

Troutman Mobility Plan





Prepared by

RS&H

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Plan Vision



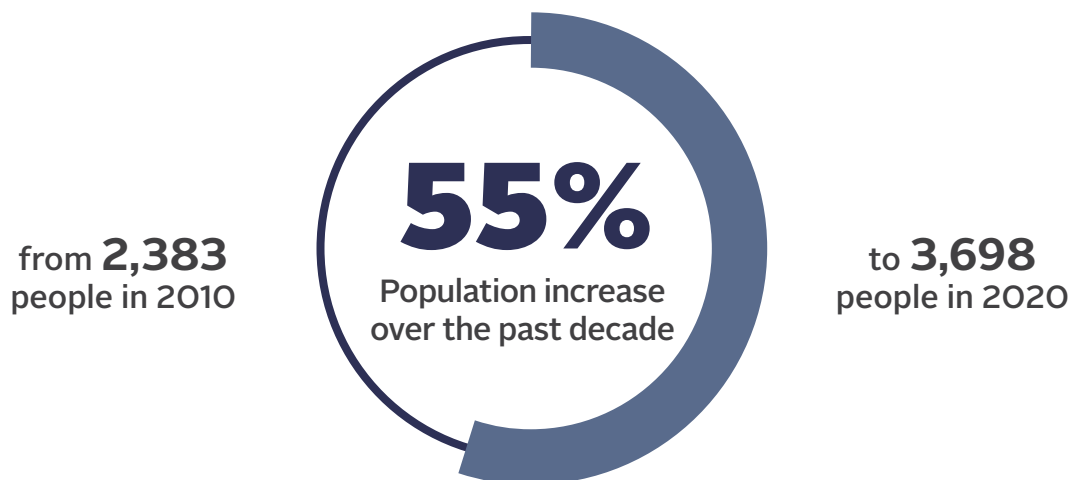
Mural on building in the Town of Troutman

The Troutman Mobility Plan is a rational and high-level multi-modal plan to safely and conveniently move people by expanding high-quality transportation choices and ensuring the needs of all residents are met.

The plan addresses existing and anticipated transportation deficiencies by defining needed transportation strategies and improvements that reflect community desires, are compatible with anticipated growth, and welcome new technologies and mobility options.

Purpose

The Town of Troutman has experienced tremendous growth, increasing in population by 55% over the previous decade, from 2,383 people in 2010 to 3,698 people in 2020.¹ It is located in the 7th fastest growing metro area in the nation and the third fastest growing county (Iredell) in terms of growth rate in the metro area.² As a result, significant development activity is underway in the Town limits and larger planning area. Over 8,000 residential units were either under construction, approved, or proposed in the planning area as of January 2023. With growth and development has come significant increases in traffic.



Traffic congestion in Troutman is further compounded by its location within the county and region. It is positioned between the two largest municipalities in the county and is roughly 35 miles north of the City of Charlotte. Consequently, Troutman experiences a significant amount of through commuter traffic. Additionally, its lake frontage and proximity to Lake Norman State Park make it a popular seasonal recreational destination. While the lake is an important draw for the Town, it also limits connectivity and creates a barrier for mobility.

While the Town and larger region continue to grow, funding shortfalls at the state level have delayed several planned roadway projects and limited the number of new projects eligible for funding. As a result, residential growth is outpacing needed transportation improvements.

The Mobility Plan identifies and documents existing and future transportation needs in the Town, builds on the strengths of the transportation system, and helps determine where there are opportunities for improvement. Based on those findings, the plan proposes a mix of short-term and long-term strategies and recommendations to help manage congestion, improve safety, and enhance mobility. The short-term strategies are focused on lower cost, interim projects that offer immediate relief to existing challenges. The long-term strategies help the Town meet its future vision by identifying and prioritizing needed projects and determining the best approach and sources of funding.

¹ US Census

² [Charlotte Regional Business Alliance](#)

Planning Area

The planning area is approximately 53 miles and includes the entire Town of Troutman as well as land west to Lake Norman and east to the Iredell County/Rowan County line (see **Figure 1**). It is consistent with the planning area used in other Troutman planning efforts including the Comprehensive Land Use Plan and Strategic Plan.

All roadways within the planning area were examined, but the focus is on needed improvements within the Town limits.

Note: Larger versions (11 x 17) of the Planning Area Map and all existing conditions maps are available in **Appendix A**.

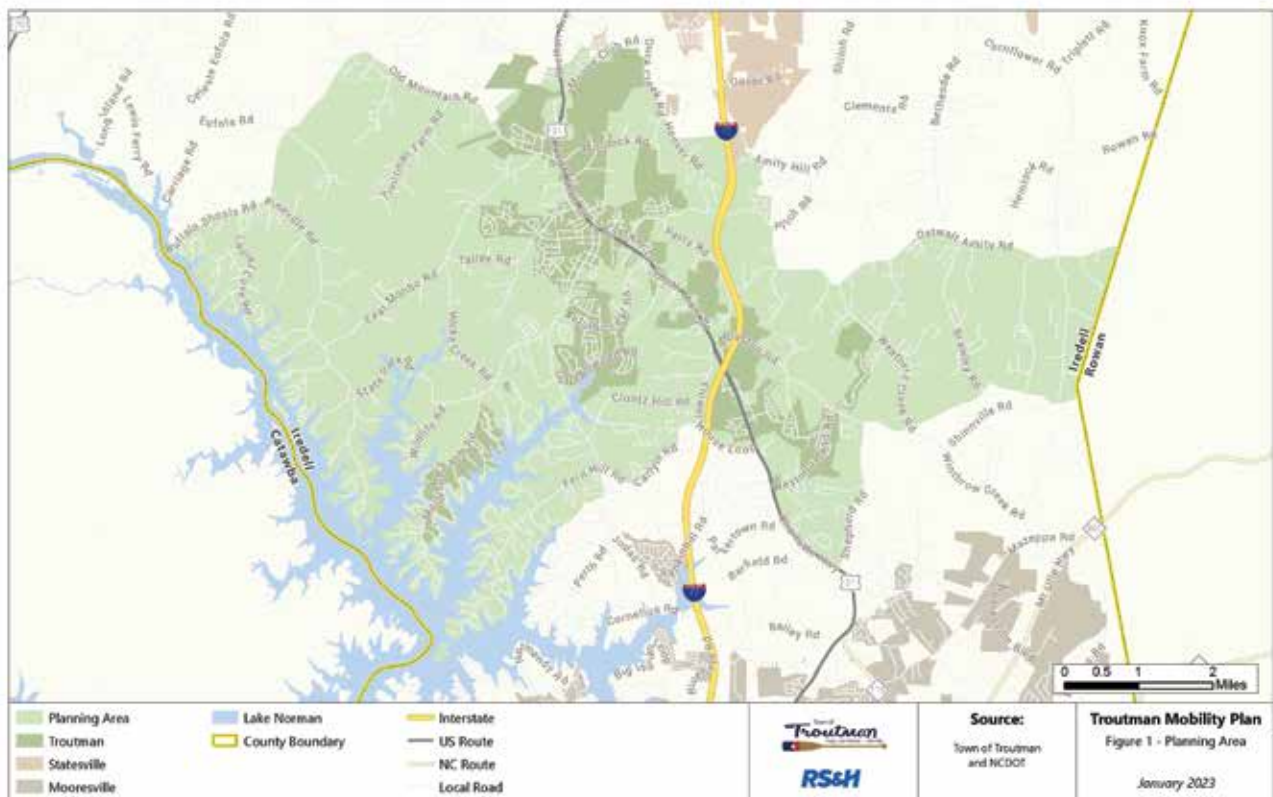


Figure 1: Planning Area

Stakeholder & Public Input



In-Person Public Engagement at Spring Craft Expo

Stakeholders as well as the general public were engaged throughout the duration of the plan’s development to provide input that contributed to plan outcomes. All input was fully considered before any plan strategies or recommendations were developed. The groups engaged and the engagement techniques used are documented below.

Steering Committee

The Town formed a core team of transportation and land development professionals to assist with the development of the Mobility Plan. This Steering Committee set the vision for the plan, provided guidance and direction on deficiencies and needed improvements, reviewed public input materials, provided feedback on project screenings and prioritization, and reviewed the draft plan document.

Table 1 identifies the Steering Committee Members.

Table 1: *Steering Committee Members*

Name	Organization
Andrew Ventresca	Troutman Planning Department
Lynne Hair	Troutman Planning Department
Anil Panicker	NCDOT Division 12
Brian Elgort	Charlotte Regional Transportation Planning Organization (CRTPO)
Matthew Todd	Iredell County
Bill Thunberg	Lake Norman Transportation Commission (LNTC)

Key Stakeholders

The Town also conducted interviews and requested input from key stakeholders. Key stakeholders are individuals or entities with an interest in transportation, will be impacted by plan recommendations and outcomes, and play a role in plan implementation. These interviews were conducted in February 2023 and reflect feedback at the time of the interview.

Table 2 shows the key stakeholder groups and summarizes the feedback provided.

Table 2: Key Stakeholder Groups and Input

Group	Input
<p style="text-align: center;">Town Council</p>	<ul style="list-style-type: none"> • Congestion issues on US 21, especially during peak hours • A lot of traffic in Town is not local; it is pass through traffic traveling to Charlotte, between Statesville and Mooresville, and to Lake Norman • Focus on low-cost improvements, addressing immediate needs, and reducing reliability on NCDOT for funding • Roads in rapidly developing residential areas (Autumn Leaf Rd, Houston Rd) need to be widened to include shoulders
<p style="text-align: center;">Developers</p>	<p>Wakefield Development</p> <ul style="list-style-type: none"> • Will take 8-10 years to fully build out • 14 acres donated to the Town adjacent to fairground property • Working to complete Phasing Plan; preliminary engineering underway for portion east of US 21 • Over 20 intersections will be included in the traffic impact assessment (TIA); recommended improvements will be tied to Phasing Plan • Will build stub out for future connection to Murdock Rd; the connection would be funded by the Town <p>Exit 42</p> <ul style="list-style-type: none"> • Land assembly recently completed • Plans to extend Home Improvement St on east side of US 21 and Lexus Dr on west side of US 21 • Have requested a traffic signal between Crosstie Ln and Lexus Dr • Desired improvements include widening US 21 from Crosstie Ln to Lexus Dr and adding a shoulder on Flower House Lp

Table 2: Key Stakeholder Groups and Input (continued)

Group	Input
<p style="text-align: center;">Town Departments</p>	<p>Police</p> <ul style="list-style-type: none"> • Massive jump in number of crashes in Town in recent years, especially on Main St (US 21) during peak hours due to congestion; needs to be widened • Several serious injuries have occurred on SB off ramp from I-77 onto US 21/Julian Pl <p>EMS</p> <ul style="list-style-type: none"> • Congestion impacts ability to respond to 911 calls <p>Parks and Recreation</p> <ul style="list-style-type: none"> • Increase in residential development has resulted in rise in pedestrian traffic; need sidewalks on Eastway Dr, Autumn Leaf Rd, and Wagner St
<p style="text-align: center;">NCDOT</p>	<ul style="list-style-type: none"> • No active safety or Spot Mobility Projects³ and no locations identified on the 2022 Highway Safety Improvement Program (HSIP) • The Draft State Transportation Improvement Program (STIP) includes the following projects: <ul style="list-style-type: none"> • R-2522 – widening of US 21/NC 115 (N Main St) from Cedar Ln to Barium Ln), funded for preliminary engineering (PE) only • U-6175 – widening of Old Mountain Rd from US 21/NC 115 (North Main St) to Buffalo Shoals Rd) not funded • These projects will be reprioritized in Prioritization 7.0 (P7.0)⁴ • R-5711 to realign and signalize the intersection of US 21/Houston Rd/Flower House Rd will be Let in July 2024 • A signal is being installed at Perth Rd/State Park Rd
<p style="text-align: center;">Iredell County Economic Development Corporation (EDC)</p>	<ul style="list-style-type: none"> • No areas being targeted for industrial uses outside of Industrial Park • Interested in future plans for the fairground property currently owned by the County • Would like to see bus options between the Larkin Development in south Statesville and Troutman
<p style="text-align: center;">Iredell County Area Transportation Study (ICATS)</p>	<ul style="list-style-type: none"> • Hoping to break ground on new Transit Center site in south Statesville in spring 2024 • Provided close to 3,000 trips for a total of 27,000 miles for Troutman residents in fiscal year (FY) 2022 • Services are limited in Troutman due to lack of contributions from the Town; however, interested in partnering with the Town for additional services

*Note: The Town made two attempts to reach New Life Baptist Church and Iredell County Schools but did not receive a response.

³The SPOT Mobility Program provides funding for small projects that will reduce traffic congestion and vehicular delay times.

⁴NCDOT's Strategic Prioritization Process (currently in the seventh iteration, hence P7.0) is used to support development of the STIP. Each project receives a quantitative score based on need. Projects are submitted by metropolitan planning organizations (MPOs) and NCDOT and agencies have a maximum number of new project submittals. Member jurisdictions like Troutman submit projects to these agencies for consideration.

There were approximately:

600 views of the StoryMap

350 people visited the CrowdSource Reporter map

70 people completed the survey



Flyer with a QR code to access the survey

Public Engagement

The Town conducted a public survey from April 1, 2023 to April 30, 2023 to help identify transportation issues and problem areas in Troutman, learn about transportation investment priorities, prioritize intersection projects, and indicate where road connections are needed.

The survey was available online through ArcGIS Storymap. The survey included a CrowdSource Reporter map where residents could drop a pin to indicate where they experienced transportation issues and leave comments to expand upon the issues. The Town shared the link to the survey on its website, produced a flyer with a QR code to access the survey, emailed the survey link to various Town departments to share through their respective channels, and advertised the survey on Facebook.

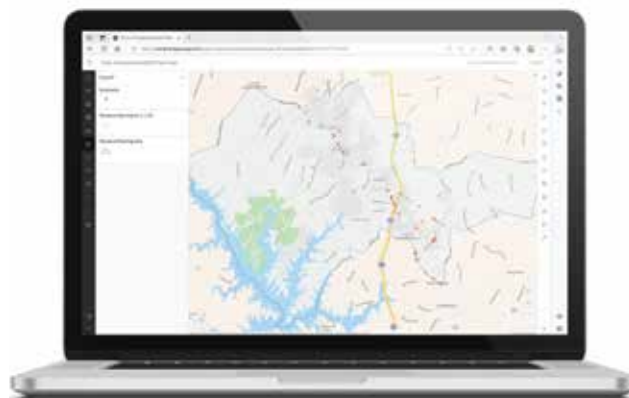
The Town also sponsored a booth at the Spring Craft Expo held on April 1, 2023 at South Iredell High School. Attendees stopped by to learn about the plan and take the survey. They had the option to complete the survey at the event or take home a flyer to complete the survey at a later date.

The full survey results are available in **Appendix B**. The public input was incorporated into the project prioritization and screening process discussed starting on page 31.

Resident comments from the survey:

“Houston Road is entirely too narrow”

“One lane bridge on Westmoreland Road will not sustain current growth and is unsafe”



Residents dropped pins on the map to indicate where they experience issues and then provided details on the problem.

The Town also held a public comment period from August 21, 2023 – September 22, 2023 to share the draft plan, obtain comments, and answer questions before the plan was presented to Town Council for adoption. The public comment period was also used to notify the public of the CRTPO CTP amendments the Town will be undertaking. The full survey results from the second public comment period, a sample letter sent to property owners within 300 feet of a proposed realignment, and all responses received, are available in **Appendix B**.

Existing Conditions Analysis

The Town performed an existing conditions analysis to evaluate the transportation system. The analysis included review of the regional travel demand model (MRM), available GIS data, and existing plans. Together this information helped the Steering Committee identify the locations with the greatest deficiencies or need for improvement in Town.

Travel Demand Model and GIS Data

The existing conditions analysis included a review of travel demand model and available GIS data associated with population and employment growth, traffic operations, safety, land use, development activity, programmed projects, transit infrastructure, and bicycle and pedestrian facilities. Data sources included the Metrolina Regional Model (MRM), NCDOT, CRTPO, Iredell County, and the Town.

POPULATION AND EMPLOYMENT GROWTH

Population data is available by traffic analysis zone (TAZ) through the MRM. A TAZ is the unit of geography used in the MRM (like a census tract or block group used in the US Census). According to the MRM, the planning area is anticipated to almost double in population from 2018 to 2050, growing

from approximately 18,160 to 34,368 people.⁵ Population growth is anticipated to be the highest south of Autumn Leaf Road, between Perth Road and US 21, and east of I-77 between Houston Road and Ostwalt Amity Road (see **Figure 2**).

It is important to note that the MRM does not reflect the Wakefield Development that was recently annexed and approved by the Town on both sides of US 21 at the northern limits of the planning area. As a result, the TAZ east of I-77 at the northern limits of the planning area is also anticipated to experience significant population growth.

⁵The population change noted above and shown in **Figure 2** reflects the entire TAZ. Some TAZs are only partially within the planning area.

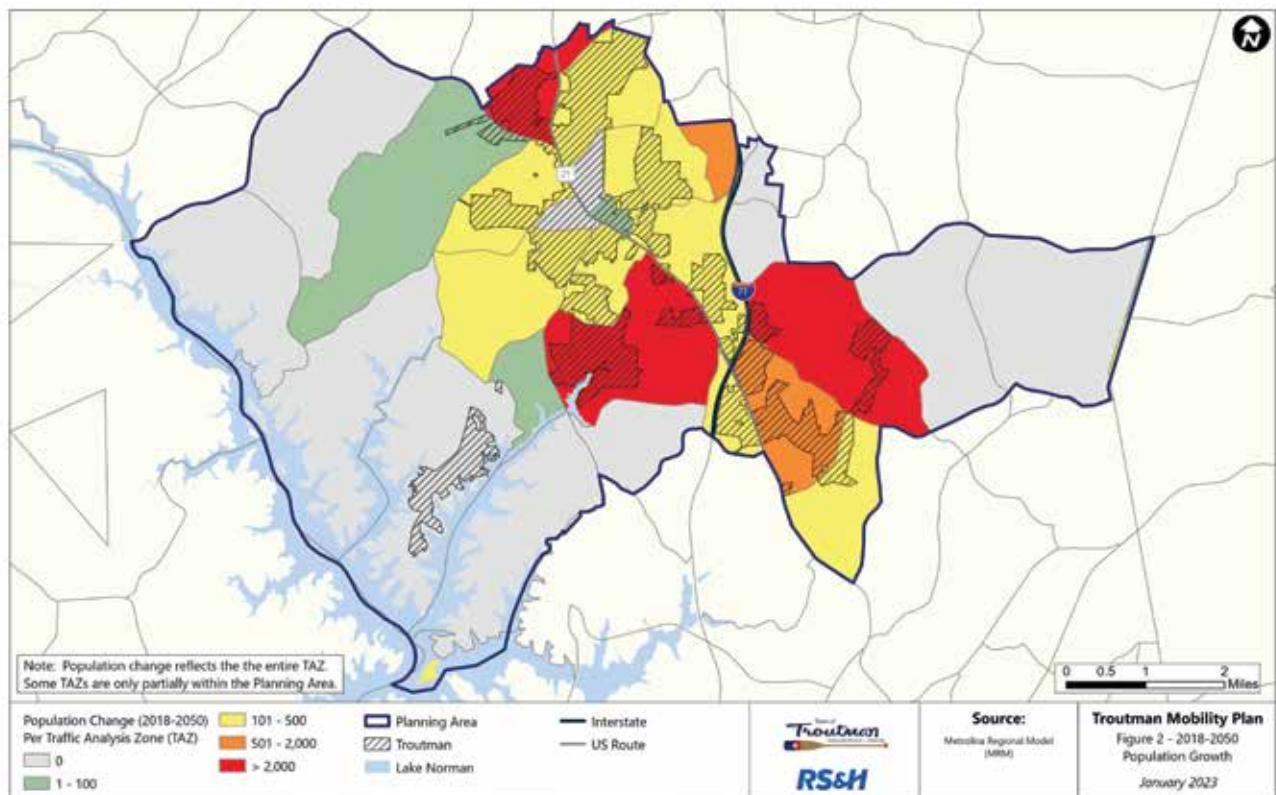


Figure 2 – 2018-2050 Population Growth

Like population data, employment data is also available by TAZ through the MRM. The planning area is expected to add over 15,000 jobs between 2018 and 2050.⁶ Employment growth is anticipated to be highest between US 21 and I-77 and I-77 and Houston Road (see **Figure 3**). While the TAZs at the northern limits of the planning area along US 21 show high employment growth, the MRM does not reflect the Wakefield Development. The approved development is mixed-use; however, it is primarily a mix of residential uses.

