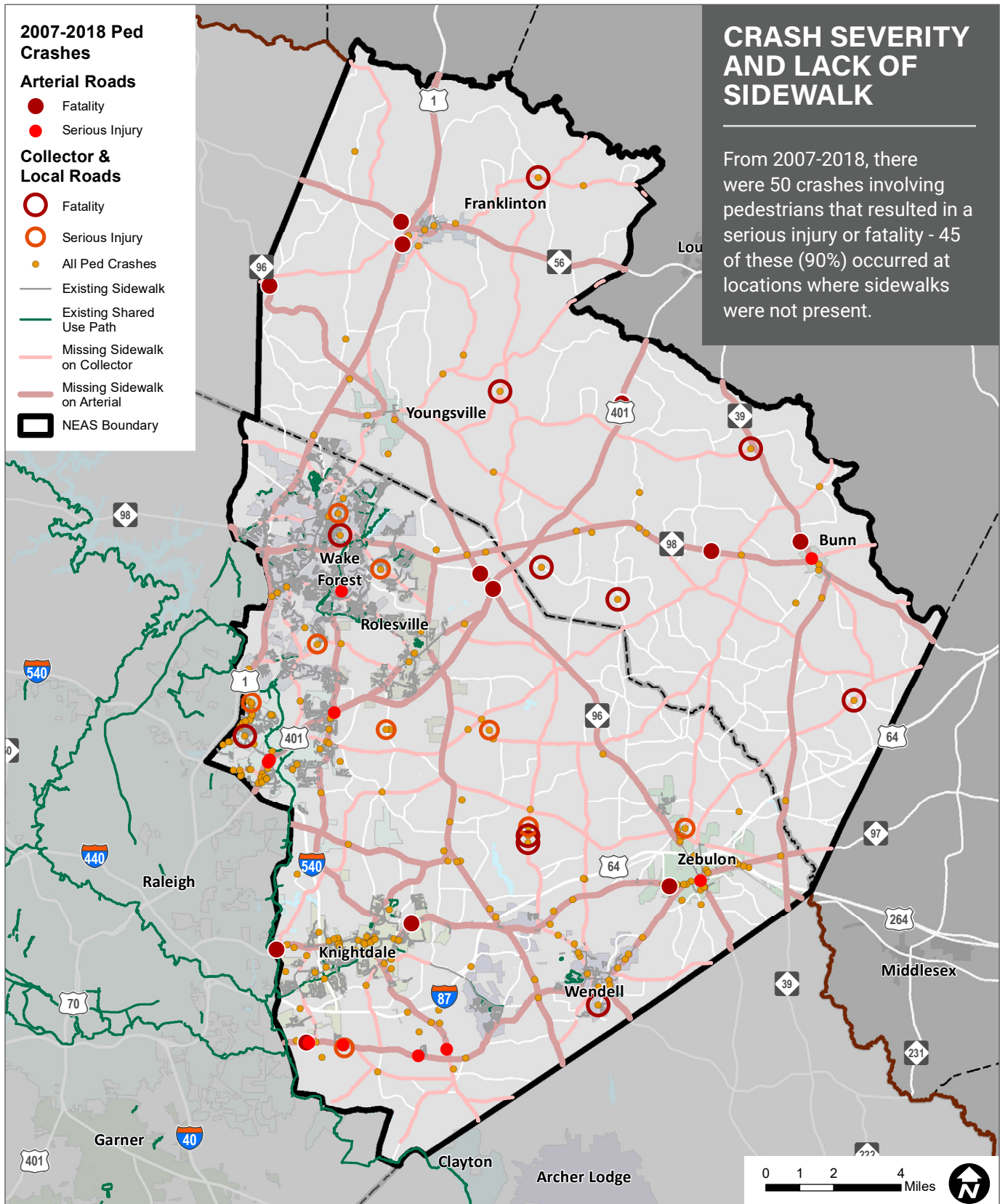


Figure 8.2: Sidewalk Network & Crash Locations (Sidewalks, Pedestrian Crashes, and Arterial/Collector Roads).

Bicycle Mobility

Background

Aside from the greenway segments in the western part of the study area, bicycle facilities are nearly nonexistent. Automobile travel lanes serve as the primary space in which bicyclists must operate, and this environment is generally a significant barrier for all ages and abilities (AAA) of bicyclists. Accommodating AAA users was a key theme from survey and stakeholder feedback.

System Performance

Bicycle Suitability Analysis

The project team developed a data-driven rating system to evaluate roads across the NEAS boundary for their suitability for bicycling. This analysis utilizes data from NCDOT's Route Characteristics ArcGIS dataset, NCDOT's Traffic Volume (AADT Traffic Segments) dataset, and is supplemented by Wake County's streets dataset that has a more comprehensive speed limit attribute (for the Wake County portion).

A scoring matrix was developed based on the findings of this review and best practices in suitability mapping. It includes a methodology tailored to the urban and rural context of the NEAS area. The scoring matrix is summarized in Figure 8.3 and the colors align with corridors in Figure 8.4.

While pockets of category 1 "Easy - All" are mainly found in the neighborhood streets of the municipal areas, they are generally separated from each other by less suitable category 3 or higher roads. This dataset can be helpful for several reasons:

The resulting scores were classified into the comfort levels summarized in Figure 7.3. These comfort rankings apply to bicyclists with at least some experience in operating on roadways with other motorized vehicles. All bicyclists must use good judgment regarding their skill levels to determine the routes most appropriate for them.

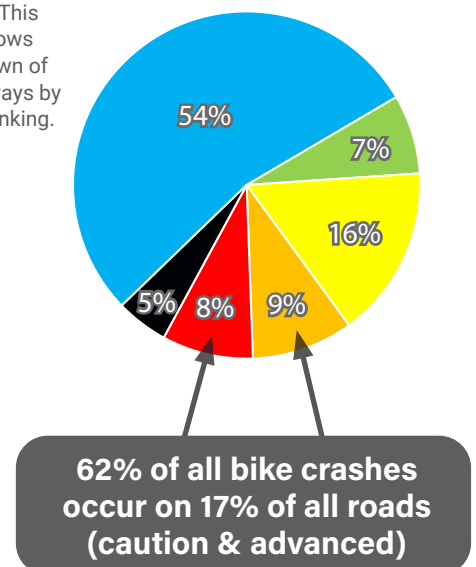
Score	Bicycling Skill
1	Easy - All
2	Easy - Adult
3	Moderate
4	Caution
5	Advanced
Limited Access Hwy	Not Allowed

- Prioritizing intersection improvements by examining key opportunities to connect pockets of category 1 "Easy - All" roads.
- The existing greenways in the study area connect some of these pockets of category 1 "Easy - All" roads, highlighting the valuable connectivity function that greenways can serve.
- Prioritizing on-road bicycle infrastructure improvements. As traffic volumes and traffic speeds increase (less suitable for bicyclists), the greater the need for bike lanes that have a wider buffer space and physical barrier between the bicycle operating space and roadway.
- Bicycle route mapping: for someone wishing to ride a bicycle in the NEAS, this map can help a bicyclist select an optimal route according to their skill level.

Crash Analysis

Bicycle crashes were analyzed using NCDOT's bicycle crash data that is available from 2007-2018. Crashes were analyzed in relation to bicycle suitability, and are also displayed on Figure 8.4.

Figure 8.3: This pie chart shows the breakdown of NEAS roadways by suitability ranking.