The planning area is expected to add

↑ 15,000+
jobs between
2018 and 2050

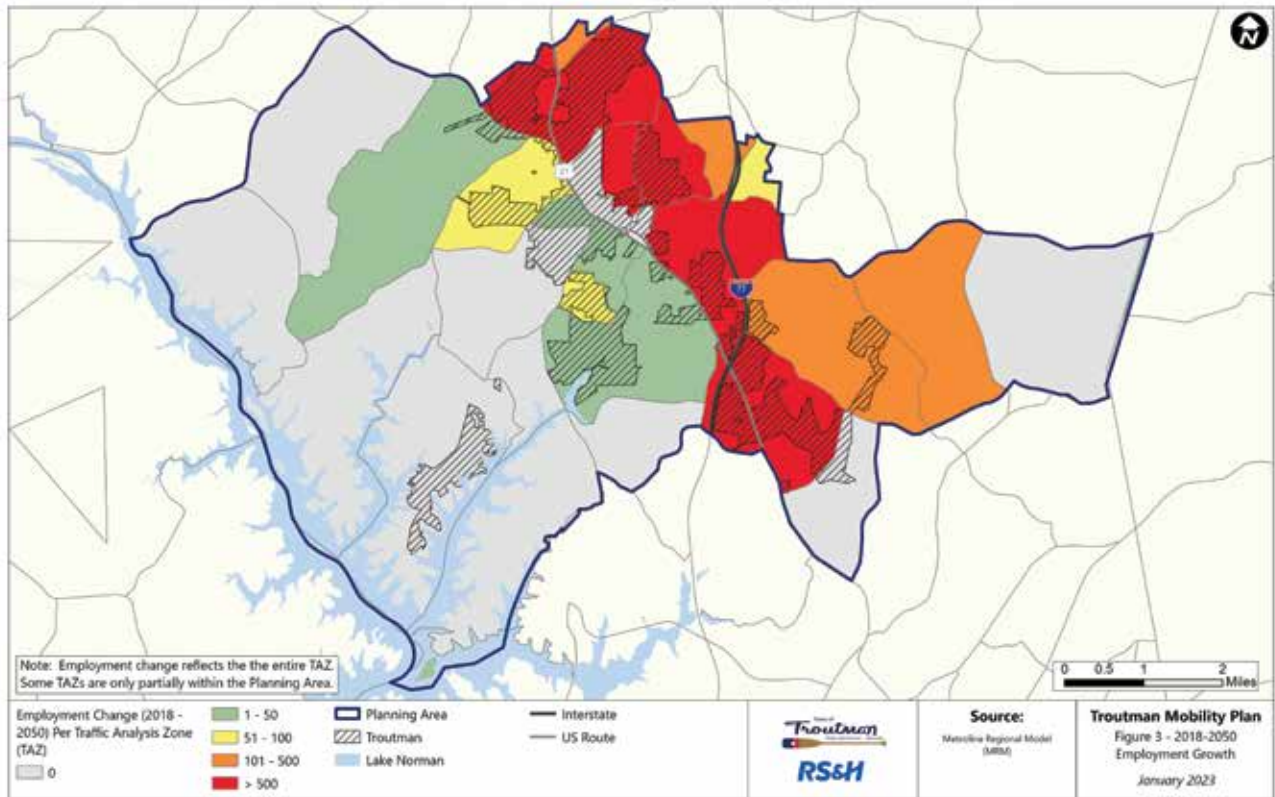


Figure 3 – 2018-2050 Employment Growth

⁶The employment change noted above and shown in **Figure 3** reflects the entire TAZ. Some TAZs are only partially within the planning area.

FUNCTIONAL CLASSIFICATION

Functional classification is a Federal Highway Administration (FHWA) process by which streets and highways are grouped into classes according to the services they provide. A functional classification is assigned based on the road's level of mobility and accessibility and affects its eligibility for federal aid. Interstates, urban freeways and expressways, and principal arterials generally receive the highest levels of funding and minor roads (minor arterials, major collectors, and minor collectors) typically receive the lowest levels of funding. Local roads are not eligible for federal funding.

As shown in **Figure 4**, only a handful of roads in Troutman have a functional classification. I-77 is an interstate, US 21 is a minor arterial, Old Mountain Road and Wagner Street/Perth Road are major collectors, and Ostwalt Amity Road and Buffalo Shoals Road are minor collectors.

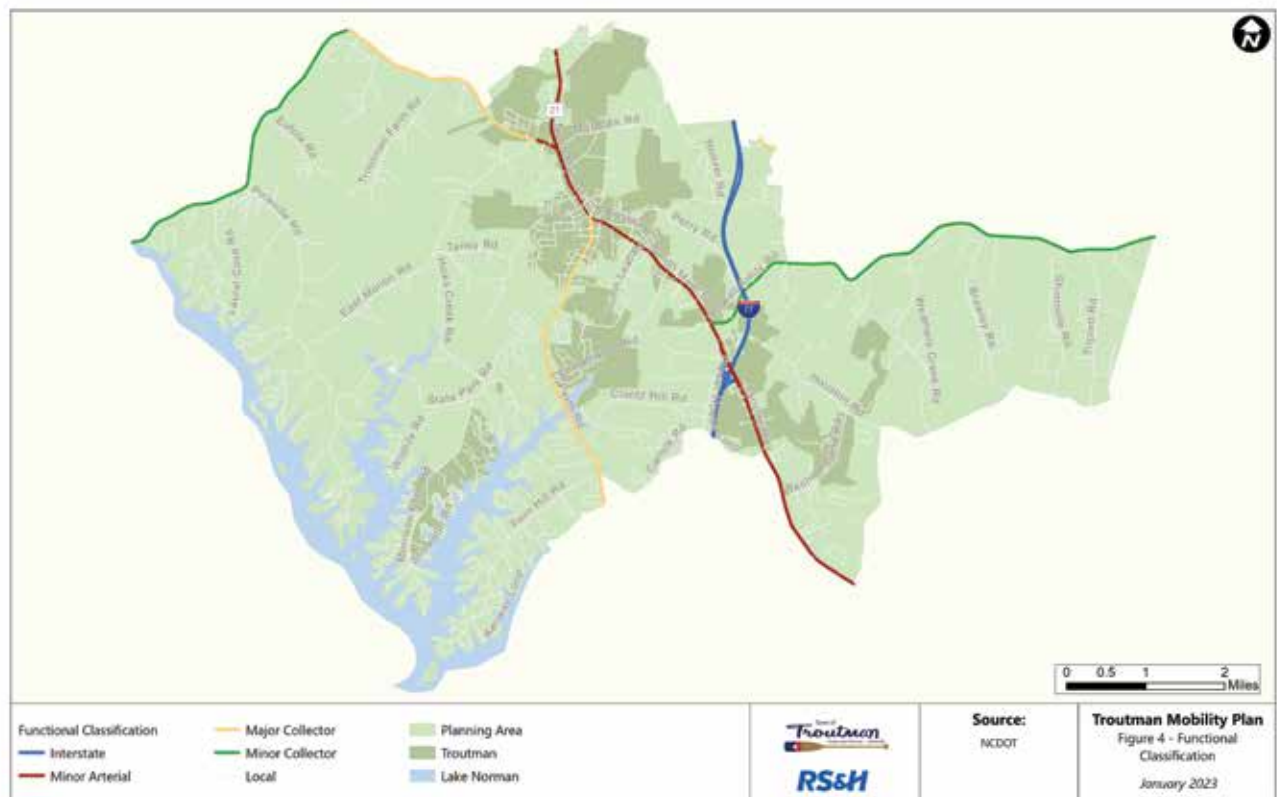


Figure 4 – Functional Classification

FHWA ultimately decides the official functional classification of a street or highway. NCDOT makes recommendations for proposed changes and also has procedures in place to allow MPOs and Rural Planning Organizations (RPO) to request revisions to the functional classification as needs arise. Some common reasons for proposed changes to functional classification include land use changes, improvements to the roadway, and improvements on other roadways that affect traffic patterns of the subject roadway. Details on how to request revisions to the functional classification are included in **Appendix C**.

2019 TRAFFIC VOLUMES

According to 2019 NCDOT traffic volumes, I-77 carries the largest amount of traffic in the planning area – between 58,500 and 59,000 vehicles per day (vpd). Other roads with high traffic volumes include US 21 (between 12,500 and 19,500 vpd), Perth Road south of Clontz Hill Road/Winding Forest Drive (13,500 vpd), and Old Mountain Road between Troutman Farm Road and US 21 (between 8,200 to 11,500 vpd) (see **Figure 5**).

I-77 carries between

58,500 and **59,000**

vehicles per day (vpd)

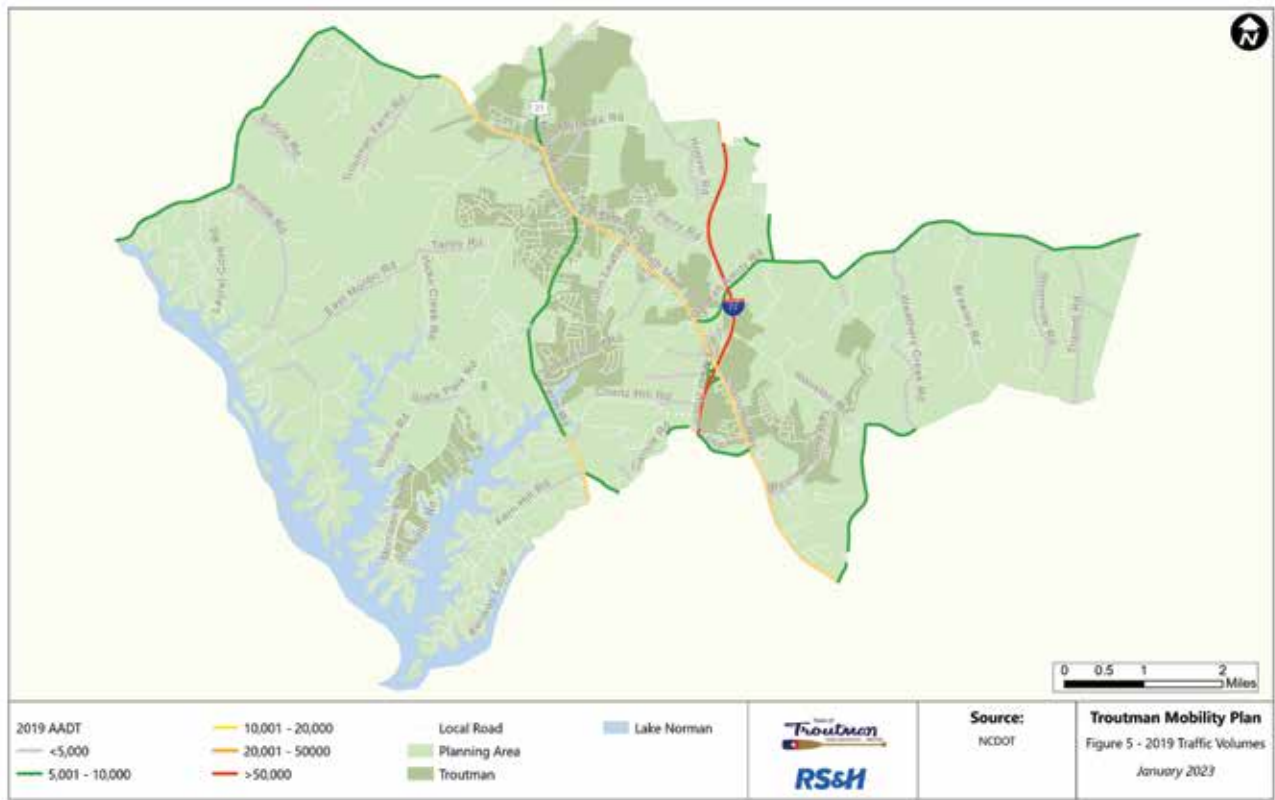


Figure 5 – 2019 Traffic Volumes

ROADWAY CONGESTION

A volume to capacity (v/c) ratio measures the amount of traffic on a given roadway relative to the amount of traffic the roadway was designed to accommodate. Data on traffic volumes and roadway capacity are available in the MRM. V/C ratios can vary from a low of near zero (free flow of traffic) to greater than one where the volume exceeds the capacity of the roadway (heavily congested). Typically, a V/C ratio of less than 0.85 indicates adequate capacity for vehicles without experiencing significant delays.

According to 2018 (baseline) MRM data, heavily congested roads in the planning area include US 21 south of I-77, US 21 from Old Mountain Road to Cedar Lane, Old Mountain Road west of Troutman Farm Road, and Wagner Street (see **Figure 6**).

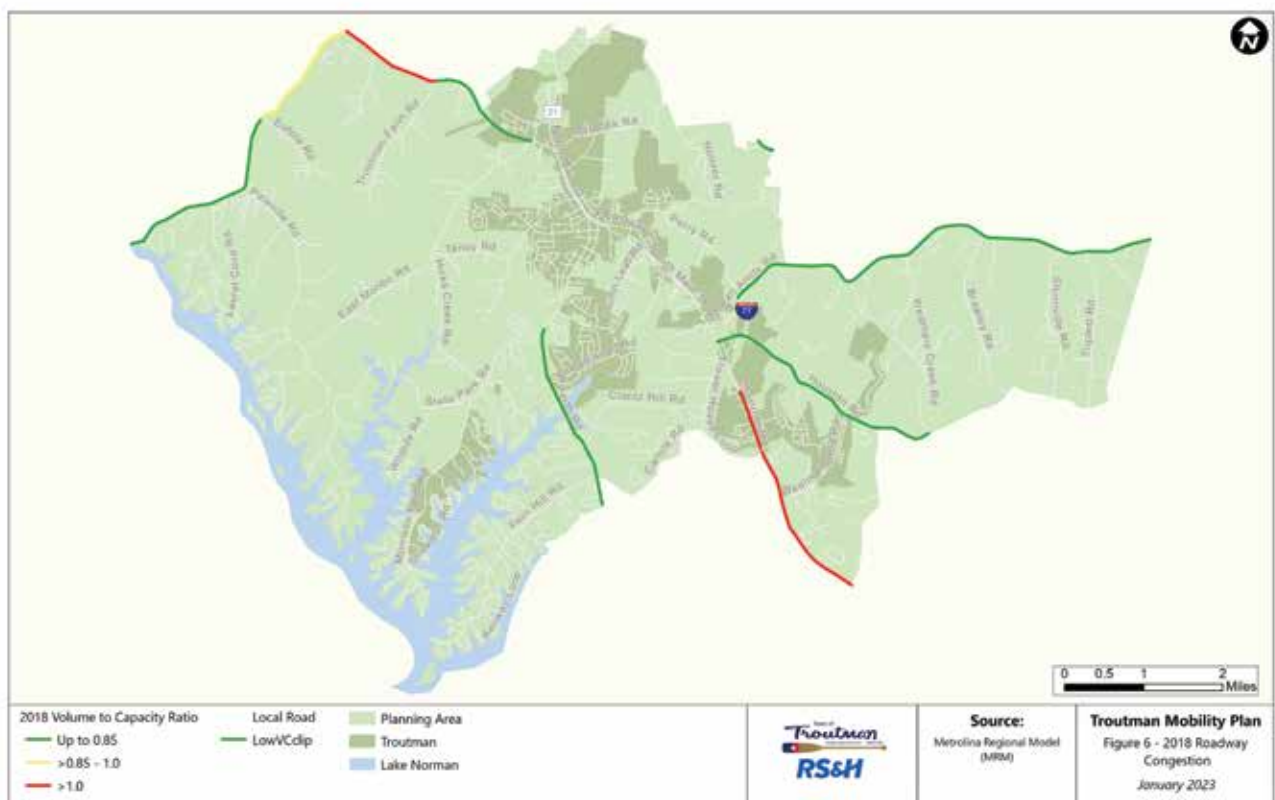


Figure 6 – 2018 Roadway Congestion

By 2050, several additional roads will be heavily congested including I-77, US 21 south of Cedar Lane, Triplett Road, Perth Road south of State Park Road, Murdock Road, and Ostwalt Amity Road from US 21 to Perry Road (see **Figure 7**).

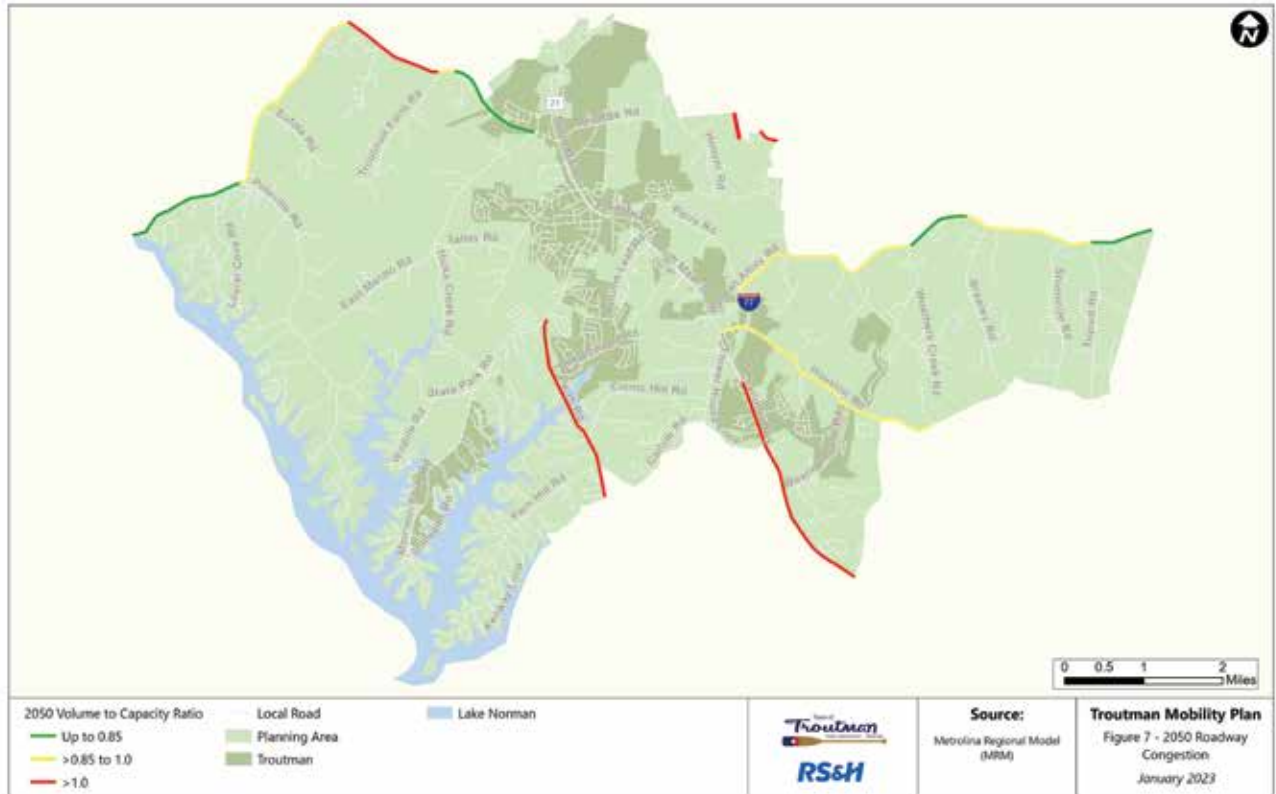


Figure 7 – 2050 Roadway Congestion

ANTICIPATED TRAFFIC GROWTH

According to the MRM, the greatest increases in traffic are anticipated on roads east of US 21. As shown in **Figure 8**, Houston Road is anticipated to experience the highest percentage increase in traffic. Volumes are projected to increase by 3,500 vpd. Volumes on Ostwalt Amity Road are increasing by at least 50% from 2,900-5,600 vpd in 2018 to 6,000-16,900 in 2050.



Traffic volumes on Houston Road are projected to increase by

3,500 vpd

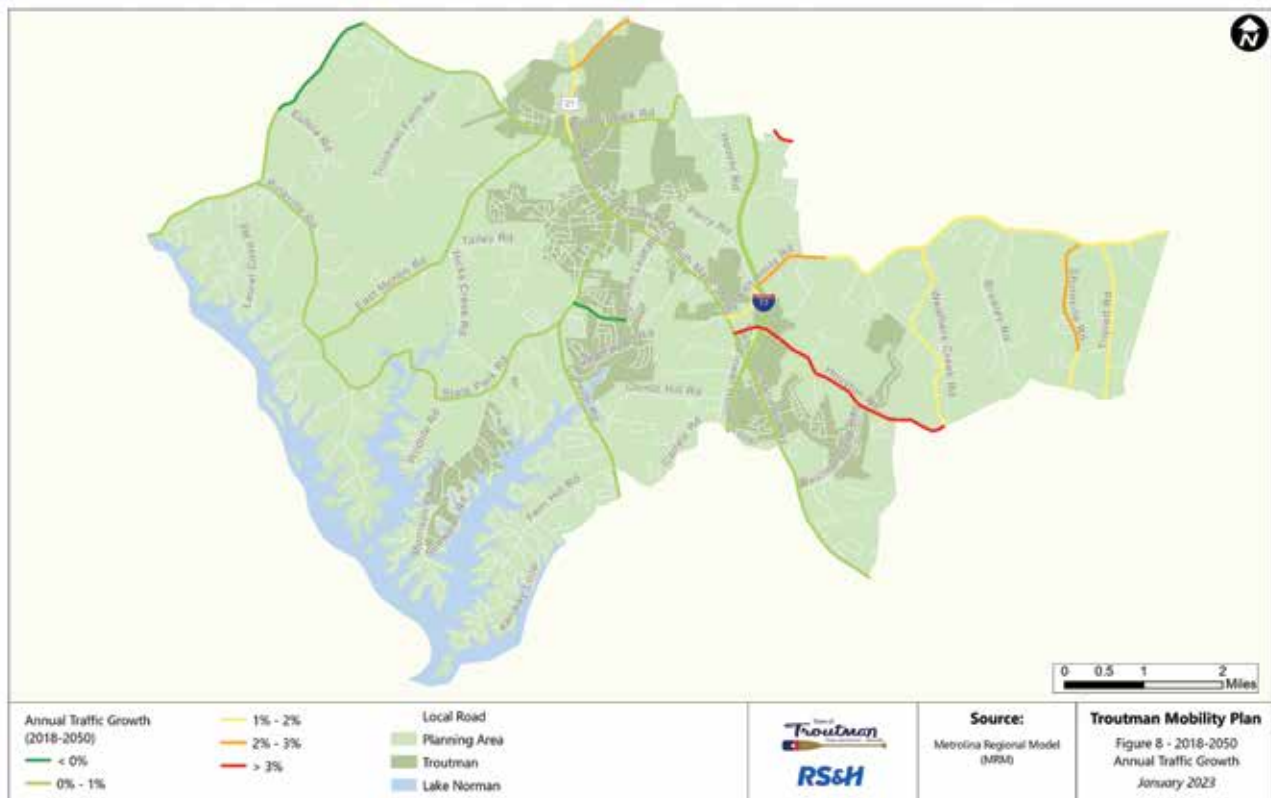


Figure 8 – 2018-2050 Annual Traffic Growth

CRASH DATA

According to NCDOT crash data, almost 500 crashes occurred in the planning area between January 1, 2017 and December 31, 2021. All of the top crash locations were located along US 21 (see **Figure 9**).

The top five crash locations (and **number of crashes**) are as follows:

- US 21 at Old Mountain Road (**68**)
- US 21 at Lexus Drive (**49**)
- US 21 at Ostwalt Amity Road (**40**)
- US 21 at Talley Street (**28**)
- US 21 at Houston Road (**26**)

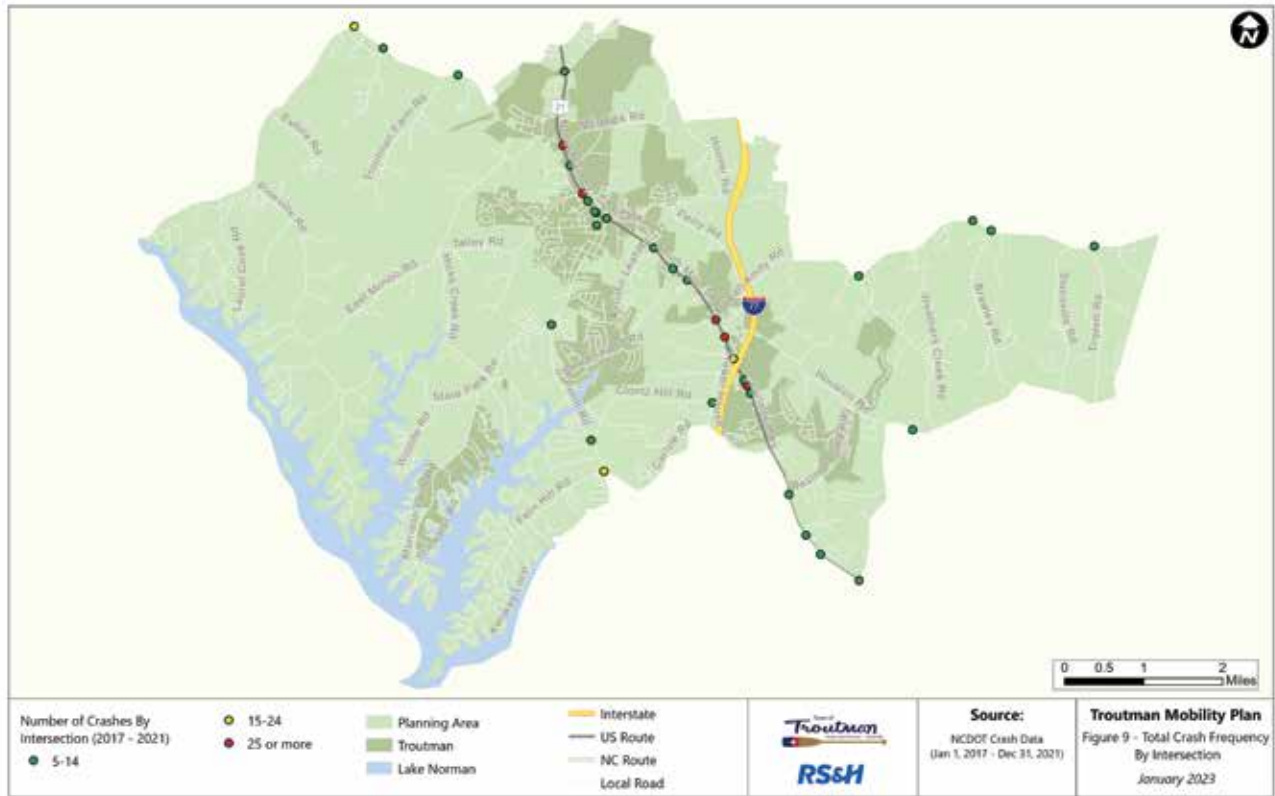


Figure 9 – Total Crash Frequency by Intersection

Four fatal crashes and 40 serious injury crashes occurred in the planning area during the same time period. Two of the four fatal crashes occurred at Ostwalt Amity Road and Weathers Creek Road, outside of the Town limits. NCDOT studied this location and determined the crashes were not a result of design. While serious injury crashes occurred throughout the planning area, they were concentrated along US 21, Perth Road, and Ostwalt Amity Road (see **Figure 10**).

Between January 1, 2017 and December 31, 2021 there were:

4 + **40**
 Fatal Crashes Serious Injury Crashes



Figure 10 – Fatal and Serious Injury Crashes

NCDOT uses planning level section safety scores to indicate the highway safety performance of roadway segments (measured in one-half increments). The higher the score, the poorer the safety performance. The safety score is based on crash density ratio (the crash density of the study area versus the average crash density of similar facilities), the severity index (the measure of the severity of a crash or series of crashes), and the critical crash rate ratio (actual crash rate for the study area versus the critical crash rate). Several segments of roadway had high safety scores on US 21, Ostwalt Amity Road, Perth Road, and East Monbo Road (see **Figure 11**).

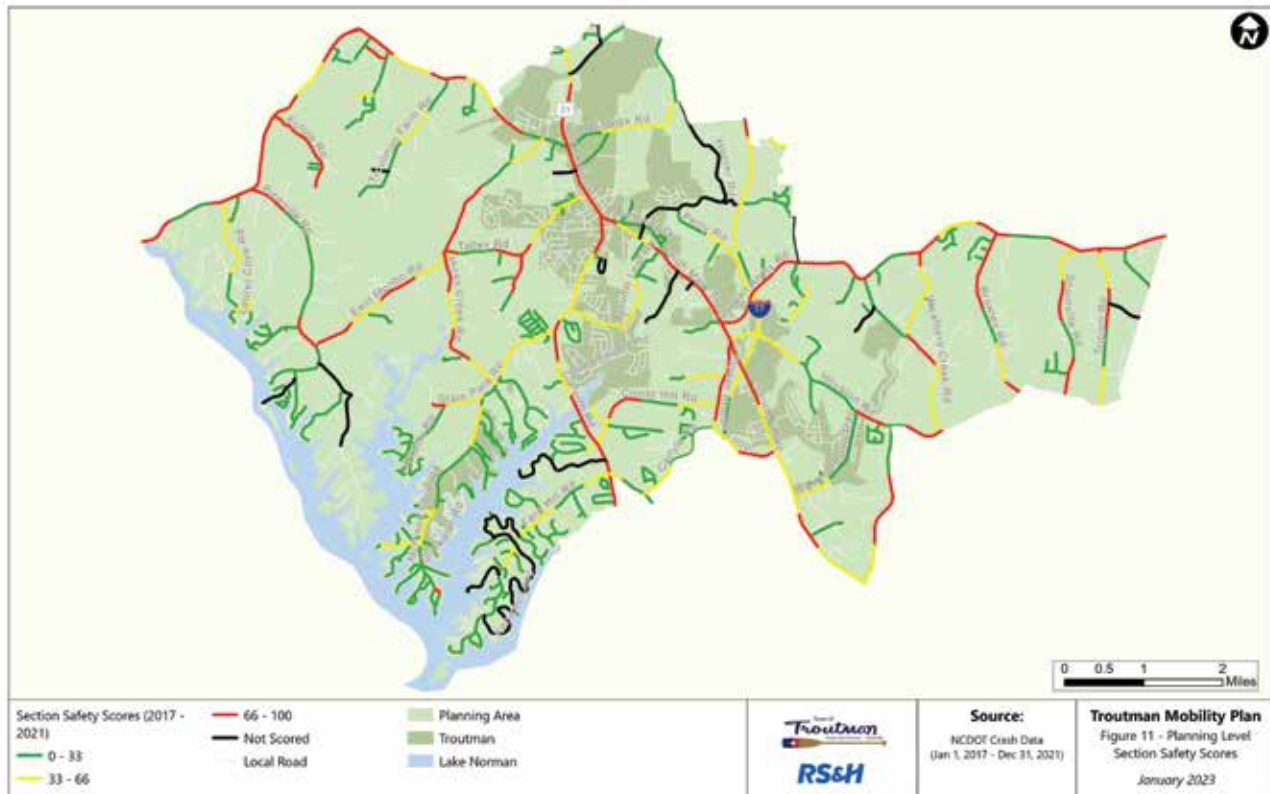


Figure 11 – Planning Level Section Safety Scores

Existing & Planned Transportation Network

The existing transportation network in Troutman is a mix of roads, highways, sidewalks, greenways, and sidepaths. Several long-range plans show the expected new facilities and planned improvements for current facilities in the Town. The main plan identifying new facilities and planned improvements is the CRTPO Comprehensive Transportation Plan (CTP). The plan includes multiple modes, focusing on highways, pedestrian facilities, bicycle facilities, public transportation, and rail. It does not include specific transportation projects, but instead represents the status or completeness of the comprehensive transportation system that may be required to support anticipated growth and development.

Facilities or services are placed into one of three categories:

1

EXISTING

facility meets current needs and is not expected to change

2

NEEDS IMPROVEMENT

facility or service is (or is expected to be) inadequate and should be changed to accommodate expected traffic volumes, improve design, and address safety issues

3

RECOMMENDED

no existing facility or services exist, but they are needed

Other plans that show expected new facilities and planning improvements (discussed more in the Existing Plans section starting on page 28) include the Troutman Bicycle and Pedestrian Plan, CONNECT Beyond, and the Iredell County Transportation Master Plan (ICTMP).

This section describes the existing network and highlights expected new facilities and planned improvements by mode.

HIGHWAY/ROADWAY NETWORK

The majority of roads in Troutman are local roads and are therefore not included in the CTP. The majority of state-owned roads and two interchanges in the planning area are classified as Needs Improvement (see **Figure 12**). A handful of new facilities or services are recommended to connect Troutman Farm Road to US 21 and Pilch Road to US 21.

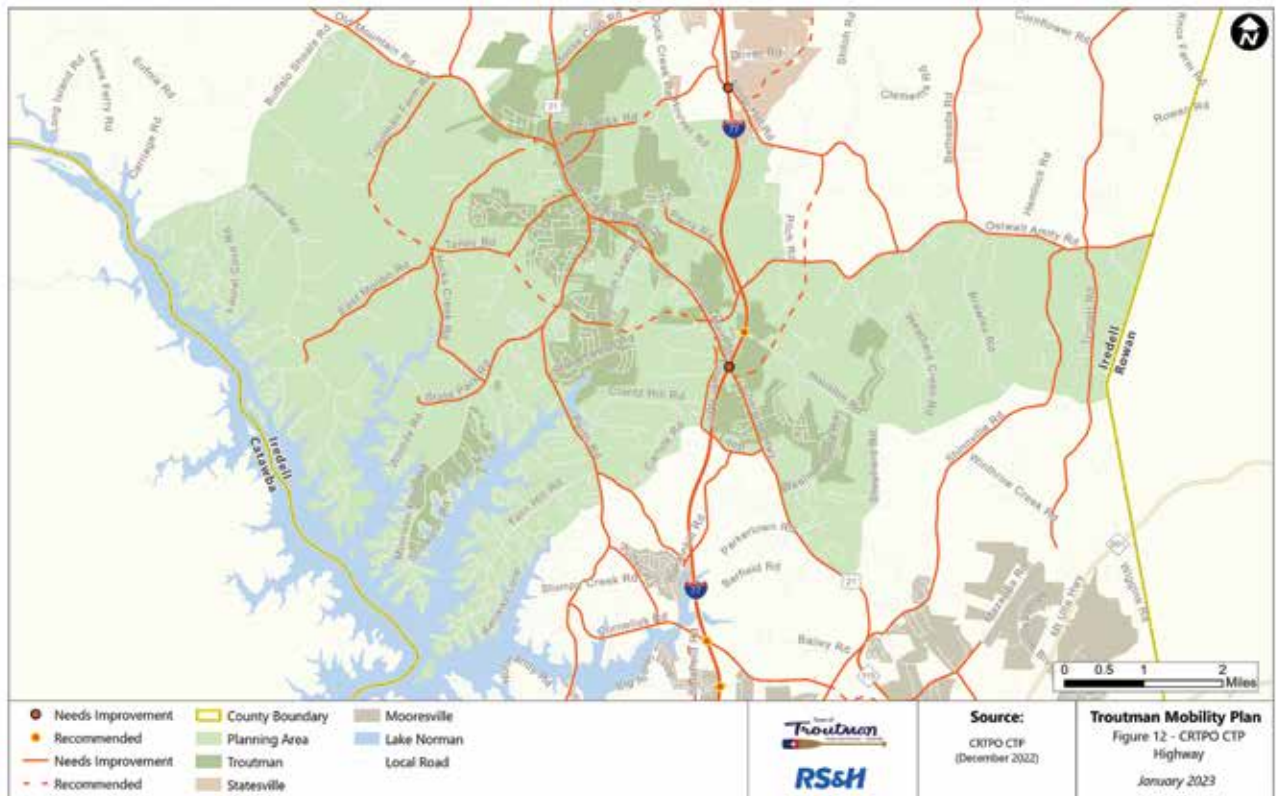


Figure 12 – CRTPO CTP Highway

BICYCLE/PEDESTRIAN NETWORK

Existing bicycle and pedestrian facilities in Troutman include sidewalks in the downtown area and along the US 21/Main Street corridor, the Richardson Greenway that runs parallel to Main Street, and a sidepath from Main Street to South Iredell High School (see **Figure 13**).

Needed improvements and recommended facilities have been captured in several plans including the Lake Norman Regional Bicycle Route, the Carolina Thread Trail Master Plan – Iredell County, the CRTPO CTP, and a town bicycle and pedestrian plan. The Town recently consolidated these recommendations into an updated Bicycle and Pedestrian Plan that was adopted by the Town in April 2023.

Recommended projects are shown in **Figure 13**. Since this plan was recently completed, the project recommendations have been carried forward into the Mobility Plan and no new bicycle and pedestrian projects are identified in this plan.