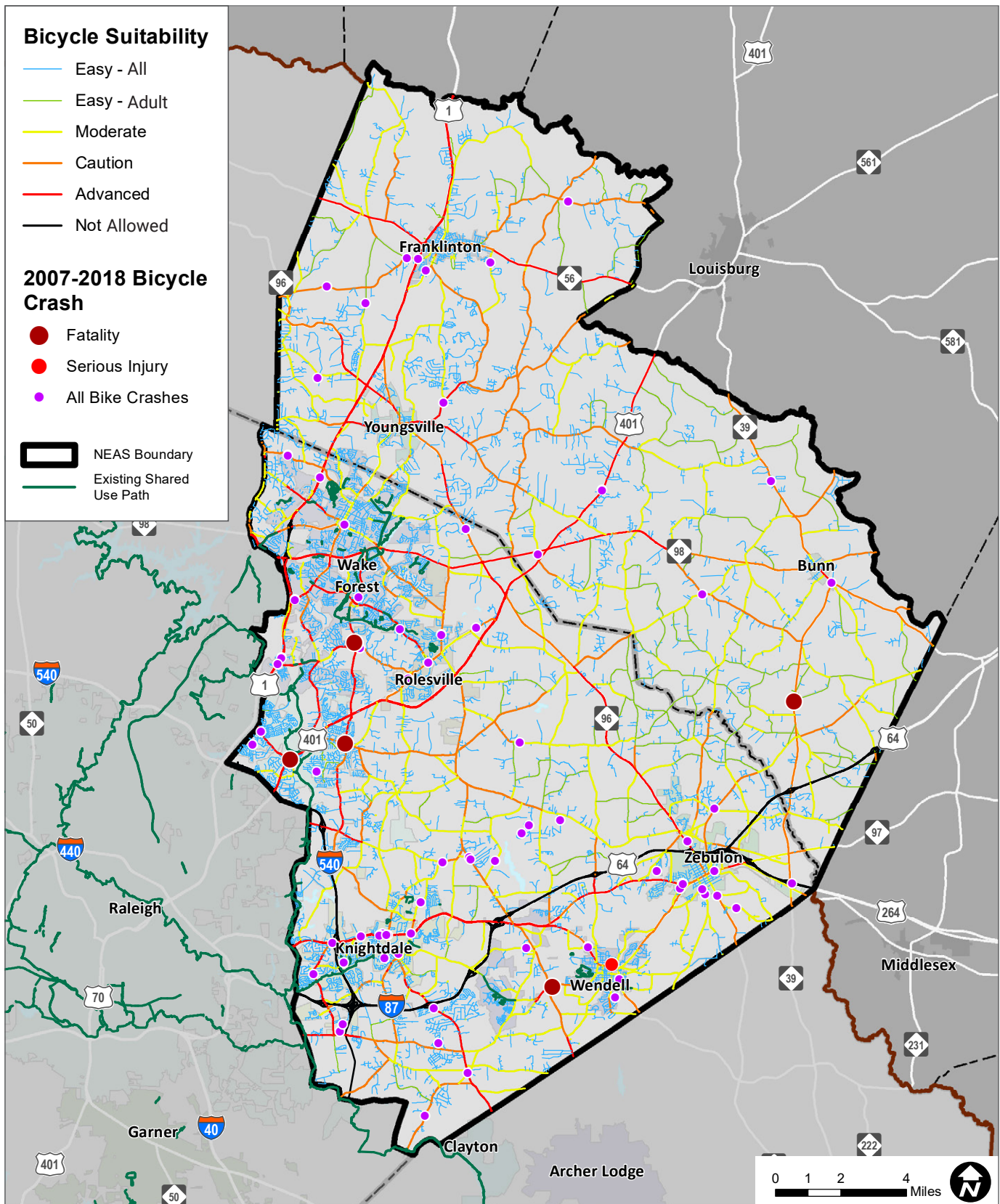


Figure 8.4: Bicycle Network & Crash Locations (Bicycle Suitability Mapping & Bicycle Crashes).

Opportunity Analysis

Transportation facilities are essential components in creating communities of opportunity and reducing the disproportionate economic and health burdens on communities of concern. Often, traditionally vulnerable populations, such as children, older adults, people of color, people with limited English proficiency, and low-income individuals rely heavily on affordable transportation options, specifically walking, biking, and transit.

Equity Analysis

The project team conducted an equity analysis using existing demographic information from the US Census Bureau. All data was obtained from the 2018 American Community Survey 5-year estimates and analysis was conducted at the census block group level. The following indicators and parameters were included in the analysis:

- Income: population that is living at or below 200% of the Federal Poverty Level.
- Age: population that is under the age of 18 and over the age of 64.
- Race: population that identifies as non-white or multiple races/ethnicities.
- Limited English Proficiency: population that identified as not speaking English well or at all.
- Limited Access to Motor Vehicle: households that said they did not have regular access to a motor vehicle.
- Composite (Figure 7.5): this map displays a combination of the above indicators.

Areas with the highest concentration of equity indicators are found east of Franklinton, east of US 1 near downtown Wake Forest, east, southeast, and northwest of Knightdale, and southwest Zebulon.

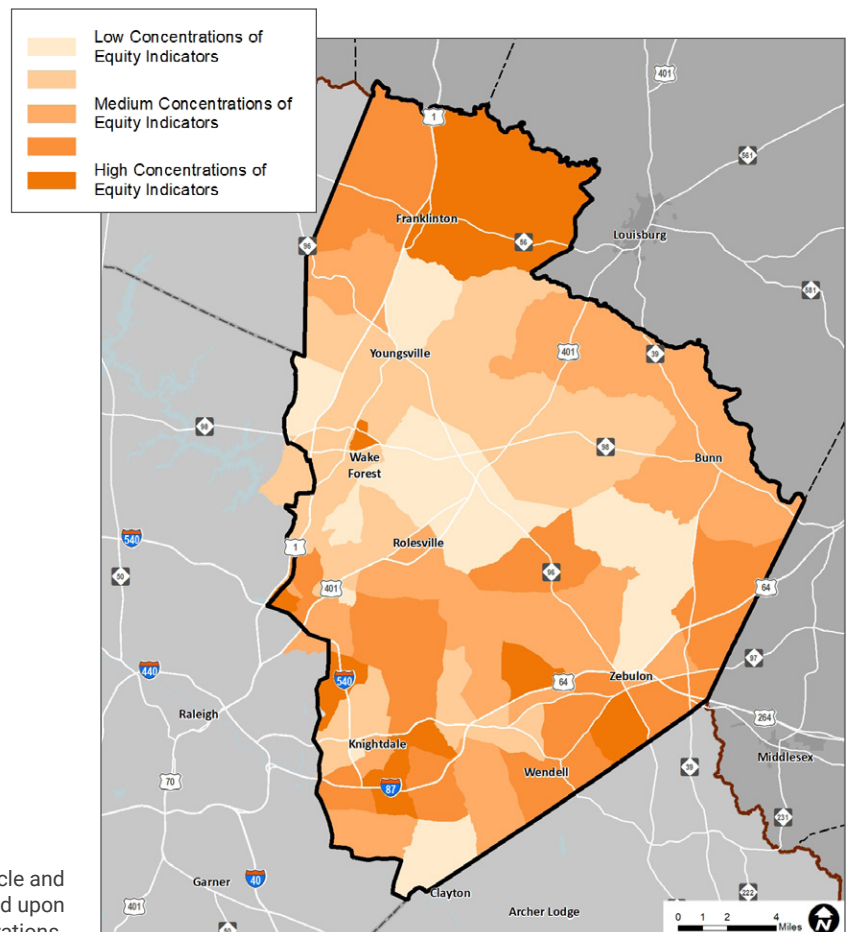


Figure 8.5: Need for bicycle and pedestrian facilities based upon equity considerations.

Demand Analysis

The demand analysis is an objective, data-driven process that estimates the cumulative demand for recreation or active transportation depending on a variety of location-based features. This was accomplished by quantifying factors that generate bicycle and pedestrian movement.

A non-motorized demand analysis was completed for the NEAS region to determine areas of expected bicycle and pedestrian activity. Inputs used in this analysis included live, work, play, shop, learn, and access transit (utilizing data from the Census, LEHD, local park, trail, and schools data, and GoTriangle transit data).

The resulting analysis was combined to form the Composite map (Figure 8.6). The Composite summarizes the geographic distribution of active transportation and recreational demand throughout the study area.