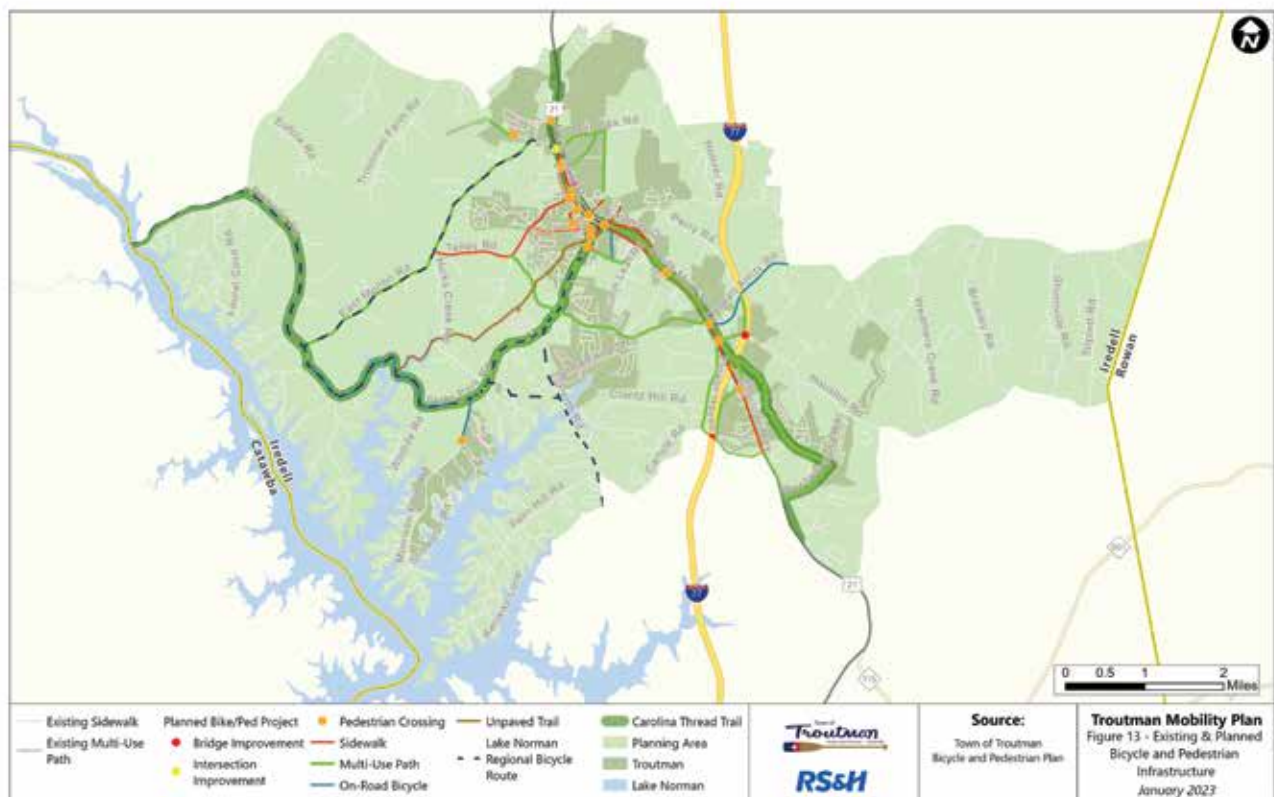


Figure 13 – Existing and Planned Bicycle and Pedestrian Infrastructure

TRANSIT NETWORK

The Iredell County Area Transportation System (ICATS) provides public transportation in Iredell County. ICATS operates the ICATS Commuter Express, with limited stops between Statesville and Center City Charlotte. ICATS has one Park and Ride Lot in Troutman at Exit 42 at 121 Julian Place (see **Figure 14**).

Two other plans, CONNECT Beyond and the Iredell County Transportation Master Plan (ICTMP), have identified transit recommendations in the planning area. CONNECT Beyond has identified two Strategic Mobility Corridors in the planning area. I-77 between Mooresville and Statesville was identified as a High Capacity Transit (HCT) Corridor (operating at higher speeds and with fewer stops) and US 21 from I-77 to Statesville was identified as an Emerging Mobility Corridor (may be a good candidate for high capacity transit in the future, but is currently better suited for other types of transit investments) (see **Figure 14**).

Downtown Troutman was identified as a potential transit node in the Iredell County Transportation Master Plan (ICTMP) (see **Figure 14**).

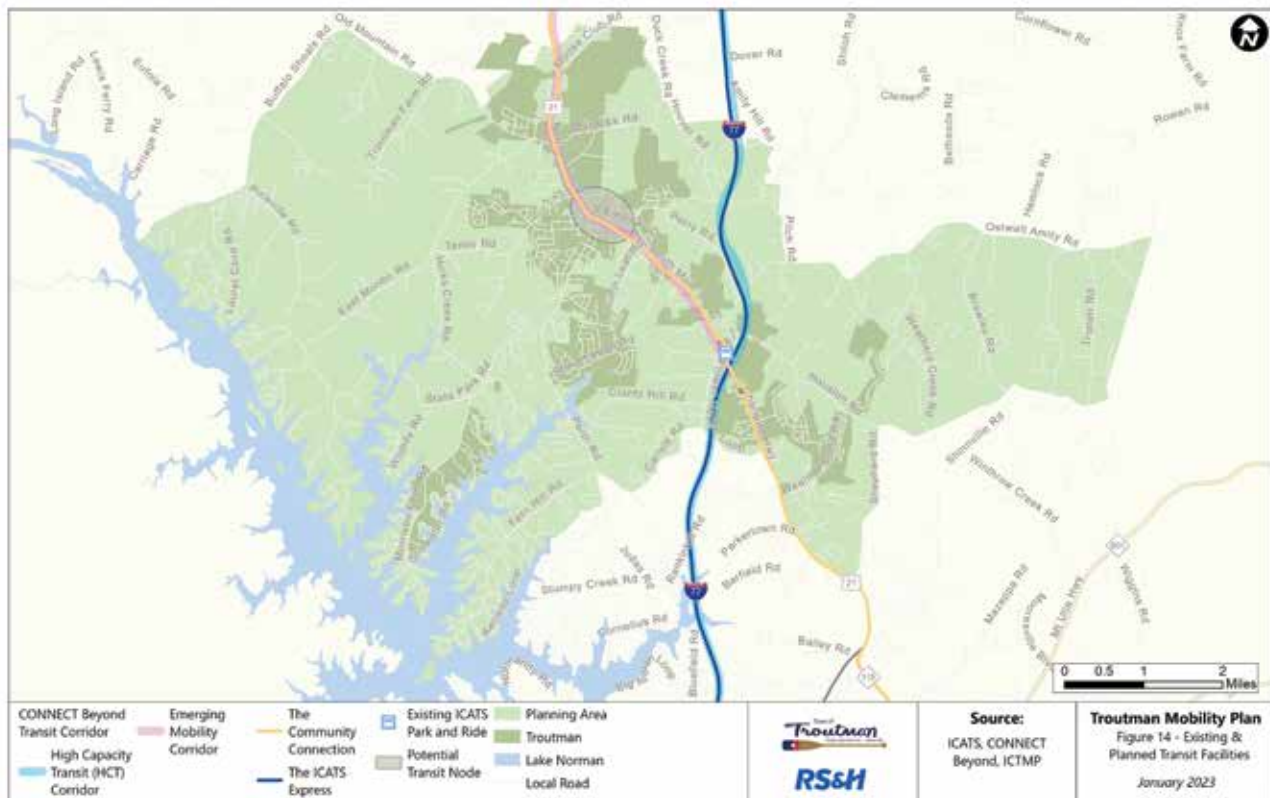


Figure 14 – Existing and Planned Transit Facilities

Programmed Projects

There are several projects that are programmed but not yet built in the planning area. Five projects (two bike/ped, two bridge, and one intersection) are programmed in the NCDOT 2024-2033 STIP. Other projects are being funded by developers as a part of recommendations that came out of TIAs. According to NCDOT, developers will be adding turn lanes and adjusting signal phasing at US 21/Barkdale Road/Ostwalt Amity Road and adding, extending, and restriping turn lanes and thru lanes at US 21/Crosstie Lane.

Figure 15 shows the programmed projects in the planning area.

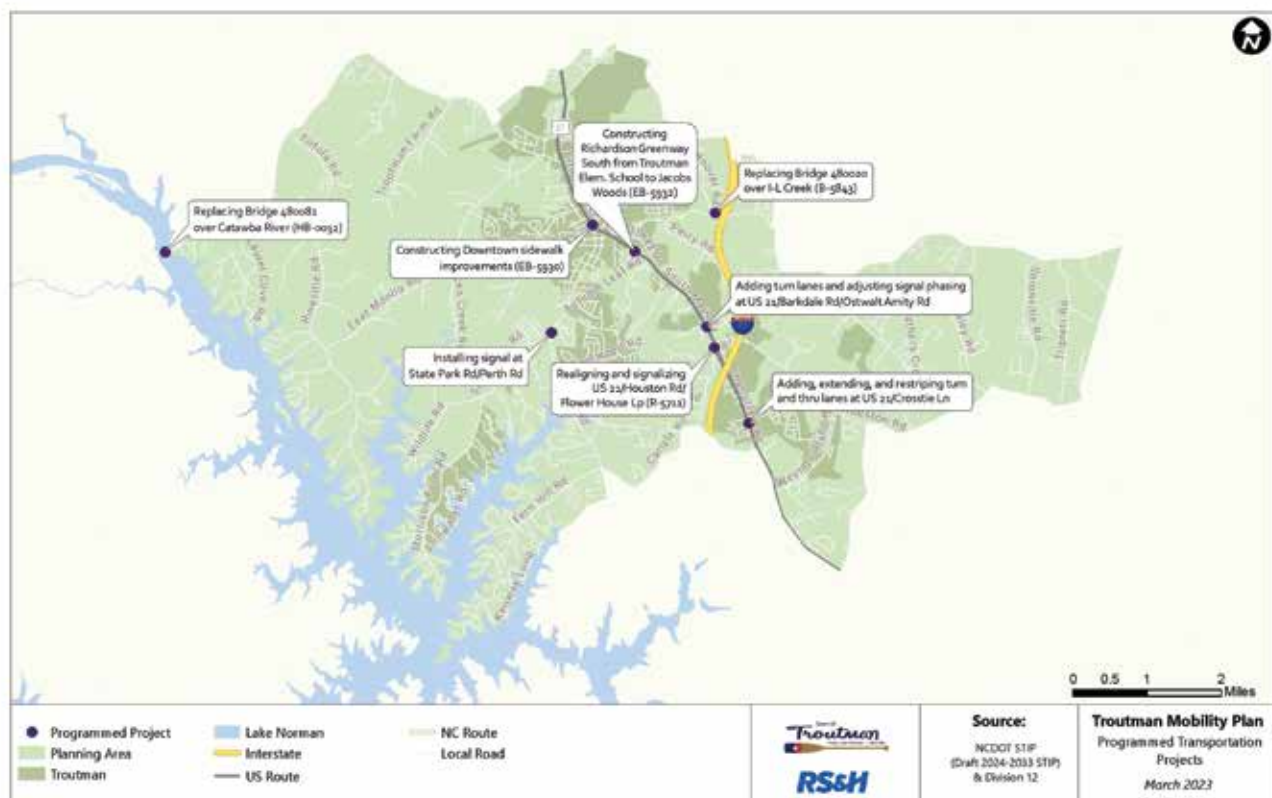


Figure 15 – Programmed Transportation Projects

Land Use and Development Activity

The predominant land use in the planning area is residential, with higher densities downtown and along US 21. Commercial uses are focused along I-77, downtown, and along US 21 around and south of Exit 42. Industrial uses are concentrated in the industrial park off Murdock Road and along Houston and Ostwalt Amity roads (see **Figure 16**).

Densities and intensities are lower in the western portion of the planning area because of environmental constraints associated with Lake Norman.

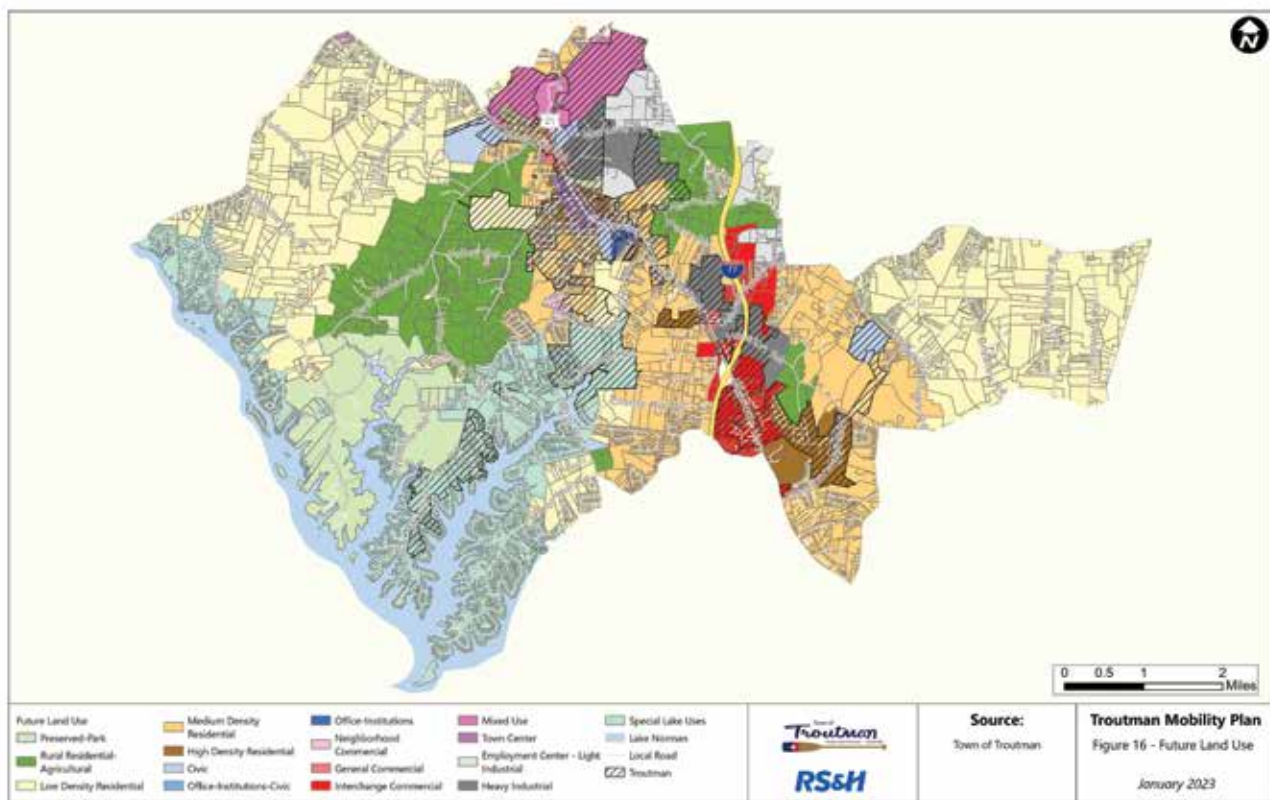


Figure 16 – Future Land Use

Several residential and non-residential developments are approved, proposed, or under construction in the planning area. The majority of these projects are off of or in proximity to US 21. As of January 2023, over 3,000 residential units were approved, 2,800 were proposed, and 2,400 were under construction. Additionally, 163 acres of non-residential development have been approved, and 130 acres are proposed (see **Figure 17**).

Certain developments have rendered some of the recommended highway alignments in the CRTPO CTP unfeasible. These recommended alignments were revisited as a part of this plan (see Focus Area section starting on page 47).

A TIA was done for each new approved development in the planning area. These TIAs were reviewed and recommended improvements were documented. This information helped inform the intersection screening process and design recommendations (see the Key Intersections section starting on page 30).

As of **January 2023**, over:



3,000
residential units
were approved

+

2,800
residential units
were proposed

+

2,400
residential units
were under construction

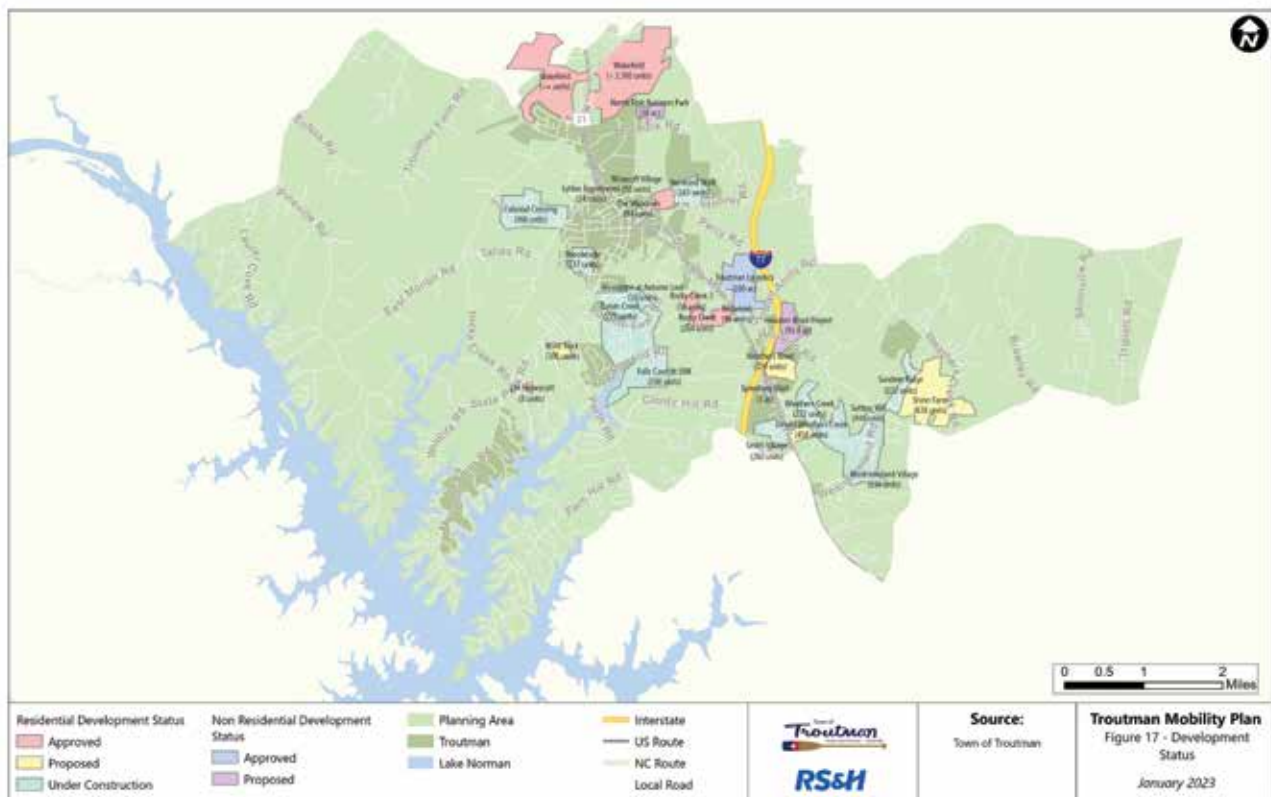


Figure 17 – Development Status

Existing Plans

The second part of the existing conditions analysis was a review of existing plans. All relevant needs and recommendations from these plans were carried forward into this planning effort. Each of the plans and the components relevant to the Mobility Plan are discussed below.

LOCAL PLANS

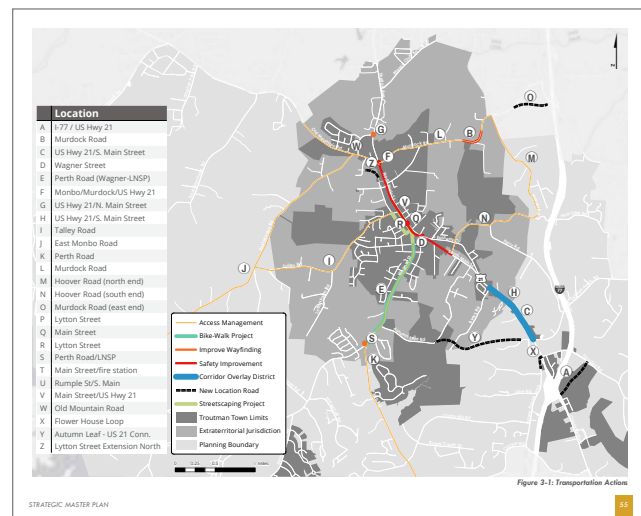
Troutman Bicycle and Pedestrian Plan (2023)

The Bicycle and Pedestrian Plan is the most recent plan completed by the Town (adopted in April 2023). Development of this plan included a review of all bicycle and pedestrian recommendations from previous plans, studying existing conditions, and obtaining public feedback to ultimately arrive at a recommended list of infrastructure projects and priority corridors. In total, 78 projects to improve walking and bicycling were identified. The projects were then ranked according to established prioritization criteria.



The projects recommended in the Troutman Bicycle and Pedestrian Plan are included by reference in this Mobility Plan. The Steering Committee considered whether bicycle and pedestrian improvements were recommended on a roadway or at an intersection when screening intersection projects. Bicycle and pedestrian accommodations were incorporated into intersection designs and cost estimates where appropriate. All plan recommendations are also documented in the Focus Areas section starting on page 47.

Troutman Strategic Plan (2018)



The Strategic Plan includes recommended strategies in several topic areas, including transportation. Transportation strategies include road connectivity recommendations, and two of the three focus areas from the Strategic Plan (I-77/US 21 interchange and Barium Springs) align with Mobility Plan Focus Areas.