The areas of high demand are focused within the town centers and western edge of the NEAS region, where residential and commercial density are highest. Higher density areas include:

- Wake Forest
- Northeastern Raleigh
- Knightdale
- Downtowns

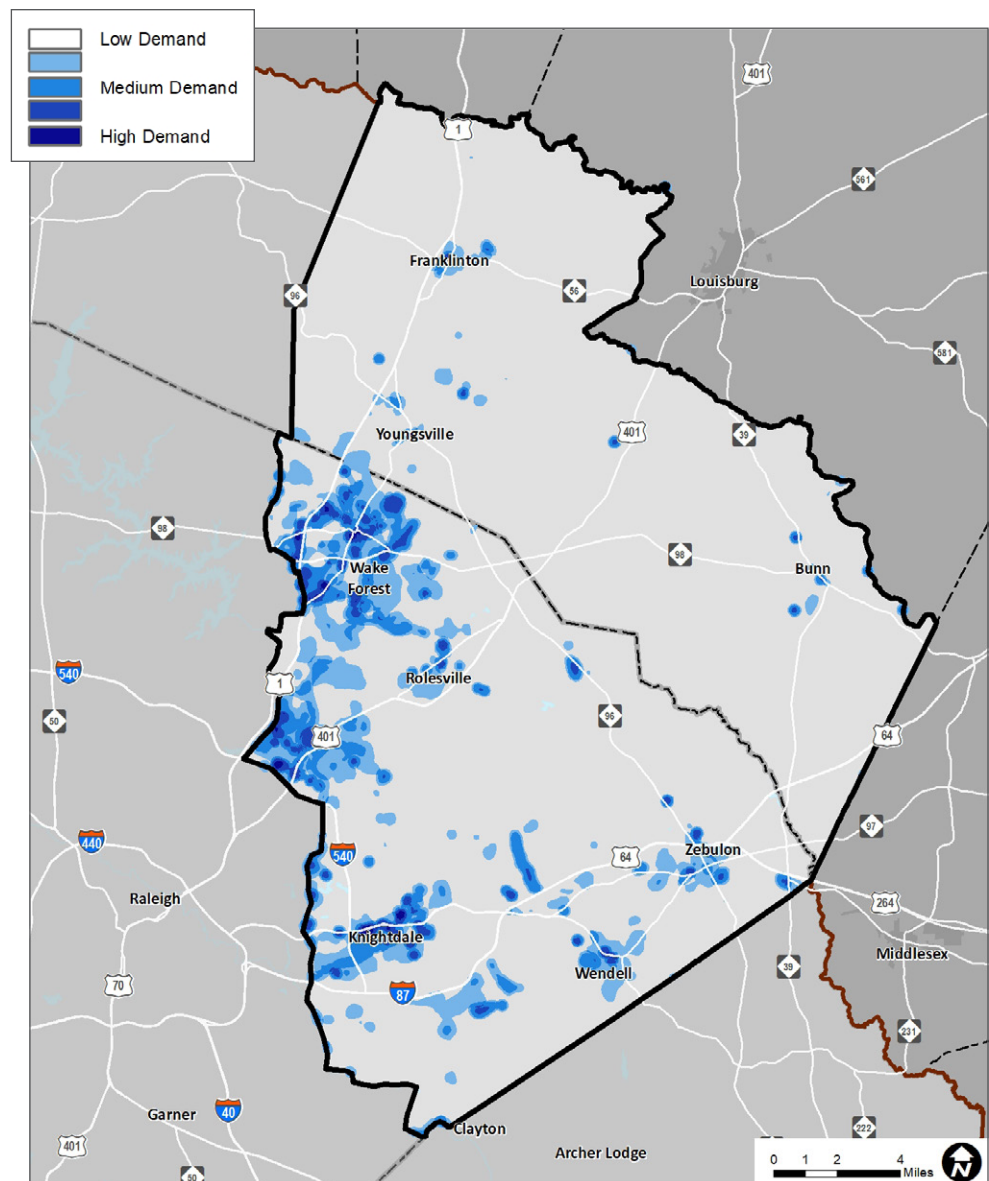
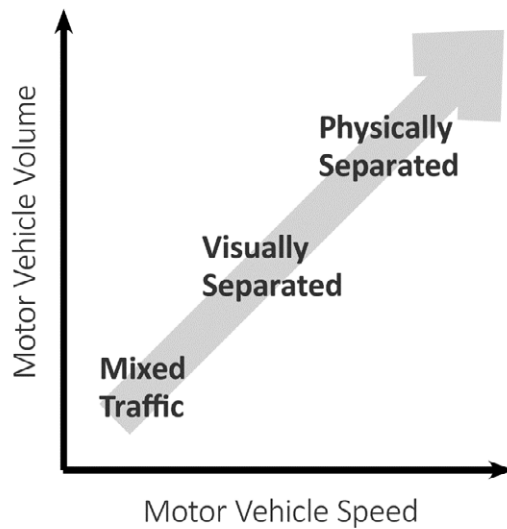


Figure 8.6: Need for bicycle and pedestrian facilities based on expected activity and demand.

Recommendations

Facility Categories

As traffic volumes and traffic speeds increase (less suitable for bicyclists and pedestrians), the greater the need for facilities that have a wider buffer space and physical barrier between the bike/ped operating space and vehicles. The graphic below illustrates this concept.



Achieving physical separation should be a central component of almost every facility design process. For the NEAS regional scale, recommendations were extrapolated principally from local data, and the following four categories were created to emphasize a flexible range of recommendations by general context.

Street Redesign, On-Road

This category generally refers to facilities that can be created **within the existing roadway curb or shoulder**. Most of these corridors extend into the rural areas but still have higher traffic volumes or speeds. A sidepath may be the ideal facility, however, if a wide paved shoulder or buffered

bike lane is the only feasible option, then extending the shoulder width further from vehicles is recommended.

Street Redesign, Off-Road

Many of these corridors have some of the highest traffic volumes and speeds through the study area but make direct connections across the region. **Physical separation should be achieved** from the roadway corridor, meaning that a sidepath would be an ideal facility for these locations.