The Steering Committee considered both the feasibility and relevance of the recommended road connections and focus area concepts as they identified projects to highlight in the Mobility Plan.

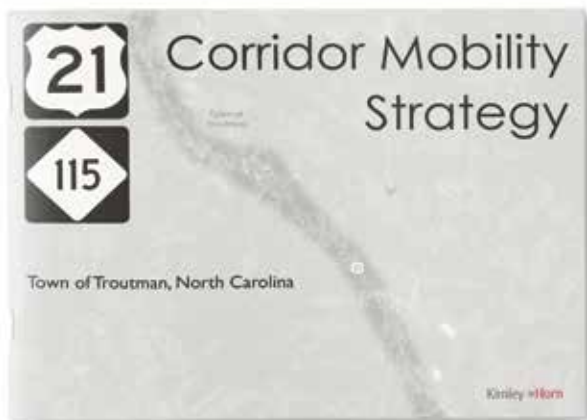
2035 Comprehensive Land Use Plan (2015)

The Land Use Plan is a guide for managing growth and development over the next 15 to 20 years, identifies primary growth areas, and recommends future land use.

For this Mobility Plan, land use and areas identified for future growth were considered in conjunction with development activity while identifying potential impacts to the transportation system.

US 21/NC 115 Mobility Strategy (2015)

The purpose of the US 21/NC 115 Mobility Strategy is to develop guiding principles for the development of a transportation strategy, identify mobility issues, and develop a comprehensive transportation solution(s) for US 21/NC 115 (Main Street). Intersection improvements recommended in this Mobility Plan were reviewed as a part of the traffic and safety analysis for key intersections.



STATE & REGIONAL PLANS

State and regional plans were reviewed to gain an understanding of needed projects and improvements already identified in Town.

State Transportation Improvement Program (STIP) (June 2023)

The STIP is a plan that identifies transportation projects that will receive federal and state funding over a 10-year period. The current STIP covers the period from 2024 to 2033. NCDOT updates this plan approximately every two years. The first five years of the document are referred to as the delivery STIP and the latter five years as the developmental STIP. Projects in the developmental STIP are intended to let the public know what NCDOT has started work on for the delivery portion of a future STIP.

The projects in the STIP in the planning area were documented as a part of this plan.

CRTPO 2050 Metropolitan Transportation Plan (MTP) (2022)

The CRTPO 2050 MTP is a long-range planning document that identifies transportation deficiencies, policies, strategies, and projects over the next 20+ years in the Charlotte Urbanized Area. One of the key components of the MTP is a fiscally constrained project list, or list of projects that can be funded given available funds.

The projects in the MTP in the planning area were documented as a part of this plan.

CRTPO Comprehensive Transportation Plan (CTP) (2022)

The CRTPO Comprehensive Transportation Plan or CTP is a multi-modal long-range plan, that was developed and is continually updated by CRTPO in conjunction with member jurisdictions to envision locally identified future transportation needs.

The needed new facilities and planned improvements for current facilities in the planning area were documented as a part of this plan.



US 21 History

Outside of I-77, US 21 has the highest functional classification and highest traffic volumes in the planning area. It also experiences the greatest congestion and there are significant issues turning left onto US 21 at unsignalized intersections. While US 21 is the highest priority corridor in the planning area, the Town chose not to focus on the US 21 corridor in this plan for several reasons.

First, the Town has conducted multiple plans/studies focused exclusively on US 21 including the US 21/NC 115 Corridor Mobility Strategy and the Troutman Alternatives Study. Since US 21 from Cedar Lane to Barium Lane was in the previous STIP as R-2522, this portion was also studied by NCDOT. Designs were presented at a public meeting in May 2019 that consisted of a four-lane median divided roadway with intersection improvements including a ‘peanut-shaped’ roundabout at the Wagner Street and Church Street intersections, along with bicycle and pedestrian accommodations.

During development of the current STIP (2024-2033) the R-2522 project was changed to “funded for preliminary engineering only”, meaning there is no funding for right-of-way acquisition, utilities, or construction through 2033. The project will have to be submitted and reprioritized in the next STIP update for the years 2026-2035.

NCDOT completed an Express Design Traffic Analysis (EDTA) Report for the project in February 2023 that assesses base year no build (2019) and future year (2050) no build and build traffic operations. The future year build scenario included an analysis of 15 intersections along the corridor. The study found that the project is anticipated to improve future year operations.

However, the signalized intersection US 21/Old Mountain Road/Murdock Road is expected to operate at a failing overall level-of-service under all future analysis scenarios. Additionally, many of the minor-street approaches at unsignalized intersections are expected to operate at LOS F or with heavy queues. These findings help shape the plan recommendations discussed in the next sections of this plan.

Key Intersections

The Steering Committee, stakeholders, and public all emphasized a desire to focus on meeting existing transportation needs in Town. The majority of these immediate needs involve accessing and traveling along US 21.

As noted above, with R-2522 having to be reprioritized in P7.O, there is no impending date for the needed widening. Additionally, there are other portions of US 21 and roads in fast-developing parts of Town that are also creating mobility challenges for users with improvements planned.










The Town wants to focus on shorter-term, smaller-scale, interim projects that can improve safety and traffic flow that are not reliant on state

funding – improvements that have an immediate impact on safety and mobility and give the Town more control when it comes to construction of improvements. The most impactful way to ensure shorter term successes is through intersection improvement projects. A key component of this plan is to identify and prioritize the intersections for which the Town could direct local funding.

Identification & Screening

The Steering Committee used local knowledge of the transportation network along with the outcomes from the existing conditions analysis and stakeholder input to identify an initial list of intersections for consideration. Seventeen (17) intersections were initially identified.

These intersections were screened to arrive at an initial list of key intersections. Criteria used to screen the intersections included:

 Crash frequency	 Whether the need for bicycle and pedestrian improvements had been identified in the Bicycle and Pedestrian Plan
 Number of fatal or serious injuries	
 Traffic volumes	 Land use
 Existing intersection control	 Location (in Town limits vs in planning area)
 Existing turn lanes	 Required TIA improvements

The full list of intersections screened, accompanying details, and outcomes are available in **Appendix D**.

Through the project screening, seven intersections were removed from the initial list. The remaining 10 locations were selected as the initial list of key intersections and were shared with the public for feedback. The key intersections are shown in **Figure 18**.

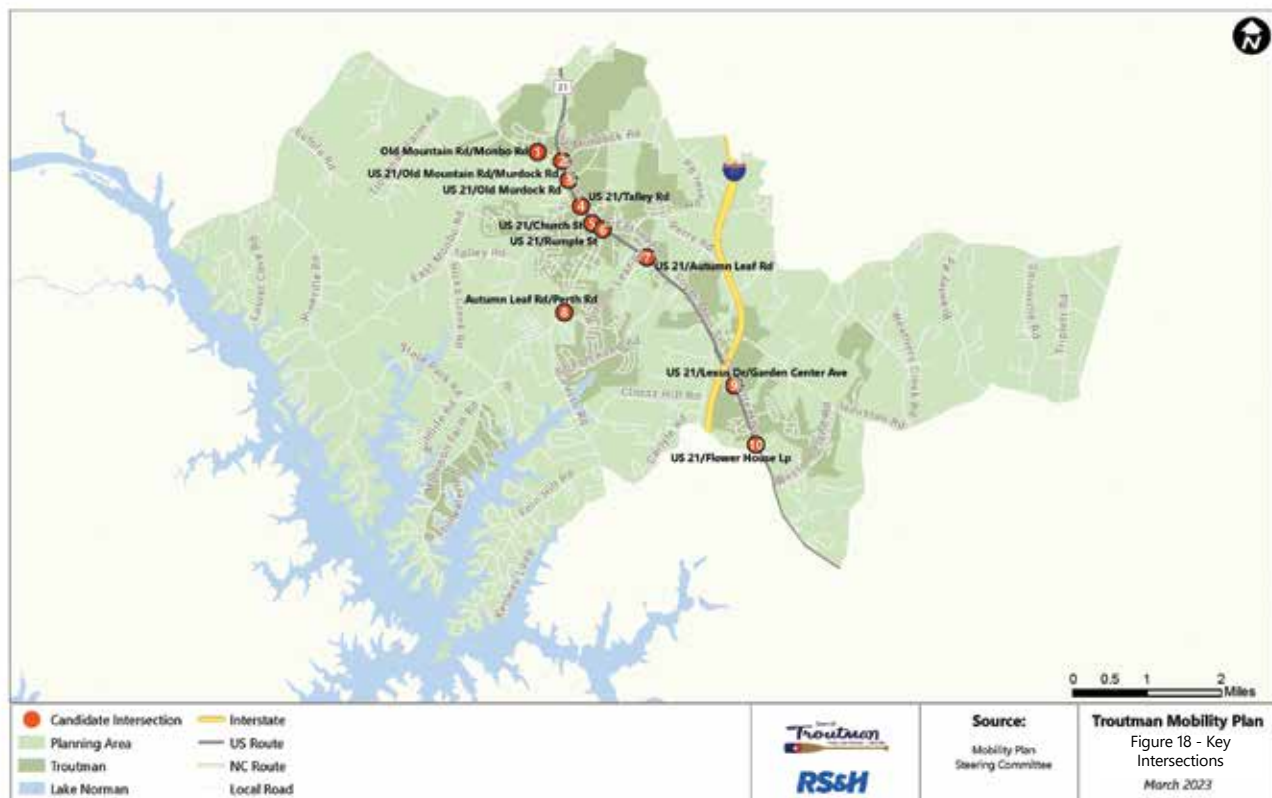


Figure 18 – Key Intersections

Public Input & Prioritization

Public input on the key intersections was solicited via the first public survey. Respondents were asked whether they agreed with the list or if there were any intersections they would add or remove. Additionally, residents were asked to rank their top three (3) intersections in the list (see **Appendix D** for results). Public input was considered during the prioritization process.



Public Engagement Meeting

Since discretionary funds will be the primary funding source for intersection projects, the Town modeled its prioritization process after the Roadway/Intersection Scoring Criteria in the CRTPO Discretionary Funds Policy Guide. A score was calculated for each intersection based on safety, congestion, and cost effectiveness (see **Appendix D**).

The Town considered both the public input and Discretionary Funds Policy Guide scoring when selecting the intersections to carry forward for designs and cost estimates. The intersections were confirmed with the Steering Committee before a final selection was made. The three intersections that were carried forward for designs and cost estimates are as follows:

- US 21/Old Mountain Road/Murdock Road
- US 21/Old Murdock Road
- US 21/Church Street

Details on the prioritization and the rationale for selection of these three intersections are included in **Appendix D**.

Details on existing design and existing and future operations are included on pages 33-39.⁷ For each key intersection, short-term improvements and short-term and long-term recommendations are provided. In order to position the Town to be able to apply for discretionary funding to improve the top three key intersections, a preferred design and cost estimate were developed for each intersection. Larger versions of the preferred design and details on the cost estimates are available in **Appendix E**.

⁷ Existing and future operations interpolated from R-2522 (H090112) Express Design Traffic Volumes (EDTV)

US 21/Old Mountain Road/Murdock Road

US 21/Old Mountain Road/Murdock Road is a signalized intersection with pedestrian safety accommodations along the southern and eastern approach legs. Each approach has a dedicated left turn lane with a thru/right lane, with the exception of the western approach leg which has right turn slip lane. Notable considerations for this intersection include South Iredell High School, the Wakefield Development, and the Iredell County Fairgrounds.

This intersection experiences heavy northbound and southbound thru movements during peak hours (385 vehicles per hour (vph) and 379 vph, respectively), heavy northbound left turns (481 vph), and heavy eastbound right turns (465 vph).

By 2050, northbound and southbound thru movements are each expected to reach approximately 860 vph during the peak hour. Additionally, there will be over 700 vehicles making the northbound left and approximately 700 vehicles making the eastbound right turn.



US 21/Old Mountain Road/Murdock Road

PLANNED SHORT-TERM IMPROVEMENTS

NCDOT plans to add a crosswalk across the southern leg of US 21 in the near future.

The TIA for the Wakefield Development was completed in June 2023. The NCDOT recommendations at this intersection include the following improvements by 2025:

- Extend the eastbound left- and right-turn lanes to provide at least 300 feet and 450 feet of storage, respectively.
- Extend the westbound left-turn lane to provide at least 375 feet of storage.
- Construct an exclusive northbound left-turn lane, that the northbound approach has dual left turn lanes that provide an average of 375 feet of storage each. A new westbound receiving lane should be constructed on the west leg to receive the additional northbound left-turn movement. The lane should drop as a westbound right-turn lane at Barium Lane.
- Construct an exclusive northbound right-turn lane that provides at least 200 feet of storage.
- Construct an exclusive southbound right-turn lane that provides at least 200 feet of storage.
- Modify the traffic signal.

Several additional short-term improvements were considered at this intersection as a part of this plan. Each improvement considered and the associated recommendation are documented in **Table 3**. The recommendations noted as ‘Carry forward’ are included in the designs and cost estimates.

Table 3: Additional Short-Term Improvements Considered at US 21/Old Mountain Road/Murdock Road

Improvement	Details	Recommendation
Single lane roundabout	Previous study indicated a single lane roundabout would not improve congestion issues.	Eliminate from further consideration
Dual lane roundabout	Cannot be implemented unless US 21 is widened (not feasible under current conditions). Heavy truck traffic at this intersection.	Move to long-term improvement consideration
Add northbound and southbound auxiliary thru lanes	Similar operations to the second northbound left recommended in the TIA. Would improve thru movements and could be added to when R-2522 was funded (not a throw away improvement). Would reduce delay on side streets by reallocating green time to them. The fairgrounds property is owned by the county and there are plans to redevelop it.	Carry forward
Shift intersection to remove existing skew	The SC and Town Council considered whether to shift the alignment to the north or south. The preference was to shift the alignment south to avoid impacts to the Quality Mart.	Carry forward
Eliminate slip lane	Slip lane has minimal storage. Recommended in bike/ped plan.	Carry forward
Convert to reduced conflict intersection	Large u-turn volumes and challenging geometry where u-turns would occur. In order to accommodate buses and trucks there would be significant ROW impacts.	Eliminate from further consideration
Add pedestrian signal heads and high visibility crosswalk markings across all approaches; upgrade curb ramps	Recommended in bike/ped plan.	Carry forward

DESIGNS & COST ESTIMATES FOR PREFERRED SHORT-TERM IMPROVEMENT

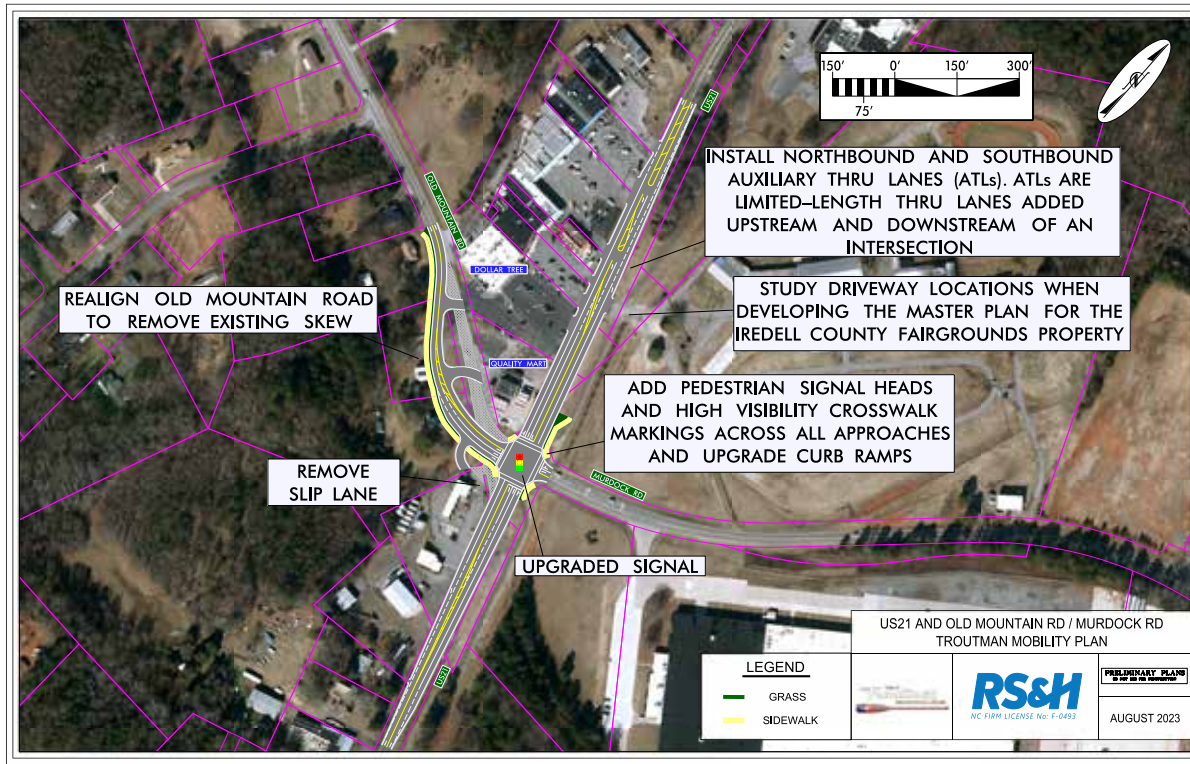


Figure 19 - US 21 and Old Mountain Road/Murdock Road

The planning level cost estimate for these improvements is estimated at just under \$4 million (complete cost breakdown in Appendix E).

SHORT-TERM RECOMMENDATIONS

The following short-term recommendations should be implemented at this intersection:

- Work with the developer to construct the improvements recommended in the TIA.
- Submit the intersection project to the Division 12 Planning Engineer for consideration for submission to P7.O.⁸ Should the project not be submitted to P7.O, submit it as a candidate project in the 2055 MTP.
- Coordinate with CRTPO and NCDOT Division 12 to assign the maximum number of local points possible to R-2522 (widening of US 21 from Barium Ln to Cedar Ln) during P7.O; the widening of US 21 will help to improve intersection operations.
- Discuss/explore funding options for recommended short-term improvements with Division 12.
- Discuss the auxiliary thru lanes with Iredell County; get an update on the redevelopment of the fairgrounds property.

LONG-TERM RECOMMENDATIONS

Long-term recommendations are largely contingent upon what improvements are built by the developer, if the project is submitted to P7.O (and how it scores if submitted), and short-term funding available through Division 12. Any recommended short-term improvements that do not get built in the short-term should remain as recommended improvements until they are constructed. For acceptable operations, the widening of US 21 (R-2522) is needed.

⁸ The Division can submit a total of 14 projects and staff will determine which projects are submitted. CRTPO is only considering projects in its 2050 MTP for P7.O so there is no possibility of a submission by CRTPO.

US 21/Old Murdock Road

US 21/Old Murdock Road is a stop-controlled intersection with US 21 offering vehicles a continuous flow. Pedestrian accommodations run along each side of US 21, as well as a portion of Old Murdock Road until the existing crosswalk is met (since Eastway Drive essentially ties into Old Murdock Road at US 21, the crosswalk is pulled further east for pedestrian safety). US 21, approaching the intersection from the south, has dedicated right turn, thru, and left turn lanes. Approaching from the north, US 21 has a dedicated left turn lane with a thru/right turn lane. Old Murdock Road, approaching the intersection from the east, is stop-controlled for all movements from one lane. The western leg is one of two driveways to access the Walgreens and has a dedicated left turn lane with a thru/right turn lane.



Old Murdock Road Intersection

Trucks are prohibited on Old Murdock Road between US 21 and Rimmer Farm Road. Currently, northbound thru and right turn volumes are heavy (881 vph and 109 vph, respectively) as well as southbound thru volumes (899 vph). There is roughly an even split between those turning right onto US 21 from Old Murdock Road as those turning left.

By 2050, thru movements along US 21 are expected to almost double while Old Murdock Road volumes are anticipated to quadruple. No improvements are currently planned at this intersection.

SHORT-TERM IMPROVEMENTS

Several short-term improvements were considered at this intersection as a part of this plan. Each improvement considered and the associated recommendation are documented in **Table 4**. The recommendations noted as ‘Carry forward’ are included in the designs and cost estimates.

Table 4: Short-Term Improvements Considered at US 21/Murdock Road

Improvement	Details	Recommendation
Traffic Signal	Not warranted currently.	Move to long-term improvement consideration
Single lane roundabout	Previous study indicated a single lane roundabout would experience delay and congestion by 2045 and is not a viable option.	Eliminate from further consideration
Dual lane roundabout	Cannot be implemented unless US 21 is widened (not feasible under current conditions).	Move to long-term improvement consideration
Dedicated left turn lane on Old Murdock Rd	Will not help with heavy thru volumes on US 21 or assist those turning left from Old Murdock Rd onto US 21, but it will allow those turning right onto US 21 to do so more easily. Only minor parking impacts to Dixie’s Fish & Chicken.	Carry forward

DESIGNS & COST ESTIMATES FOR PREFERRED SHORT-TERM IMPROVEMENT

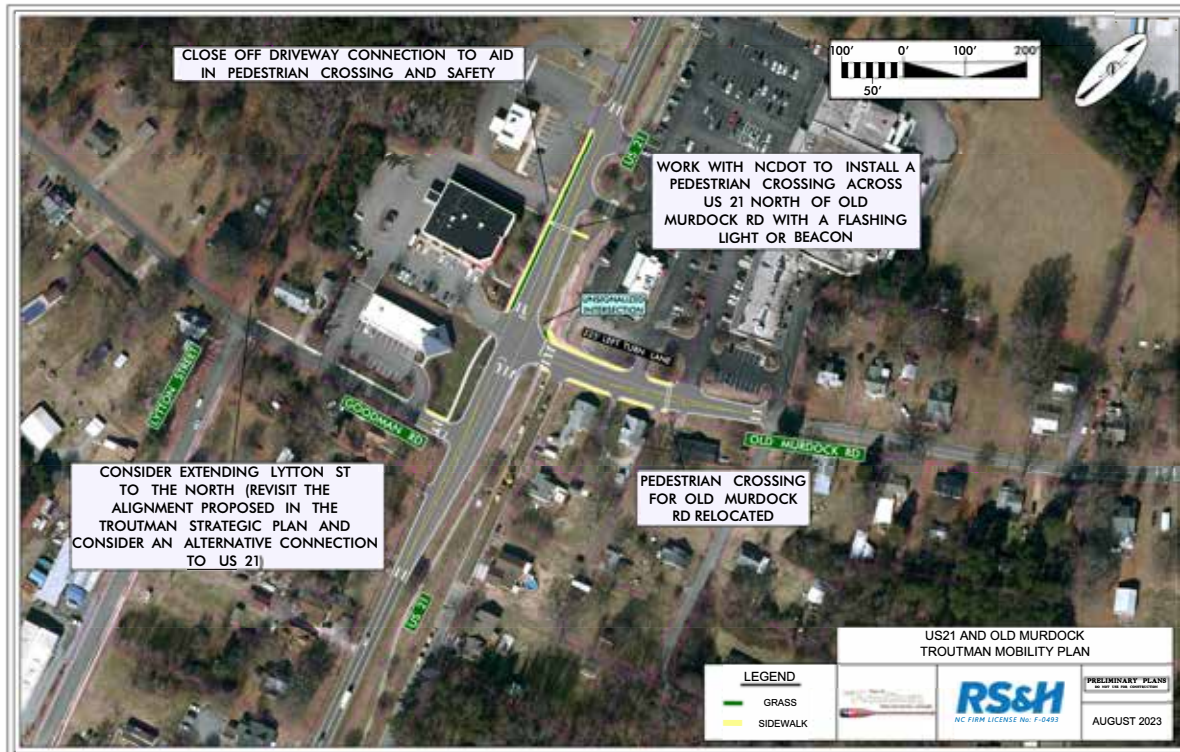


Figure 20 - US 21 and Old Murdock Road

The planning level cost estimate for these improvements is estimated at **\$517,000** (complete cost breakdown in **Appendix E**).

SHORT-TERM RECOMMENDATIONS

The following short-term recommendations should be implemented at this intersection:

- Submit the intersection for discretionary funds through CRTPO.
- Coordinate with CRTPO and NCDOT Division 12 to assign the maximum number of local points possible to R-2522 (widening of US 21 from Barium Ln to Cedar Ln) during P7.0; the widening of US 21 will help to improve intersection operations.
- Discuss/explore funding options for short-term improvements with Division 12.
- Discuss using local funds to improve this intersection with Town Council.

LONG-TERM RECOMMENDATIONS

The Town should continue to monitor this intersection and coordinate with NCDOT to add signal when warranted. Prior to the widening of US 21 (R-2522), the Town should work with NCDOT to determine if a traffic signal or dual lane roundabout is the preferred treatment.

For acceptable operations, the widening of US 21 (R-2522) is needed.

US 21/Church Street

US 21/Church Street is a stop-controlled intersection with US 21 offering vehicles a continuous flow. This intersection has no dedicated turn lanes for any approach. The signalized intersection of US 21 at Wagner Street is less than 150’ south of the intersection and the stop-controlled intersection of Church Street at Eastway Drive is less than 100’ to the east. The signalized intersection to the south can back up cars into the Church Street intersection due to its proximity causing large delays for Church Street vehicular travel.



Southbound US 21 approaching Church St

Currently, northbound thru and southbound thru volumes along US 21 are heavy (997 vph and 977 vph, respectively) while right and left turn movements from Church Street are less than 15 vph and roughly evenly split between those turning right versus left onto US 21.

By 2050, thru movements along US 21 are expected to almost double, as well as volumes along Church Street.

No improvements are currently planned at this intersection.

SHORT-TERM IMPROVEMENTS

Several short-term improvements were considered at this intersection as a part of this plan. Each improvement considered and the associated recommendation are documented in **Table 5**. The recommendations noted as ‘Carry forward’ are included in the designs and cost estimates.

Table 5: Short-Term Improvements Considered at US 21/Church Street

Improvement	Details	Recommendation
Add a physical barrier on E Church Street at US 21 to restrict all movements toward and from the east	Eastbound traffic on W Church Street could continue to turn right or left onto US 21. Cars traveling toward and from the east would access US 21 via Morgan Street to the north or Rumble Street to the south. These improvements provide for optimal intersection spacing and improve the safety of the intersection.	Carry forward
Restrict northbound left turns from the current shared thru/left lane on US 21 at peak hours	This would reduce northbound thru traffic congestion since drivers would not be waiting for a gap in the southbound traffic flow to turn left.	Carry forward
Install signage notifying drivers of the northbound left-turn restrictions		Carry forward

DESIGNS & COST ESTIMATES FOR PREFERRED SHORT-TERM IMPROVEMENT

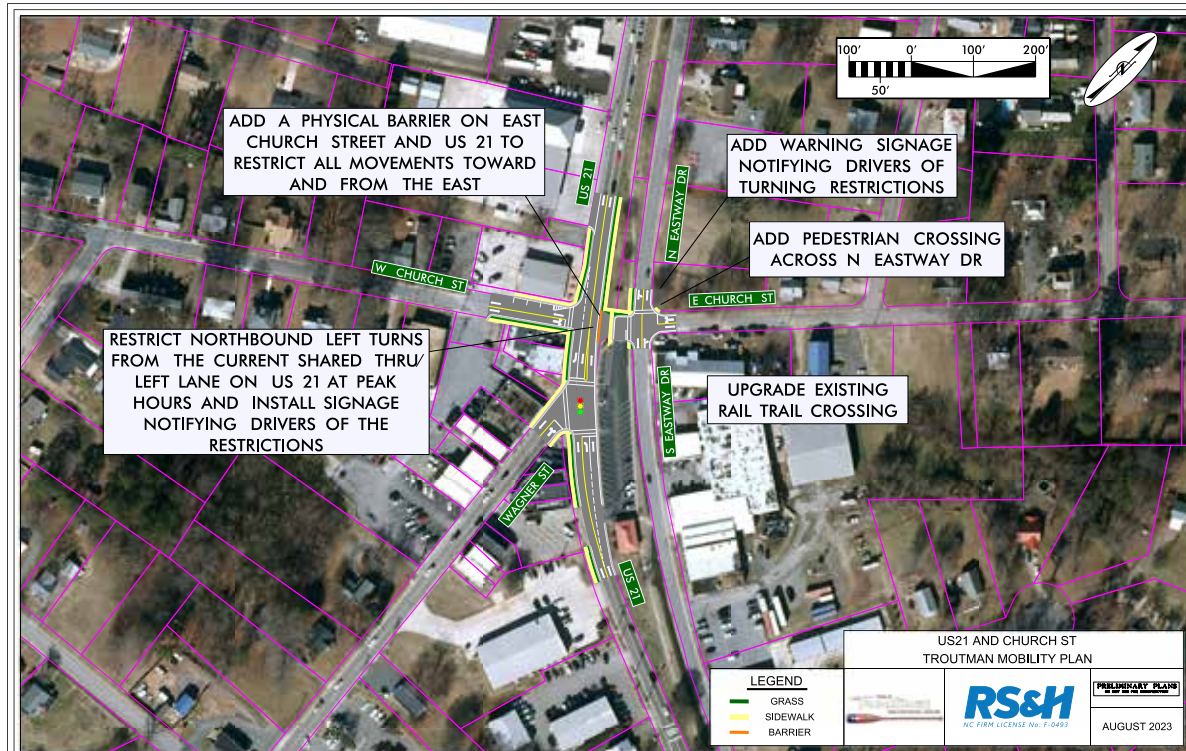


Figure 21 - US 21 and Church Street

The planning level cost estimate for these improvements is estimated at **\$407,000** (complete cost breakdown in **Appendix E**).

SHORT-TERM RECOMMENDATIONS

The following short-term recommendations should be implemented at this intersection:

- Discuss using local funds to improve this intersection with Town Council.
- Coordinate with CRTPO and NCDOT Division 12 to assign the maximum number of local points possible to R-2522 (widening of US 21 from Barium Ln to Cedar Ln) during P7; the widening of US 21 will help to improve intersection operations.
- Discuss/explore funding options for short-term improvements with Division 12.

LONG-TERM RECOMMENDATIONS

Construct a peanut roundabout as recommended as part of the R-2522 project.



Peanut roundabout shown on the R-2522 public meeting maps

Other Key Intersections

A detailed traffic and safety analysis was conducted for the remaining seven intersections. The US 21/Flower House Loop (south) intersection is getting a traffic signal with the new Food Lion development. No further improvements are recommended at this intersection.

Figures 22-27 illustrate the design elements recommended at the remaining intersections.