Complete Street - Urban

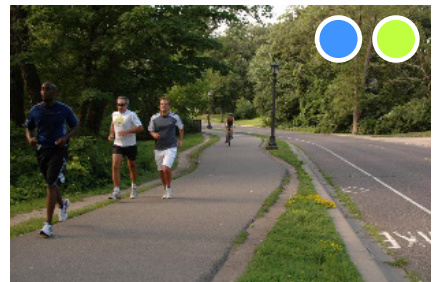
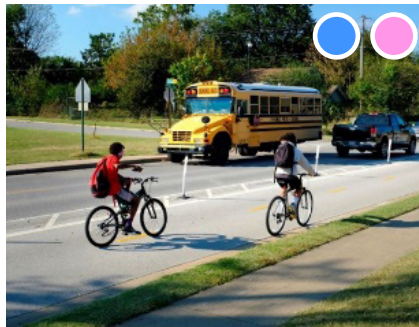
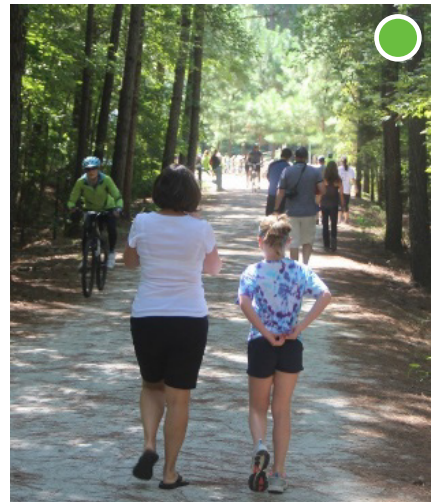
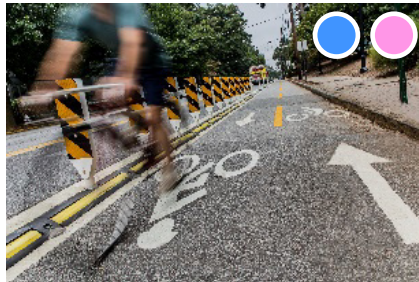
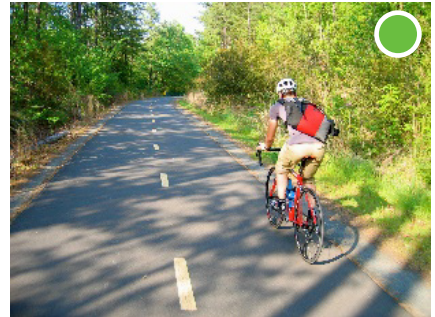
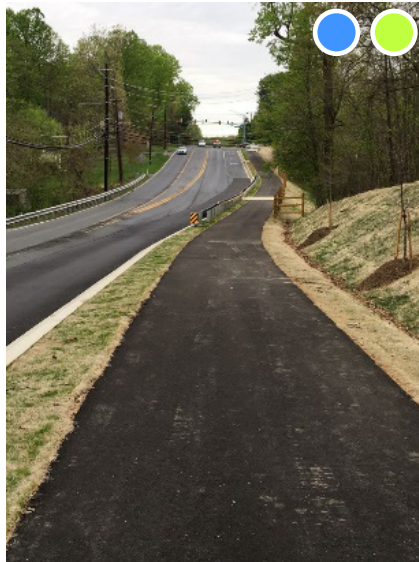
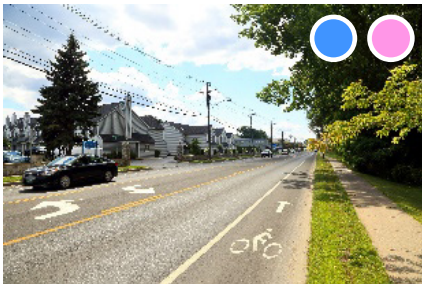
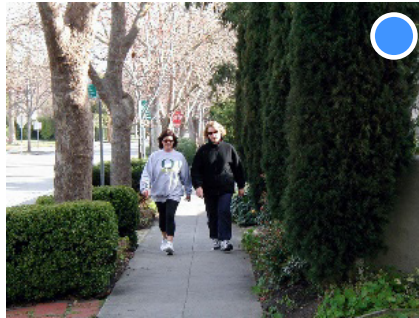
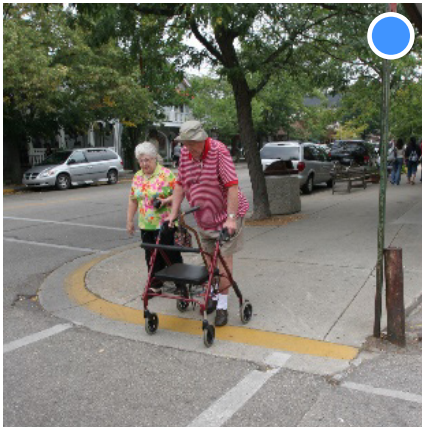
Key roadways through the urban centers of the NEAS are likely to be more complex projects where multiple aspects of the streetscape environment may also be addressed in addition to bicycle and pedestrian facilities. Crossing features such as pedestrian bulb-outs, high visibility crosswalks, and traffic calming (to control speeds) elements can be implemented alongside bicycle and pedestrian facilities that ideally have **physical separation from the roadway**. Some of these corridors may have lower speeds as they connect through a downtown, but have high traffic volumes.

Greenway/Trail

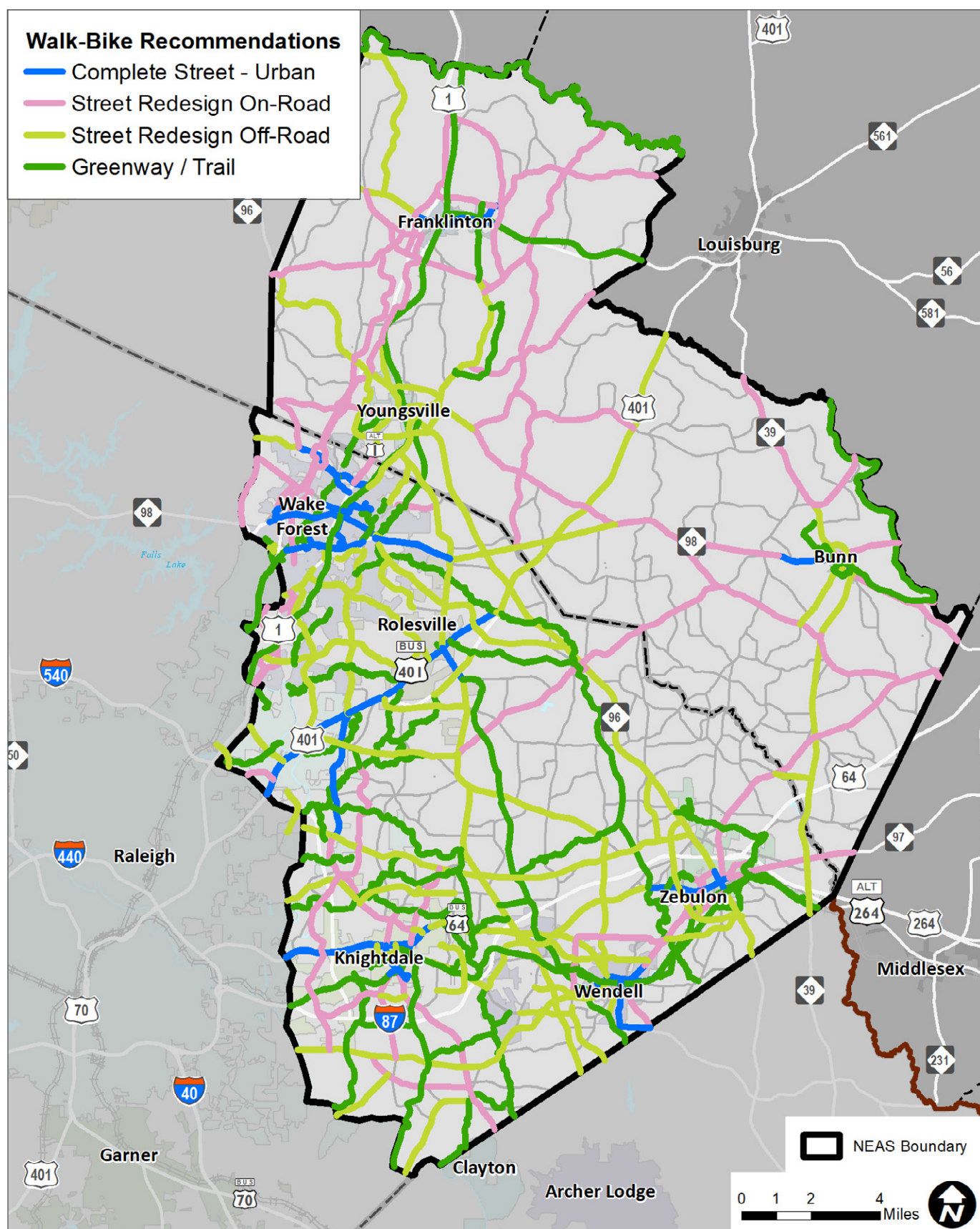
These corridors are **independent of the roadway right of way**. These are generally shared use paths that are paved and 10'-12' wide, but can also be unpaved depending on the context. Many of these corridors follow the floodplain, abandoned or active railroad corridors, and/or connect over land through open space, parks, and schools.

Table 8.7: Relationship of Roadway Characteristics with Paved Shoulders. Source: FHWA Small Town & Rural Multimodal Network Design Guide.

Functional classification	Volume (AADT)	Speed (Mi/h)	Recommended Minimum Paved Shoulder Width
Minor Collector	up to 1,100	35 (55 km/h)	5 ft (1.5 m)
Major Collector	up to 2,600	45 (70 km/h)	6.5 ft (2.0 m)
Minor Arterial	up to 6,000	55 (90 km/h)	7 ft (2.1 m)
Principal Arterial	up to 8,500	65 (100 km/h)	8 ft (2.4 m)



Example images of bicycle and pedestrian facility types.



Recommendations: General Phasing

Physical improvements to walking and bicycling are displayed in Figure 7.8, according to the four facility categories described on the prior pages. As NEAS communities implement local bicycle and pedestrian priority projects incrementally across their communities, multi-jurisdictional opportunities become increasingly available concurrently. Local priorities are listed below, and key mid-/long-term components are listed to the right.

Local Priorities (Near-term)

Knightdale

Greenway along the Neuse River (east side); Mingo Creek Greenway extension; Smithfield Rd improvements.

Wendell

Downtown to the parks and recreation fields; S. Main St greenway; downtown to Wendell Falls; Wendell Falls to Knightdale; Wendell Falls trail system and future Lake Myra Park.

Zebulon

Beaverdam Creek Greenway; Local greenway to Little River Park.

Rolesville

Main Street streetscape (Vision Plan).

Wake Forest

Smith Creek Greenway (Phase 2); Dunn Creek Greenway extension; Durham Rd sidepath extension.

Youngsville

Main St streetscape; Luddy Park Trail; NC 96 sidepath and sidewalk.

Franklinton

Franklinton to Novozymes Rail Trail.

Bunn

Main Street crosswalks.

KEY COMPONENTS

1. Near-term

- Priorities from local/regional planning/gap projects

2. Mid-term

- Upcoming roadway/complete street projects (including US 1 study roads (new roads))
- Wake County Greenway System Plan (Connect to Parks & Lakes, Connect the Communities)
- Higher bike/ped crash corridors (if not in near-term project)
- State Bike Routes NC 2 & NC 2B

3. Long-term

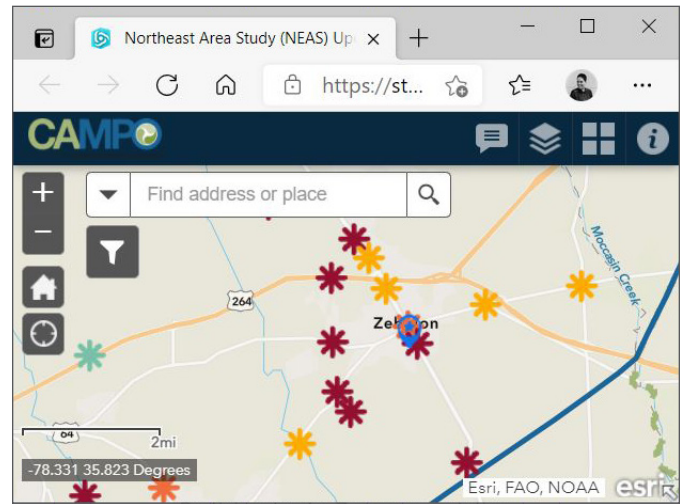
- Rail with Trail: S-Line and Carolina Coastal Railway Short Line
- Roads in the Bicycle Level of Service category 'Advanced' or 'Caution' (if not in Near- or Mid-term)
- Greenway alternatives to 'Advanced' or 'Caution' roads (if not in Near-term or Mid-term)

IMPLEMENTATION 09

Implementation

What We Heard from the Public

Transportation is a vital part of improving communities, and, over time, our communities change to keep pace with trends in housing, shopping, entertainment, and recreation. The Northeast Study Area is undergoing this change at a rapid pace, which makes careful study and effective recommendations all the more important. The NEAS Update is fundamentally a visioning exercise for coordinated, regional growth of its many communities. Engaging, listening, and summarizing feedback serves as the foundation for this plan, setting the stage for developing recommendations, and then in the final months, their refinement and prioritization.



GIS Interactive Map with public comments.

WE HEARD YOU LOUD AND CLEAR! YOU TOLD US...

- **Half** of Transportation Improvement dollars should be spent on **non-motorized modes**
- Addressing safety and **prioritizing Complete Street improvements** are the preferred roadway improvements
- Planning **more resilient communities**: future development should prioritize infill and reserve undeveloped/agricultural areas
- The region needs more **quality of life amenities**, such as improving access to recreation/open space; providing more entertainment (shopping/retail), and/or medical centers; as well as improving utilities and infrastructure, such as broadband internet
- Passenger rail would be welcomed, **reinvesting in traditional neighborhoods near Town Centers**
- Filling sidewalk gaps and connecting with greenways and transit stops are priorities for pedestrian mobility
- Biking reinvestments should **prioritize improving access** to greenways/trails, and providing separated bikeways that are suitable for **all-ages-and-abilities**

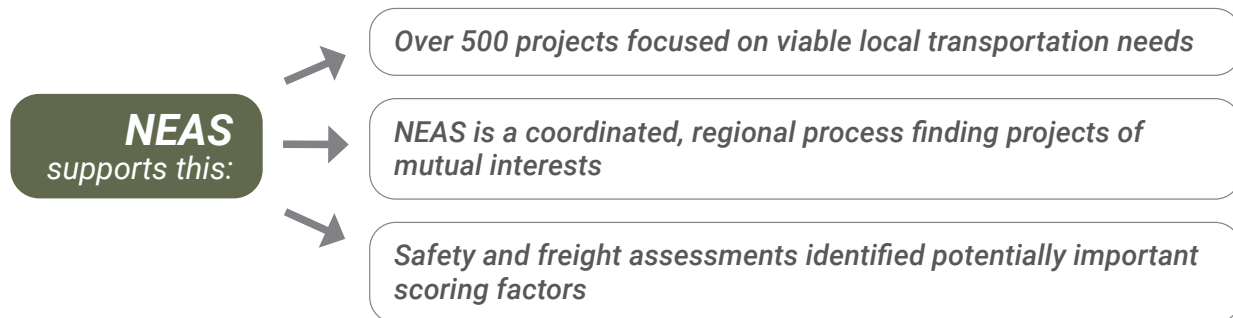
How the Northeast Study Area Update Responds

Your feedback directly shaped the four themes below, which guided NEAS recommendations.

#1 REINVEST IN CORE COMMUNITY:

The maturation of the Strategic Transportation Prioritization process since 2014 has not changed the federal / state funding dynamic for eastern Wake County and Franklin County. Both are mostly low-density areas with many projects eligible only for the highly competitive Division funding tier. Understanding the Division Tier criteria – congestion, benefit-cost, safety, accessibility/connectivity, and freight for the Mobility default – is critical to identifying the most-competitive local transportation projects. These criteria change by mode of travel. Identifying projects eligible for the Regional and Statewide tiers is also important, as is gathering local jurisdictional support for projects of

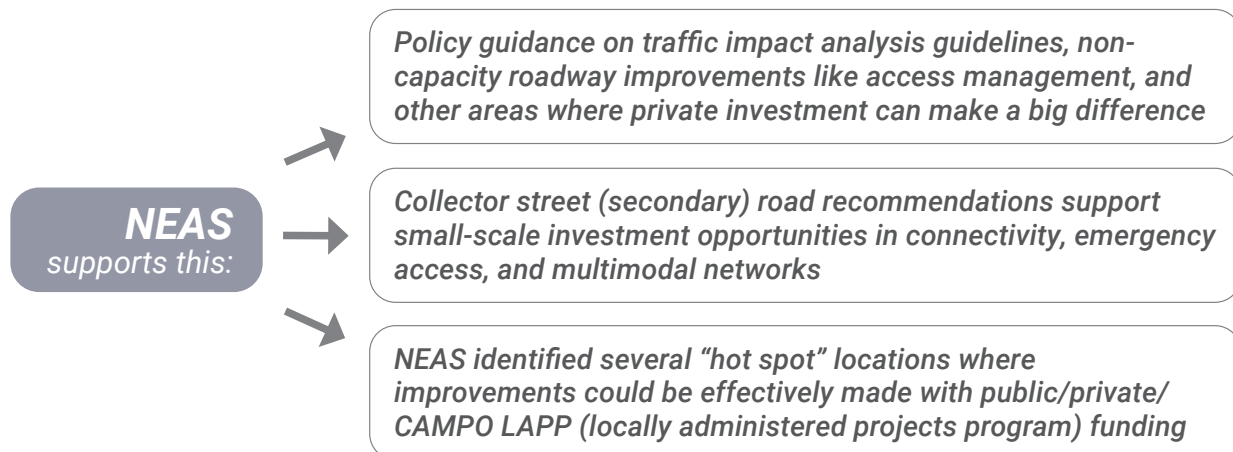
interest to more than one government entity. In this environment, the “core community” isn’t just a single town or county, but may require collective action to advance some projects in one area with the agreement to support someone else’s projects later. That being said, the “Small is Beautiful” saying is also important, with smaller or segmented projects of high value achievable by working with CAMPO or private developers to score wins on the transportation system. Growth in many areas is still desirable, seeking a “15-minute community” where living amenities can be easily reached by any mode of travel.