OLD MOUNTAIN ROAD / E MONBO ROAD

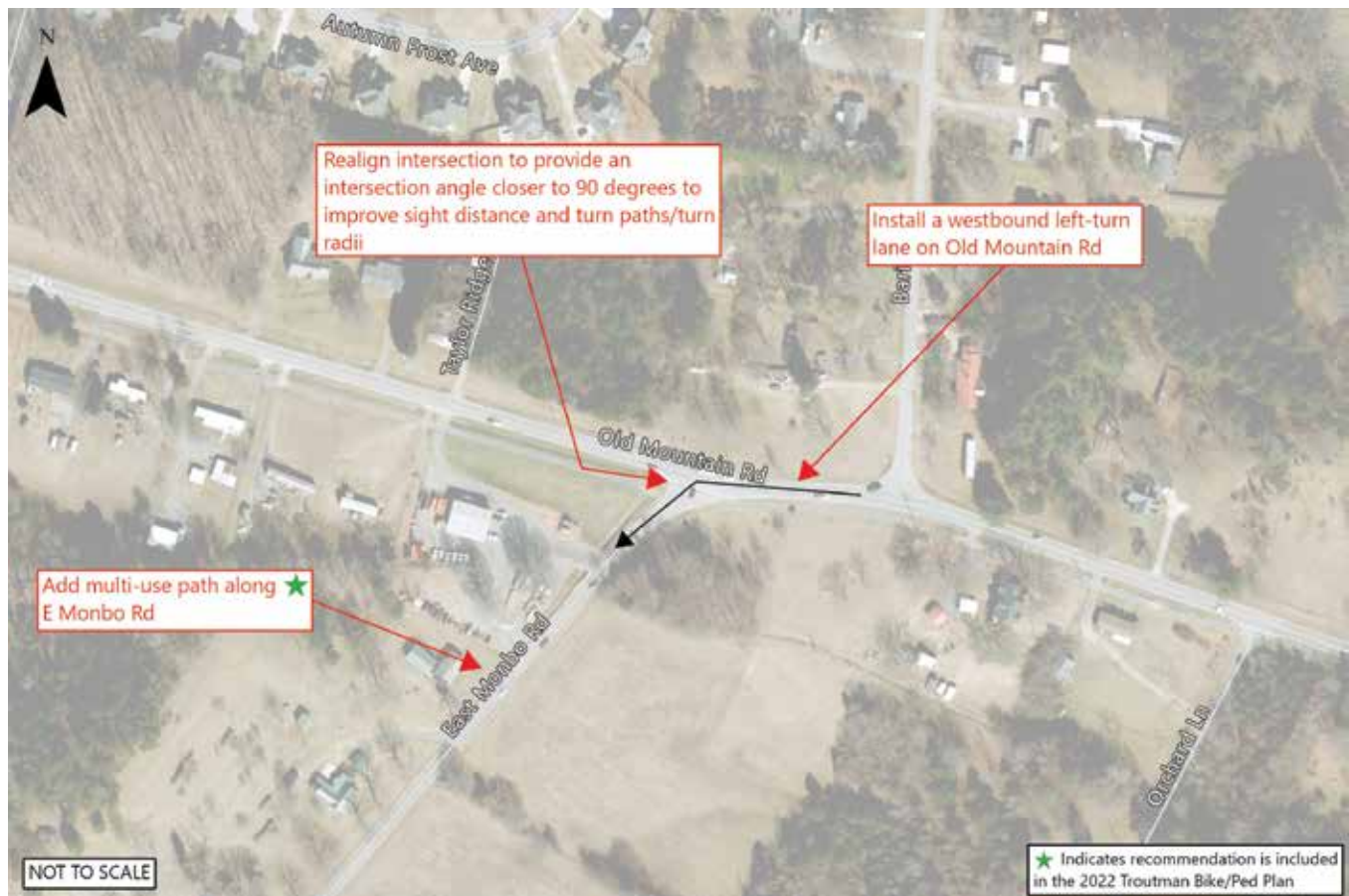


Figure 22 - Old Mountain Road / E Monbo Road

US 21 / TALLEY STREET

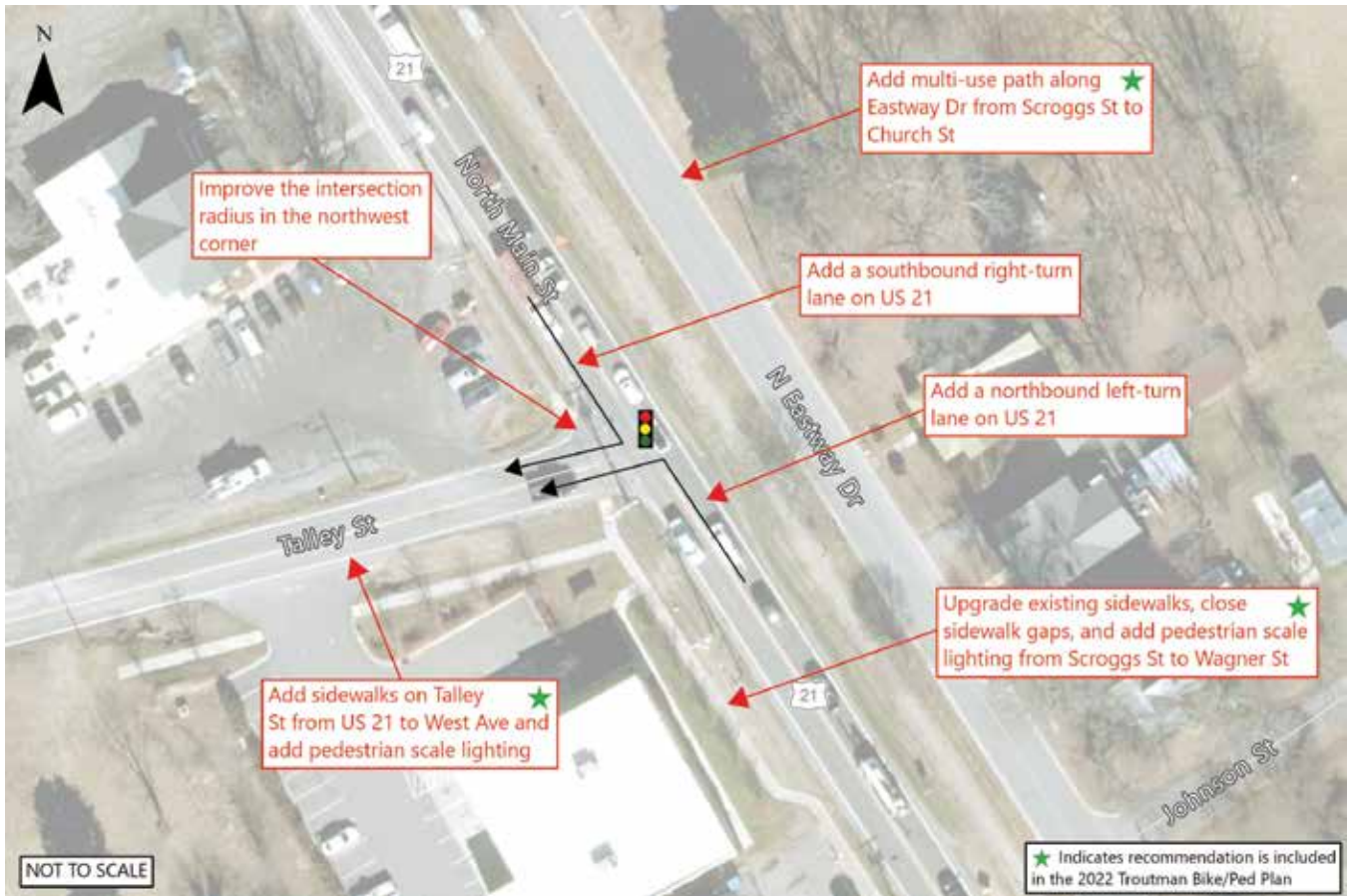


Figure 23 - US 21 / Talley Street

US 21 / AUTUMN LEAF ROAD



Figure 24 - US 21 / Autumn Leaf Road

AUTUMN LEAF ROAD / PERTH ROAD



Figure 25 - Autumn Leaf Road / Perth Road

US 21 / LEXUS DRIVE / GARDEN CENTER AVENUE

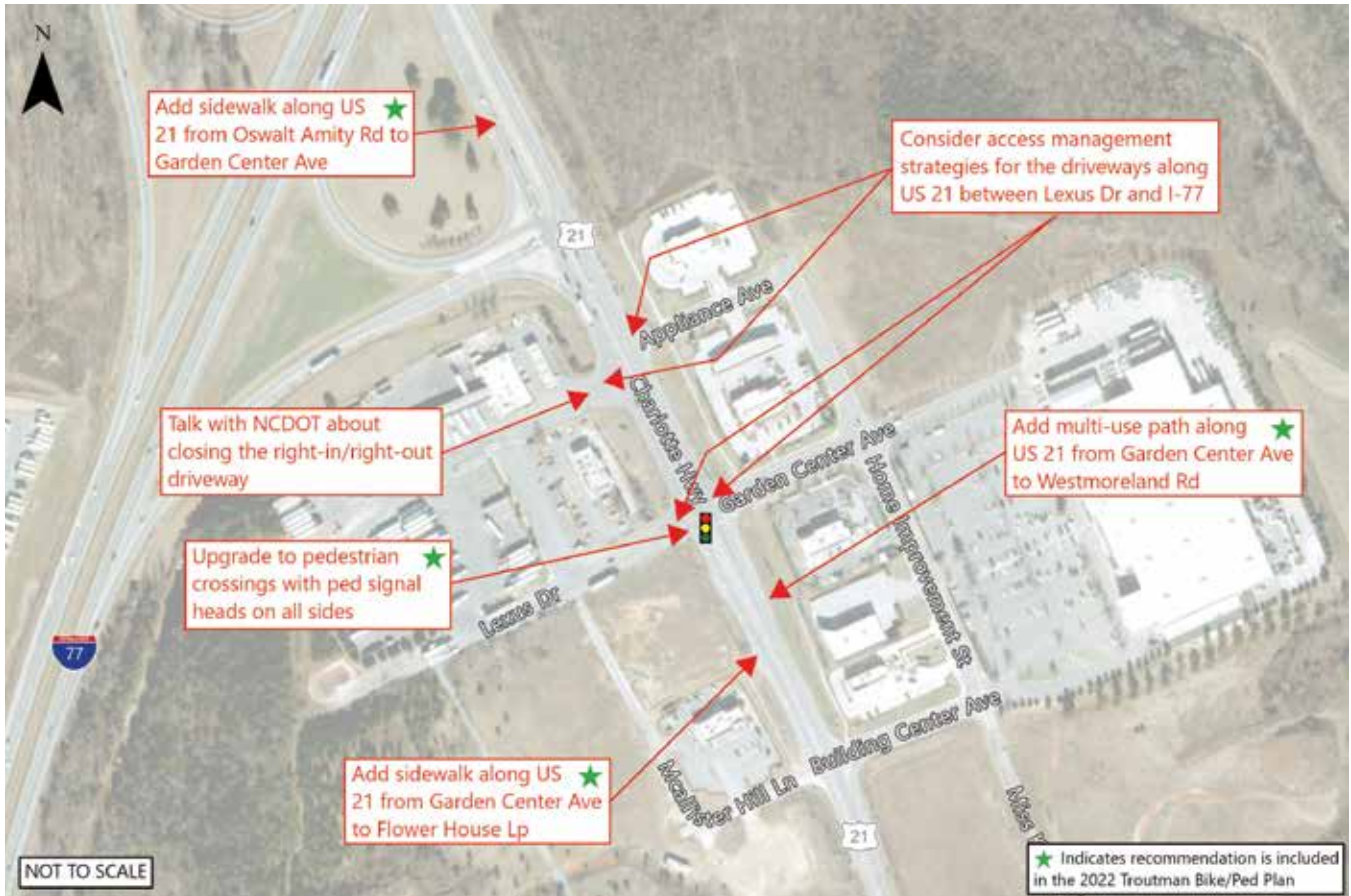


Figure 26 - US 21 / Lexus Drive /Garden Center Avenue

US 21 / RUMPLE STREET

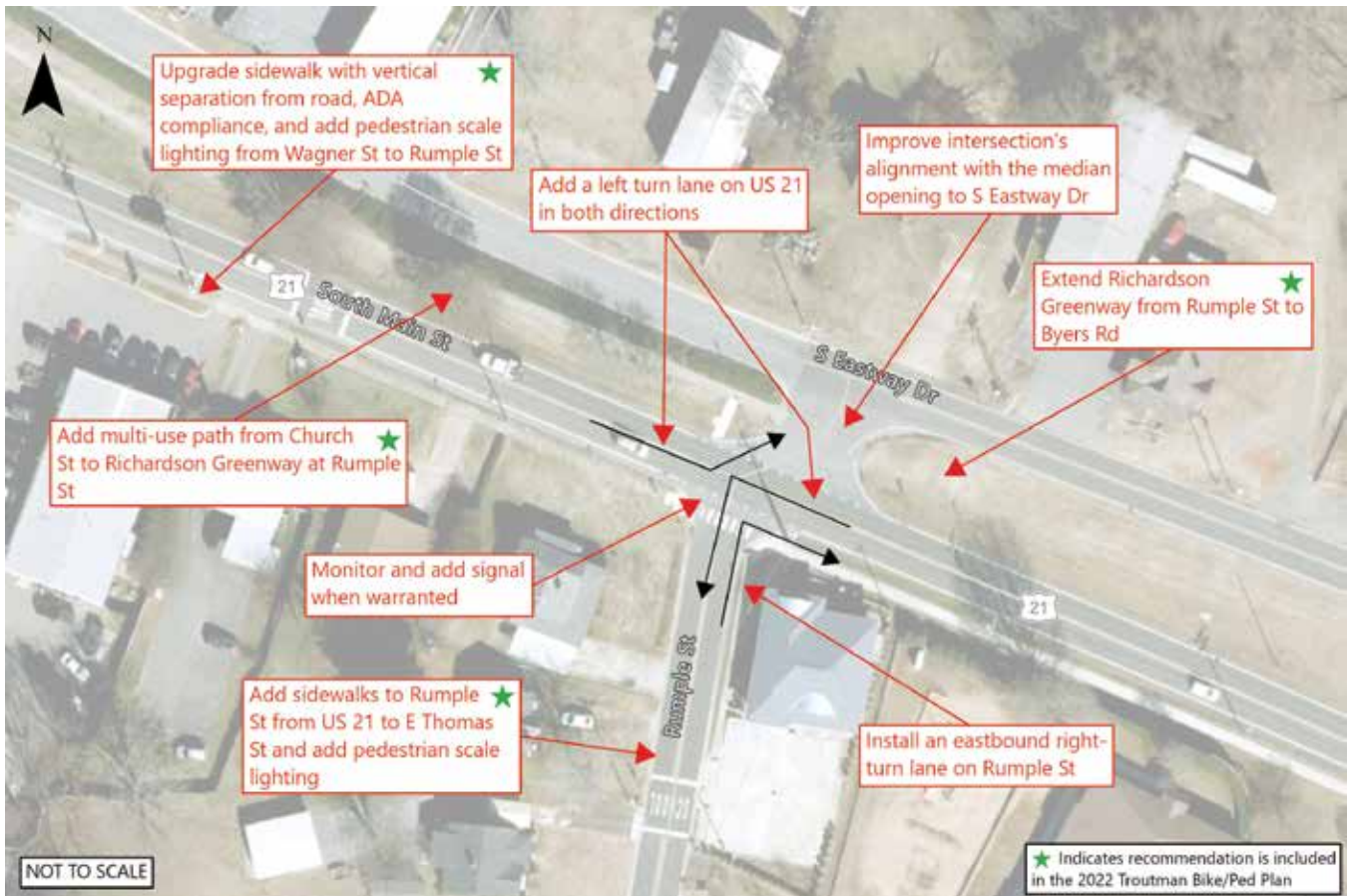


Figure 27 - US 21 / Rumples Street



General Key Intersection Recommendations

The Town should consider the following additional recommendations related to the key intersections:

- Develop a preferred design and cost estimates for all key intersection projects
 - Apply for CRTPO discretionary funds to fund development of the designs and cost estimates
 - Approve the preferred design as it is developed so it can be submitted as soon as eligible funds become available
- Reserve local funds for the required 20% match for discretionary funds
- Monitor and update the list of key intersections over time as projects are constructed by analyzing available traffic and safety data and CRTPO discretionary scoring criteria

Focus Areas

The Town, with input from the Steering Committee and key stakeholders, identified three focus areas for a more detailed study. The focus areas were selected given the recent or planned growth in traffic and changing land use and development patterns.

These areas include the following:

- Barium Springs
- Autumn Leaf Road Area
- Exit 42

For each focus area, a detailed review of existing, planned, and proposed conditions was conducted and documented on a map. Particular attention was paid to land use, environmental constraints, street network and connectivity, development activity and known development plans, and recommendations from other planning efforts. Additional strategies were also recommended for each focus area. Details and strategies for each focus area are provided below. Larger versions of each focus area map are available in **Appendix F**.

Barium Springs

The Barium Springs Focus Area aligns with the Wakefield Development recently annexed and rezoned in Town. The focus area is 774 acres and is currently undeveloped. The plan includes 2,750 residential units – a mix of traditional single family, age restricted single family, townhomes, and multi-family, along with up to 100,000 square feet of commercial and 14 acres of community amenities. **Figure 28** shows the concept plan for the development.

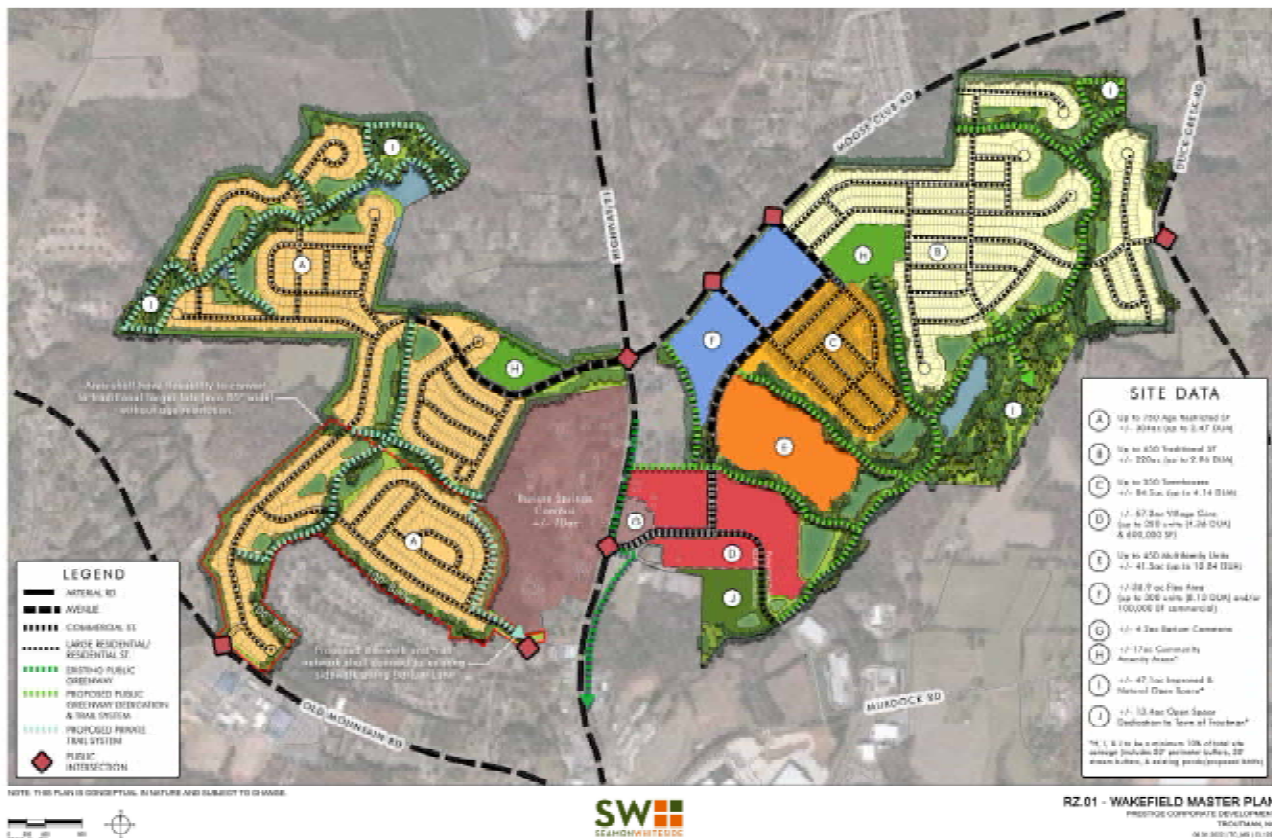


Figure 28 - Wakefield Development Concept Plan

The development will be built out over an 8–10-year time period. A phasing plan outlines when road/ intersection improvements are to be constructed and the Town is currently coordinating with the developer regarding improvements recommended in the TIA.

Because the plan was conditionally approved, the details of the development have been set and no additional strategies can be recommended within the development itself. **Figure 29** shows activity and improvements planned for the area as well as additional recommended strategies.

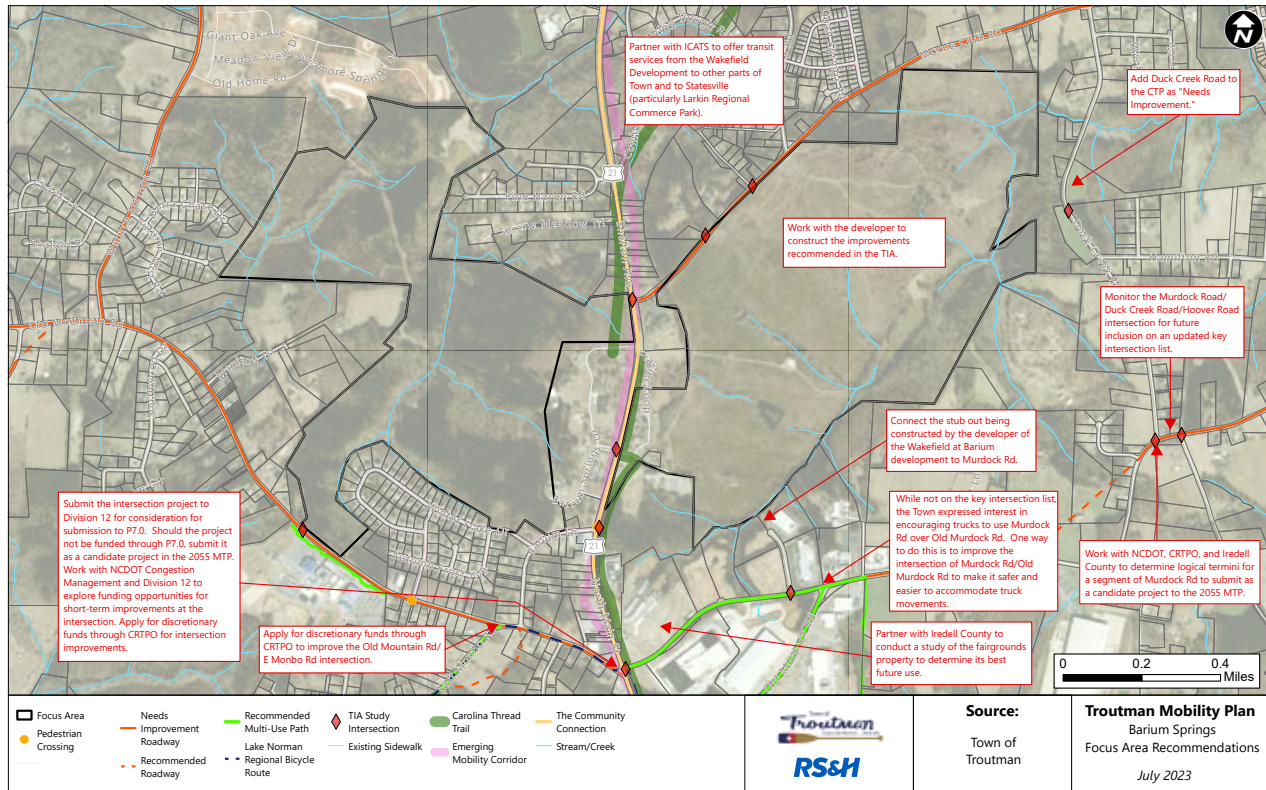


Figure 29 - Barium Springs Focus Area Recommendations

Autumn Leaf Road Area

The Autumn Leaf Road area is experiencing high residential development activity. Three residential developments are under construction (Winestone at Autumn Leaf, Calvin Creek, and Falls Cove at LNK) and two others (Rocky Creek and Rocky Creek 2) have been approved. This area is a priority area for residents as indicated by the survey results and by Town Council.

Figure 30 shows activity and improvements planned for the area as well as additional recommended strategies.

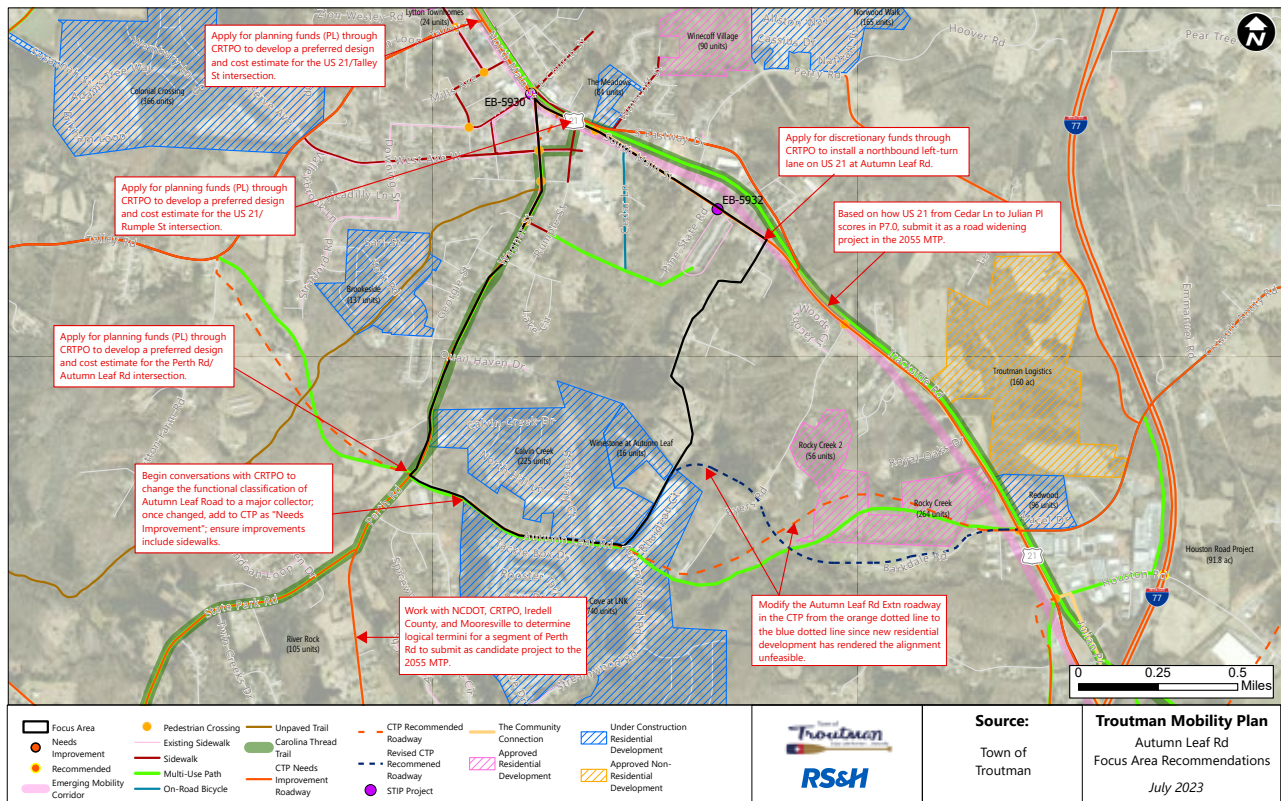


Figure 30 - Autumn Leaf Road Focus Area Recommendations

Exit 42 Area

The Exit 42 Focus Area is a key southern gateway into Troutman. The area has a concentration of highway commercial development, with additional development under construction and planned in the area. The police noted the I-77 southbound off ramp coming onto US 21/Julian Place as the top location for serious collisions in Town. This area includes the Town’s only intersection project funded in the STIP at US 21/Houston Road/Flower House Loop (R-5711).

Figure 31 shows activity and improvements planned for the area as well as additional recommended strategies.