#2 DOING MORE WITH LESS:

The Capital Area MPO largely serves to consider projects of regional importance, while providing a forum for local communities to discuss actions that prioritize local projects and implementation. The MPO now goes beyond many North Carolina metropolitan planning organizations in that they have a mature local funding program (Locally Administered Projects Program LAPP) for implementing smaller-scale improvement projects, allowing these local needs to advance without com-

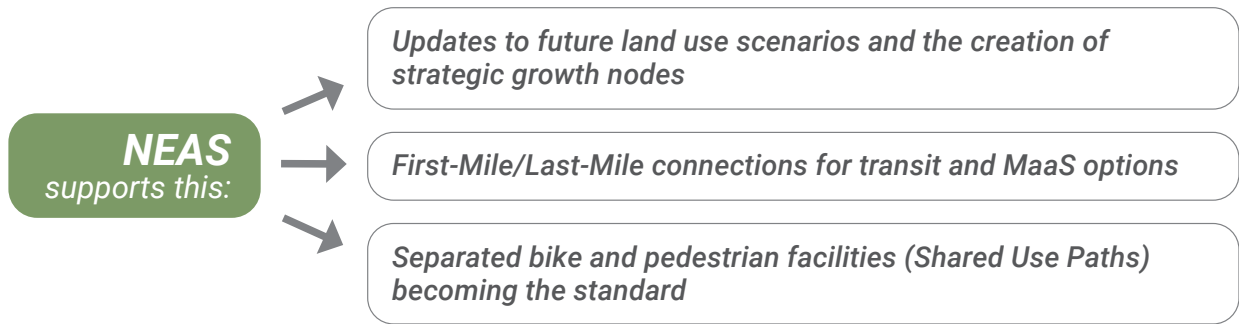
peting against regional-scale projects for funds within the state SPOT prioritization framework. It is vitally important that local governments make sure that, during a time of growth opportunity, private investments carry a larger share of the public sector investment burden through direct private sector requirements for right-of-way, construction, fees-in-lieu, impact fees, and other mechanisms.



#3 LIMITING BARRIERS TO MULTI-MODAL TRANSPORTATION:

The importance of walking, biking, transit, and now micromobility / Mobility-as-a-Service (MaaS) options are largely accepted as commonplace, having value for every traveler and exciting economic potential. NEAS stakeholders and residents are clear that a connected, safe, active transportation network is a high priority. The community is interested in filling sidewalk gaps and retrofiting roadways within town cores. In addition, there is a strong desire to provide greater separation from vehicular traffic in the form of greenways and separated bikeways, beginning within town and radiating outward to connect destinations between activity

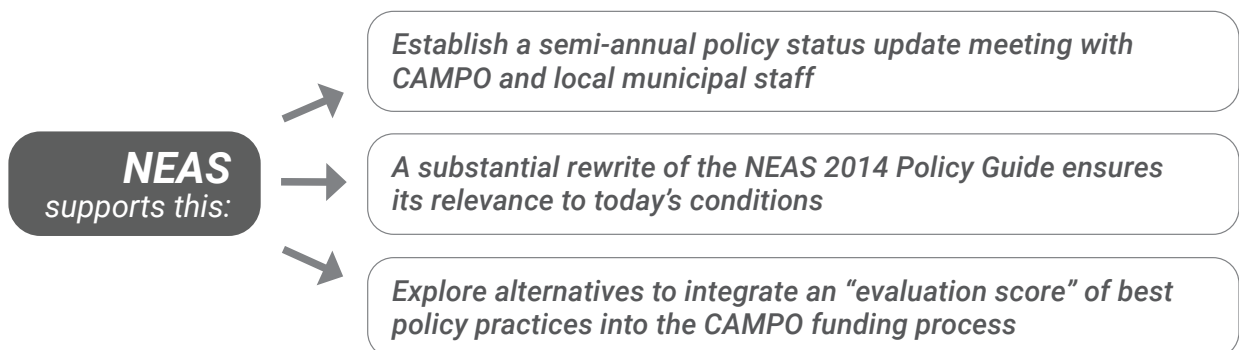
centers. Planners and engineers are actively working to revise their street standards to incorporate separated bicycle facilities as a typical facility treatment. Finally, residents want to see greater overall connectivity to, and growth of, the regional greenway network for transportation, recreation, and overall quality of life. This NEAS Update recommends more walking, biking, and transit projects than roadway improvements occurring on new locations. Roadway improvements overwhelmingly focus on safety, connectivity, enhancing appearances, and supporting quality economic growth – things that our communities told us they wanted to see.



#4 FOCUS ON POLICY:

Every future-first plan has the same biggest challenge: how to assess, evaluate, and account for future conditions that aren't here yet. The NEAS Update, just as it did in 2014, has adopted a Complete Street mentality that emphasizes places and people over cars. No longer recovering from the Great Recession of 2008-2009, the NEAS communities are looking forward to increasing levels and pace of quality growth. This private sector infusion, as many on the western side of Wake County might be quick to attest, comes with its own challenges. Ensuring that our citizens, businesses, and visitors (some of whom may be future residents

and business owners) get the most lasting value from private investment should be a top priority, and sound policies will help ensure that happens across political cycles. Effectively guiding private sector growth has taken on an even more acute sense of urgency as state and federal resources have been repeatedly shown to be inadequate to address the needs of unguided, unaccountable growth. Most of the NEAS communities have a rich heritage of leading their own planning studies; NEAS should be viewed as a source of both projects and policies to enhance that work.



Key Projects

One of the fundamental goals of this study was to develop cost-effective recommendations for roadway improvements that address potential congestion issues, increase the economic competitiveness of the Northeast Area, improve current safety conditions, and provide important mobility and accessibility connections in the area. As funding realities change and traditional transportation funding streams become more constrained, developing a set of strategic priorities for roadway improvement becomes increasingly important.

The Northeast Area Study Update identified a number of projects across the region. Based on public input, data analysis, and coordination with the Core Technical Team and Stakeholder Oversight Committee, these projects and their relative prioritization represent the culmination of both technical analysis and anecdotal research. Key projects are outlined in the following tables by region and community.

Project ID	Project Description	Cost	Time Frame
Bunn and Vicinity			
BP294	NC 98 S Main St Complete Street - Urban - from NC 98 / Jewett Ave to NC 39 / Main Street, improve streetscape, sidewalks and add bicycle facilities (0.72 miles)	\$ 53,734,000	Near-term
NEAS444	S Main St / NC 39 Access Management - from Main St / NC 39 to Jewett Ave / NC 98, consider Complete Street retrofit to accommodate all modes, and improve intersection crossings (0.72 miles)	\$ 9,158,400	Mid-term
BP361	Bunn Urban Trail Greenway - from Town limits to Tar River, construct urban trail to connect local destinations (6.12 miles)	\$ 17,172,000	Mid-term
BP360	Bunn Elem School Rd Sidepath Street Redesign Off-Road - from Brantleytown Rd to NC 39 / Main Street, construct sidepath along roadway (2.16 miles)	\$ 53,734,000	Mid-term
Frnk10	Bunn Bypass New Location - from NC 39 (north) to NC 39 (south), provide truck alternate around Main Street; connect sidewalks and provide off-road bicycle facilities (1.3 miles)	\$ 13,053,000	Long-term
BP294	NC 98 Widening - from NC 39 to Wake County line, add lane(s), improve shoulders, and provide on-road bicycle facilities for experienced users (3.72 miles)	\$ 29,570,000	Long-term
Franklinton and Vicinity			
BP126	E Mason St Complete Street - Urban - from Elm St to Perrys Chapel Rd, sidepath / multiuse path along former railroad corridor (1.58 miles)	\$ 2,218,412	Near-term
BP249	Franklinton/Louisburg Rail Trail Greenway - from Franklinton railroad tracks near Elm St to Existing Louisburg Bike Trail near Peach Orchard Rd, sidepath / multiuse path along former railroad corridor (4.53 miles)	\$ 5,434,906	Mid-term

Table 9.1: NEAS Update key projects by jurisdiction.

Project ID	Project Description	Cost	Time Frame
Franklinton and Vicinity (continued)			
NEAS401	NC 56 E Green Street Access Management - from US 1 Interchange to Whitaker Street, consider Complete Street retrofit to slow vehicles, accommodate all modes, and connect sidewalks (1.35 miles)	\$ 17,172,000	Mid-term
NEAST2	Transit Service Improvement - extension of existing service to Youngsville and Franklinton	-TBD-	Mid-term
BP325	Franklinton Rail Greenway - from Cedar Creek Rd realignment to MPO Boundary, Sidepath / multiuse path along S-line railroad corridor (5.88 miles)	\$ 7,059,177	Long-term
NEAS405	Cedar Creek Rd Realignment New Location - from Essex Village Road to Yearling Dr, provide grade separation over railroad corridor to connect with US 1 frontage road; provide sidewalks (0.61 miles)	\$ 11,245,667	Long-term
Frnk4b	NC 56 Widening - from US 1 to Peach Orchard Rd, add lane(s), shoulders, and provide separated bicycle facility through Franklinton, transitioning to on-road shoulder facility for experienced bicyclists (6.76 miles)	\$ 53,734,000	Long-term
Knightdale and Vicinity			
BP314	Mingo Creek Greenway - from Mingo Creek Park to Smithfield Rd, extend existing greenway to east (0.62 miles)	\$ 739,552	Near-term
BP270	Mingo Creek Greenway - from N Smithfield Rd to N 1st Ave, extend existing greenway to east and connect with Knightdale Station Park (0.75 miles)	\$ 898,691	Near-term
NEAS426	US 64 Bus / Knightdale Blvd Widening - from Neuse River to Smithfield Rd, improve safety by consolidating driveways, limiting left turns, and improving intersection crossings; consider Complete Street retrofit to accommodate all modes (3.02 miles)	\$ 34,422,504	Near-term
NEAS434	Knightdale Station Run Ext New Location - from Carolina Ave to US 64 Bus, extend and connect roadway; improve intersection crossings, provide sidewalks and bicycle facilities (0.35 miles)	\$ 6,452,432	Mid-term
A149a	Poole Rd Widening - from I-540 to Martin Pond Rd, add lanes for this commuter corridor, provide shoulders, and off-road bicycle facility (5.57 miles)	\$ 54,268,000	Mid-term
BP315	East Wake High Trail Greenway - from Marks Creek Road to Rolesville Rd, connect Phase II greenway further east to East Wake High School (2.16 miles)	\$ 2,591,168	Long-term
BP152	East Wake High Trail Greenway - from Marks Creek Road to Lake Neuseoco Greenway, construct Phase I greenway along creek (2.42 miles)	\$ 2,898,533	Long-term
BP130	Lake Neuseoco Greenway - from Neuse River to Old Knight Rd, extend and connect with Neuse River Greenway Trail (4.63 miles)	\$ 5,558,100	Long-term
NEAST6	Transit Service Improvement - Bus Rapid Transit (BRT) Extension to Knightdale	-TBD-	Long-term
NEAST9	New Passenger Rail Service - Eastrans passenger rail feasibility	-TBD-	Long-term

Table 9.1: NEAS Update key projects by jurisdiction.

Project ID	Project Description	Cost	Time Frame
Raleigh and Vicinity			
A161a	Skycrest Dr Ext New Location - from New Hope Rd to Forestville Rd, extend and connect roadway, provide new I-540 interchange, and off-road bicycle facility (4.24 miles)	\$ 53,978,000	Near-term
A402a	Buffaloe Rd Widening - from Spring Forest Rd Extension to Old Milburnie Rd, add lanes, shoulders, and construct Diverging Diamond Interchange; construct off-road bicycle facility and improve intersection crossings to connect with planned greenway trails (1.74 miles)	\$ 20,403,000	Near-term
NEAS424	US 401 / Louisburg Rd Access Management - from I-540 Interchange to Neuse River, improve safety and congestion by consolidating driveways, limiting left turns, and improving intersection crossings; connect sidewalk gaps and provide off-road bicycle facility (4 miles)	\$ 50,880,000	Near-term
A2	Perry Creek Rd Ext (Part NL) New Location - from Buffaloe Road to Perry Creek End of Road, extend and connect roadway over I-540; provide off-road bicycle facility (0.98 miles)	\$ 23,587,000	Mid-term
BP272	Wake County Greenway - from Neuse River Greenway to Harris Creek and Hodges Mill Creek, extend Harris Creek Greenway further east with regional trails (1.05 miles)	\$ 1,255,682	Long-term
BP318	Harris Creek Greenway Connector - from Hodges Mill Creek to K/R Greenway east of Old Crews Rd, extend greenway connector to Neuse River Greenway (2.3 miles)	\$ 2,764,405	Long-term
BP260	Mitchell Mill Rd Sidepath connection - from Neuse River Greenway to Harris Creek, connect two greenway trails along roadway sidepath (2.36 miles)	\$ 2,832,168	Long-term
Rolesville and Vicinity			
A133	Burlington Mills Rd Widening - from US 1 to US 401, add lanes, shoulders, and sidewalks, off-road bicycle facility; improve intersection crossings at signalized intersections; realign with US 401 Business (4.34 miles)	\$ 37,916,000	Near-term
BP269	Tom's Creek Greenway - from Neuse River Greenway to US 401 Bus / Main St, connect residential neighborhoods with Neuse River Greenway (3.89 miles)	\$ 4,670,462	Mid-term
NEAS411	Rogers Road Widening - from Rogers Branch Rd to Main St Rolesville, add lane(s), shoulders, and provide separated bicycle facility between Wake Forest and Rolesville; improve intersection crossings (2.93 miles)	\$ 33,396,667	Mid-term
BP246	Eastern Bypass Trail Greenway - from US 401 Bus / Main St to US 401 Bypass, extend and connect with Wake County Greenway (0.85 miles)	\$ 1,015,122	Long-term
BP127	Harris Creek Connector Greenway - from Wake County Greenway to Rolesville Town limits, connect residential neighborhoods with regional greenway system (1.53 miles)	\$ 1,840,598	Long-term
BP121	Austin Creek Greenway - from Jones Dairy Rd to Averette Rd, extend and connect regional greenways (2.26 miles)	\$ 2,717,308	Long-term
NEAS452	US 401 Bus / Complete Streets / Access Management - from US 401 Bypass South to Burlington Mills Rd, reconstruct Main Street to accommodate all modes; reduce vehicle speed and improve safety (1.02 miles)	\$ 12,974,400	Near-term

Table 9.1: NEAS Update key projects by jurisdiction.

Project ID	Project Description	Cost	Time Frame
Wake Forest and Vicinity			
BP123	Dunn Creek Greenway - from NC 98 / Dr Calvin Jones Hwy to Juniper Ave, extend existing multiuse path further north and connect with residential (0.83 miles)	\$ 993,082	Near-term
A127b2	Ligon Mill Rd Connector New Location - from Richland Creek to NC 98, extend and connect roadway network providing sidewalks and on-road bicycle facilities (0.84 miles)	\$ 7,268,000	Near-term
NEAS409	US 1 Alt / S Main St Access Management - from US 1 / Capital Blvd to NC 98 / Dr Calvin Jones Hwy, consider Complete Street retrofit to slow vehicles, accommodate all modes, and connect sidewalks (0.78 miles)	\$ 9,921,600	Near-term
NEAS413	Rogers Rd Access Management - from US 1 Alt / S Main St to Marshall Farm St, improve safety by limiting left turns and improving intersection crossing locations; provide off-road bicycle facility and connect sidewalk gaps (2.09 miles)	\$ 26,584,800	Near-term
BP140	Richland Creek Greenway - from Forest Pines Dr to Carroll Joyner Park, extend and connect with Town park (3.63 miles)	\$ 4,351,159	Mid-term
A125b	Heritage Lake Rd Widening - from NC 98 / Dr Calvin Jones Hwy to End of Existing Heritage Lake Rd, add lane(s), widen shoulders, and improve crossing locations, including future Smith Creek Greenway (midblock) (0.74 miles)	\$ 9,012,000	Mid-term
A126a	Ligon Mill Rd Center Turn Lane - from Burlington Mills Rd to US 1A, add center turn lane, widen shoulders; provide sidewalks and off-road bicycle facility (2.32 miles)	\$ 9,890,000	Mid-term
A613	Harris Rd Widening - from US 1 to US 1A, add lane(s), shoulders, and provide separated bike facility that connects with existing and planned greenways (1.42 miles)	\$ 24,562,000	Mid-term
NEAST4	New Passenger Rail Service - SEHSR Corridor passenger rail	-TBD-	Mid-term
BP119	Smith Creek Greenway - from NC 98 / Wait Ave near reservoir to NC 96 in Youngsville, construct greenway along creek (4.36 miles)	\$ 5,232,240	Long-term
BP326	East Coast Greenway - from Forestville Rd to Union Grove Church, construct multiuse path along S-line corridor (Rail with Trail) (5.54 miles)	\$ 6,652,737	Long-term
NEAST61	Transit Service Improvement - Bus Rapid Transit (BRT) Extension to Wake Forest	-TBD-	Long-term
Wendell and Vicinity			
BP138	Marks Creek Greenway - from MPO Boundary to Myra Falls Road and Poole Rd intersection, connect with regional greenway system (4.4 miles)	\$ 5,284,791	Near-term
A148a2	Eagle Rock Rd Widening - from Old Tarboro Road to Martin Pond Rd, add lane(s), widen shoulders, and improve crossing locations; correct alignment skew with Eagle Rock Rd and Old Tarboro Rd (0.75 miles)	\$ 6,639,000	Near-term
NEAS427	Wendell Falls Pkwy Access Management - from I-87 Interchange Ramps to Daniel Ridge Rd, improve safety at intersections, and improve crossings; accommodate bicyclists with of-road facility; plan for future infill development along corridor frontage (1.06 miles)	\$ 13,483,200	Near-term

Table 9.1: NEAS Update key projects by jurisdiction.

Project ID	Project Description	Cost	Time Frame
Wendell and Vicinity (continued)			
BP355	S Holleybrook Rd Complete Street - Urban - from S Selma Rd / NC 231 to Wendell Blvd, construct sidepath along roadway and connect with local destinations (2.27 miles)	\$ 3,182,356	Mid-term
BP242	Buffalo Creek Greenway - from Robertson Millpond Preserve to Wendell Community Center, connect local recreation destinations (3.4 miles)	\$ 4,077,540	Mid-term
A148b	Eagle Rock Rd Widening - from Martin Pond Rd to Lake Myra Rd, add lane(s), shoulders, and improve intersection crossings; provide off-road sidepath to accommodate walking and biking (2.47 miles)	\$ 19,634,000	Mid-term
A695	Wendell Valley Blvd New Location - from Knightdale Eagle Rock Road to Eagle Rock Road, extend roadways to improve network; align with US 64 Bus at Rolesville Road intersection; consider multiuse sidepath to accommodate walking and biking (1.12 miles)	\$ 21,349,000	Mid-term
NEAS501	I-87 / Wendell Falls Blvd Interchange Redesign - consider interchange alternatives to reduce safety conflicts and improve traffic flow during peak commuter periods; improve pedestrian crossing of bridge	\$ 21,727,000	Mid-term
NEAST5	Transit New Service - bus service to Wake Tech East Campus	-TBD-	Mid-term
A587b	Wendell Blvd Center Turn Lane - from Hanor Lane to NE Old Zebulon Rd, add center turn lane, curb & gutter for consistent cross-section; improve intersection crossing locations; accommodate walking and biking (2.9 miles)	\$ 12,363,000	Long-term
NEAST10	New Local Bus Service - Wendell Circulator Route	-TBD-	Long-term
Youngsville and Vicinity			
BP290	US 1 Alternate Street Redesign Off-Road - from Steven Taylor Rd to Holden Rd, construct off-road sidepath for walking and biking (1.32 miles)	\$ 1,217,210	Near-term
NEAS402	Holden Road Widening - from US 1 Interchange to US 1 Alt / College St, add center turn lane, shoulders and provide multiuse path along the corridor; improve intersection crossings to accommodate all modes (1.77 miles)	\$ 20,174,779	Near-term
BP205	State Bike Route NC 2 Street Redesign Off-Road - from NC 96 / Cross St to May Crossroad Rd, provide off-road sidepath for walking and biking (2.02 miles)	\$ 1,865,809	Mid-term
A418c	NC 96 Bypass (Youngsville) Widening - from US 1 to US 1 Alt / Park Ave, add lane(s), curb and gutter, and provide sidewalk/multiuse path along corridor; improve intersection crossings and consider roundabout at US 1 Alt intersection with future Youngsville northern bypass (1 miles)	\$ 10,535,000	Mid-term
A612	White St Center Turn Lane - from NC 98 to Main St, add center turn lane, shoulders and connect sidewalk gaps along this railroad-adjacent corridor (3.85 miles)	\$ 26,697,000	Mid-term
NEAST2	Transit Service Improvement - extension of existing bus service to Youngsville and Franklinton	-TBD-	Mid-term
NEAST4	New Passenger Rail Service - SEHSR Corridor passenger rail feasibility	-TBD-	Mid-term

Table 9.1: NEAS Update key projects by jurisdiction.

Project ID	Project Description	Cost	Time Frame
Youngsville and Vicinity (continued)			
BP265	Richland Creek Greenway - from Existing greenway trail near Barnford Mill Rd to Holden Rd, extend and connect with existing greenway system further south (1.85 miles)	\$ 2,216,826	Long-term
BP141	Gasline Trail Greenway - from Union Grove Church to Cedar Creek, construct multiuse path along S-line corridor (Rail with Trail) (4.81 miles)	\$ 5,777,338	Long-term
NEASF40	N Main St Widening - from NC 96 to Knollwood Ln, consider Complete Street retrofit to accommodate all modes, and improve intersection crossings (1.73 miles)	\$ 19,718,851	Long-term
A663	Main St Grade Separation - from Main St to Railroad crossing, provide grade separation over railroad corridor, and improve sidewalks (1 miles)	\$ 28,785,360	Long-term
NEAS403	Youngsville Southern Bypass New Location - from Holden Rd to NC 96, consider truck alternate route south of Main Street, connecting with US 1 from Holden Road; provide off-road bicycle facility (1.6 miles)	\$ 29,496,832	Long-term
Zebulon and Vicinity			
NEAS437	NC 96 Arendell Rd Access Management - at NC 97 Gannon Ave intersection, construct roundabout to slow vehicles and maintain traffic flow; connect sidewalks and improve pedestrian crossings (0.06 miles)	\$ 763,200	Near-term
BP349	Beaverdam Creek Greenway - from Hendricks Pond to Little Creek, extend and connect with regional greenway system (3.66 miles)	\$ 4,392,059	Mid-term
A402e	Proctor St Center Turn Lane - from NC 96 (North) to Shepard School Rd, add center turn lane, shoulders, and provide sidewalk/multiuse path; coordinate with adjacent projects, and improve crossing locations (0.85 miles)	\$ 6,757,000	Mid-term
BP115	Zebulon Rail Greenway - from Crosstrac Ln to E Horton St, construct multiuse path along Eastrans corridor (Rail with Trail) (6.41 miles)	\$ 7,688,538	Long-term
BP251	Little River Greenway - from NC 97 / Gannon Ave to Cedar Fork / Mitchell Mill State Park, connect regional recreation destinations (7.47 miles)	\$ 8,966,869	Long-term
NEASW9	N Arendell Ave Access Management - from E Gannon Ave to US 64, consider Complete Street retrofit to accommodate all modes, and roundabout at NC 97 intersection (0.72 miles)	\$ 9,158,400	Long-term
NEASW8	E Gannon Ave Access Management - from Mack Todd Rd to US 264, consider Complete Street retrofit to accommodate all modes, and improve intersection crossings (1.72 miles)	\$ 21,878,400	Long-term
NEAS451	Old Zebulon Rd Ext New Location - from Wendell Blvd US 64 Bus to Perry Curtis Rd, extend and connect roadways along southern side of Zebulon; provide separation from vehicles for walking and biking; connect with regional greenways (2.49 miles)	\$ 45,904,445	Long-term
NEAST8	New Local Bus Service - NEAS community circulator route	-TBD-	Long-term
NEAST11	GoRaleigh Service Improvement - ZWX extension (Zebulon) of existing service to Eastern Regional Center	-TBD-	Long-term

Table 9.1: NEAS Update key projects by jurisdiction.