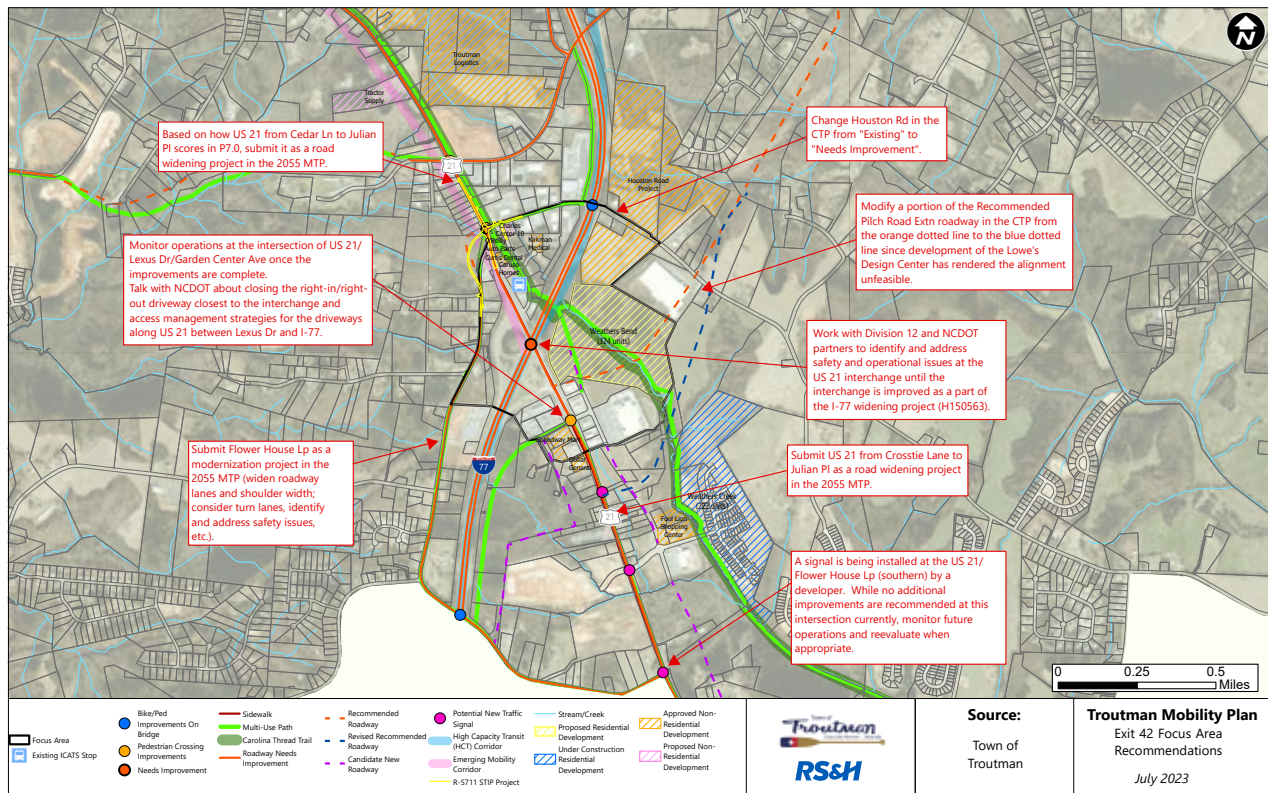


Figure 31 - Exit 42 Focus Area Recommendations

State & Regional Plan Recommendations

STIP and CRTPO MTP

The majority of an MPO's state funding is tied to committed projects that have scored well in previous planning and prioritization processes. These include projects in the first five years of the STIP (aka the delivery STIP) and those awarded funding through CRTPO's discretionary projects process. Any remaining state funding can be assigned to other projects.

NCDOT typically first looks to projects that were not committed (in the development period) or not fully funded in the STIP. These projects are considered carryover projects, are automatically reprioritized during prioritization, and do not count against an MPO or Division's total number of submittals. There were two widening projects in the planning area in the previous STIP that will be automatically reprioritized:

- R-2522: the widening of US 21/NC 115 from Cedar Ln to Barium Ln
- U-6175: the widening of Old Mountain Rd from US 21/NC 115 to Buffalo Shoals Rd

As mentioned previously, NCDOT is currently (through October 2023) accepting new project submissions for P7.O. The MPO and Division 12 have a finite number of projects they can submit and projects in Troutman are weighed against all other projects in their planning areas. The CRTPO will only be submitting projects currently in its 2050 MTP. The following projects in the planning area are being submitted by CRTPO for prioritization:

Highway

- Southwest Bypass on new alignment (new roadway) (H171427)
- US 21/NC 115 from North of Julian Pl to Cedar Ln (widening) (HO9O112-A)
- I-77 from NC 150 in Mooresville to Salisbury Rd in Statesville (widening)

Bicycle and Pedestrian

- Lake Norman State Park Multi-Use Trail Segment A (B141908)
- Carolina Thread Trail Segment Q4 (B140707)

Division 12 will consider new projects when determining which projects to submit (Division 12 can submit 14 projects in total).

The Town submitted the following projects to Division 12 for consideration:

- US 21/Old Mountain Rd/Murdock Rd (intersection improvements)
- US 21/NC 115 from Crosstie Ln to Julian Pl (widening)
- New roadway from Autumn Leaf Rd to US 21 (new roadway)
- Flower House Lp (modernization)

The Town received indication from Division 12 that it would be submitting the US 21/NC 115 from Crosstie Ln to Julian Pl project to P7.O, but the official submittal has not occurred yet. Any of the projects that are not submitted to P7.O by the Division, or do not make it as committed projects in the 2026-2035 STIP, should be submitted as candidate projects by the Town to CRTPO during development of the 2055 MTP.

As a part of the CRTPO 2055 MTP update, the Town should also work with NCDOT, CRTPO, Iredell County, and Mooresville to determine logical termini for a widening project on Perth Rd and with NCDOT and CRTPO to determine logical termini for a widening project on Murdock Rd. These projects should be submitted as candidate projects to the 2055 MTP. The Town should also work with these partners to identify and submit other candidate projects that could benefit the region. The ultimate fiscally constrained project list in the 2055 MTP will determine which projects have funding identified.

Historically intersection and modernization projects were not accepted by CRTPO for consideration in the MTP because they did not score well during the ranking process. However, the CRTPO is accepting these types of projects if they are larger in scope for the 2055 MTP update. The Town should monitor any changes to project types accepted for the 2055 MTP and adjust its candidate project submissions accordingly.

CRTPO CTP

The Steering Committee compared existing conditions data to improvements already identified in the CRTPO CTP to determine needed CTP updates. These updates are important to the Town because improvements must be reflected in the CRTPO CTP before the Town can submit them for funding through CRTPO and NCDOT. Recommended CTP amendments are as follows (and shown in **Figure 32**):

- Modify the Autumn Leaf Road alignment
- Modify the recommended Pilch Road Extn alignment
- Change Duck Creek Road from existing to needs improvement
- Change Houston Road from existing to needs improvement
- Remove the recommended I-77/Houston Road interchange

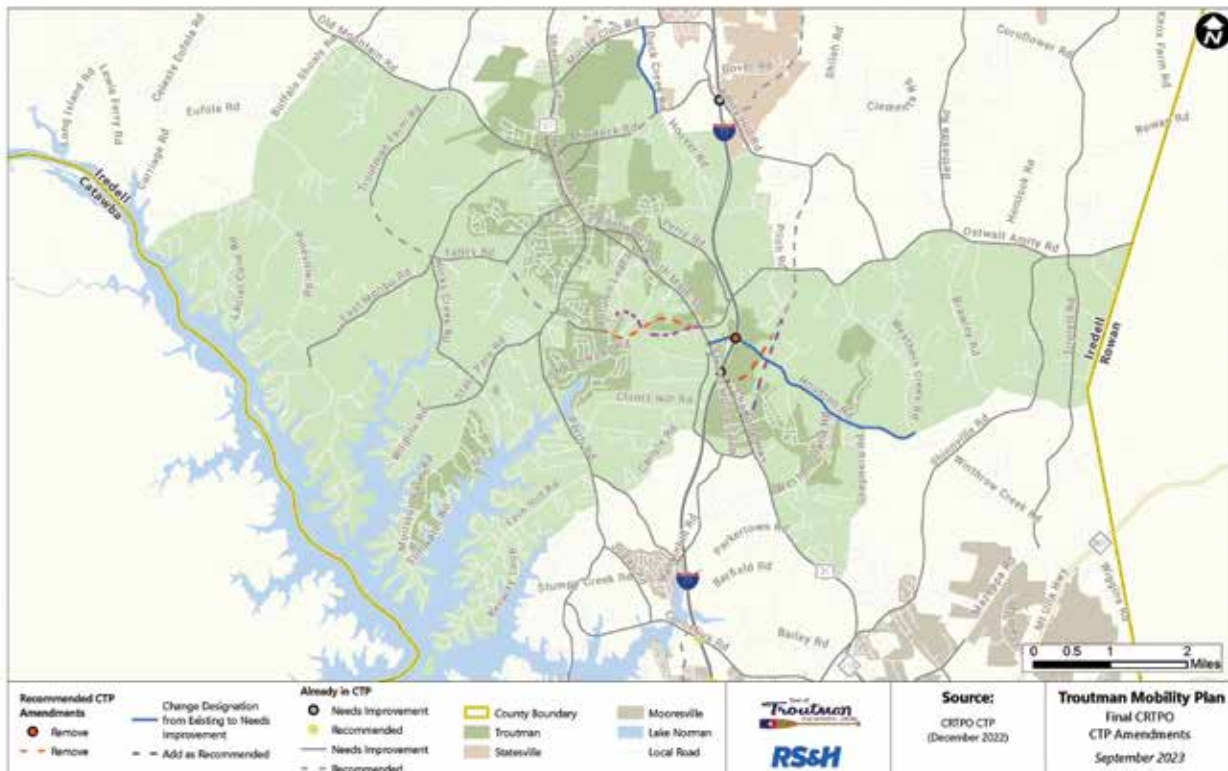


Figure 32 - CRTPO CTP Amendments

In the short-term, for an intersection to be submitted to the 2055 MTP at least one of the cross streets must be identified as 'needs improvement' on the CTP highway map. In the future, the CRTPO will be adding intersections to the CTP highway map. The Town should add all key intersections from this plan to the CTP as well as continue to monitor the intersections that were removed from this plan during the screening process to determine if they elevate in priority.

Local roads are not eligible for state or federal funding. As a result, the Town should begin conversations to change the functional classification of Autumn Leaf Road and Westmoreland Road. Details on how to request revisions to the functional classification are included in **Appendix C**. Once these roads become state roads, the Town should request that they be added to the CTP as 'needs improvement.'

The Town reviewed the CRTPO CTP Amendment Guidelines prior to holding its second round of public involvement to ensure the public

involvement for the Mobility Plan would satisfy CRTPO CTP public involvement requirements. The public was given an opportunity to comment on all proposed CTP amendments. In order for the recommended CTP amendments to get incorporated into the CRTPO CTP, the Town should present the amendments to the CRTPO Technical Coordinating Committee (TCC) for a recommendation to approve and the CRTPO Board for approval.

Once the CTP is updated, the Town should use it to inform local land use decision-making and transportation planning initiatives and to communicate transportation expectations with residents, developments, and NCDOT. Town Planning Staff and Town Council should review the CTP prior to approving new development to ensure preservation of corridors for planned future roadways.

Other Recommendations

Recommendations for key intersections, focus areas, and state and regional plans are documented in the previous sections. Below are some additional recommendations for the Town to successfully achieve its desired mobility vision.

- Update the 2035 Comprehensive Land Use Plan (adopted May 2015)
- Actively participate on the SEAM Trail Core Project Team
- Take advantage of technical assistance programs and other resources offered through the MPO such as the traffic data program, alignment evaluation program, and cost estimating tools
- Coordinate with ICATS once their plan is finalized and update the Mobility Plan if needed
- Regularly coordinate with the NCDOT Division 12 Engineer to discuss needed improvements and funding opportunities
- Develop TIA guidelines that outline what the Town wants to see as far as improvements from developers in their jurisdictional boundaries (see **Appendix G** for resources and best practice ideas)
- Identify projects for IIJA grants, evaluate project competitiveness, and apply for appropriate grants
- Stay up to date on alternative funding discussions and consider viable options as they are identified to fund needed transportation projects



Funding

The majority of road infrastructure, in the planning area and state as a whole, is owned and maintained by the state. Due to a number of factors including increased project costs and project complexity, natural disasters, and changing revenue streams, the state has experienced funding challenges. These funding challenges have delayed planned projects and limited the submission of new projects for consideration. Troutman has not been immune, as two needed widening projects in Town have been delayed.

Despite these challenges, state and federal funds remain the largest and most common funding source for transportation infrastructure improvements, specifically roadway projects. There are other funding sources available, but these funds are limited and very competitive.

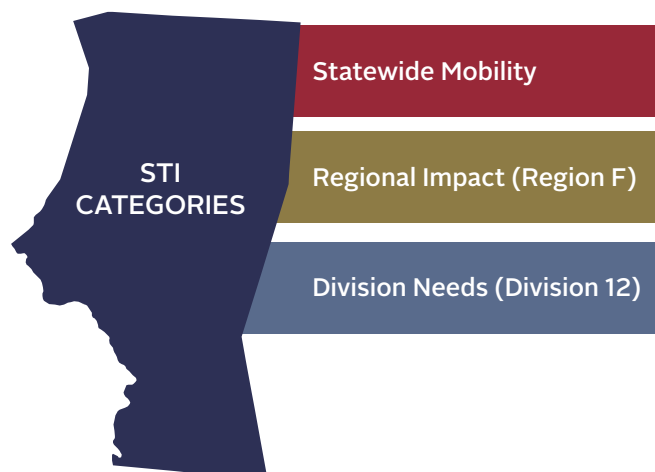
The funding sources available to the Town, what they can be used for, and how they are administered are detailed below.

Roadway Projects

STATE AND FEDERAL FUNDS

In North Carolina, funds for roadway projects are allocated through a quantitative process called Strategic Transportation Investments (STI). The process is a collaborative effort between NCDOT and the state's MPOs. Funds are allocated in three categories based on geography:

- Statewide Mobility (**40** percent of available funds)
- Regional Impact (**30** percent of available funds)
- Division Needs (**30** percent of available funds)



Troutman falls into the following geographies for the distribution of STI funds: Statewide Mobility, Region F, and Division 12. While the Statewide Mobility category is 100% quantitative/data-driven, Division 12 and CRTPO assign local input points to projects in the Regional Impact and Division Needs categories which can influence how those projects score.

There are two significant planning processes that determine how the STI funds are allocated: NCDOT Prioritization (SPOT) and the CRTPO MTP.

NCDOT Prioritization (SPOT)

NCDOT conducts the Prioritization (SPOT) process approximately every two years. The SPOT process is used to develop the State Transportation Improvement Program (STIP) which identifies transportation projects that will receive funding over a 10-year period.

The current cycle to update the STIP for the years 2026-2035 is Prioritization 7.0 or P7.0.

CRTPO MTP

The CRTPO MTP is updated every four years. As a part of the update, CRTPO anticipates how much STI roadway project funding will be available to the MPO and issues a call for projects from jurisdictions within its planning area. Using an adopted project ranking methodology with similar criteria as the NCDOT SPOT process, CRTPO scores and programs MTP projects based on anticipated available funding.

The highest scoring projects make it into the fiscally constrained project list.

MTP projects are eligible to be submitted for SPOT consideration. The call for P7.0 project submittals occurred before the adoption of the 2055 MTP, but any projects in the 2055 MTP fiscally constrained project list will be eligible for submission to P8.0 (years 2027-2036).

Other Funding Sources

Federal Discretionary Funds

Another source of funding for roadway projects is federal discretionary funds including the following:

- Surface Transportation Block Grant – Direct Attributable (STBG-DA)
- Congestion Mitigation and Air Quality (CMAQ)
- Transportation Alternatives Program (TAP)
- Bonus Allocation (BA)

Certain federal discretionary funds, like CMAQ, have specific requirements for which the funding can be used. These funds must be used for projects that demonstrate improvements to air quality through reduced congestion and increased multimodal transportation options. Other discretionary funds, like STBG-DA, are more flexible and can be used on a wide variety of transportation improvement projects.

Federal discretionary funds are administered through CRTPO. CRTPO established a Project Oversight Committee (POC) to monitor and recommend the allocation of discretionary funds and has a Discretionary Projects Policy in place to solicit eligible projects, evaluate projects, and allocate funds. CRTPO issues a call for projects (highway, intersection, transit, bicycle, and pedestrian) annually. A 20% match is required by the local jurisdiction and federal guidelines apply.

The amount of federal discretionary funds available through CRTPO varies from year to year.

State Discretionary Funds

State discretionary funds are an additional funding source for roadway projects and include the following:

- Spot Mobility and Safety
- Highway Safety Improvement Program (HSIP)
- High Impact/Low Cost
- Small Construction
- State Contingency

These funds are limited and highly competitive. NCDOT has processes and procedures in place to select, prioritize, and award these funds. To be considered, requests must be made to the NCDOT Division office (Division 12 for Troutman). The Division office then evaluates the type of improvement requested and determines the funding type most appropriate based on the project's purpose and need (i.e. safety or capacity). Projects are considered on a case-by-case basis.

Infrastructure Investment & Jobs Act (IIJA)

The IIJA provides approximately \$350 billion for Federal highway programs over a five-year period from fiscal years 2022 through 2026. Most of this funding is apportioned to states based on formulas specified in Federal law. However, the IIJA also provides funding through a wide range of competitive grant programs. Local governments are eligible applicants for the majority of these programs.

A complete listing of these programs can be found on the United States Department of Transportation (USDOT) website ([BIL Grant Programs](#)).

Alternative Funds

Several recently completed initiatives at the state and regional level, including the CRTPO 2050 MTP, Beyond 77 study, NC First Commission, Charlotte Moves, and CONNECT Beyond Mobility Plan have identified potential alternative funding sources for the region to explore. CRTPO is currently working to advance the recommendations and details of the next steps on alternative funding solutions. This work could produce funding options for the Town to consider to help fund projects identified in this plan.

Planning Funds

Planning Funds, also known as PL or PL 104 (f) funds are federal funds provided to MPOs to carry out eligible transportation planning activities documented in the MPO's work program; the funds are not eligible for right-of-way or construction costs. NCDOT allocates funds to MPOs based on a formula approved by the North Carolina Board of Transportation (BOT) and the Federal Highway Administration (FHWA). Each fiscal year, CRTPO provides an opportunity for member jurisdictions to request the use of these funds for transportation planning studies. A 20% match is required by the local jurisdiction and federal guidelines apply. Troutman received PL funds to complete this Mobility Plan.

Local Funds

Local funds, set aside by individual counties or municipalities, can be used to fund transportation improvements. An example of local funds could be a bond referendum.

Local funds are also often used to provide the required local match for projects using federal funds.

Bicycle and Pedestrian Projects

Many of the funding sources noted above can also be used to fund bicycle and pedestrian infrastructure.

Bicycle and pedestrian infrastructure can be funded as part of larger roadway projects using state and federal funds. NCDOT's Complete Streets Policy requires consideration and incorporation of different modes when constructing transportation projects. NCDOT considers the CRTPO CTP and other adopted plans (like this one) when identifying non-motorized facilities to be evaluated as part of a roadway project. NCDOT enters into maintenance

agreements with local municipalities to maintain facilities once constructed.

Stand-alone bicycle and pedestrian projects are typically funded through discretionary and local funds. For federal discretionary funds, CRTPO's Discretionary Projects Policy includes a provision that 20% of all discretionary funding is directed to non-roadway projects, including bicycle and pedestrian projects. State discretionary funding is allocated on a case-by-case basis.

Other funding sources could include grants (federal, state, or non-profit) and private funds.

Transit Projects

The Federal Transit Administration (FTA) administers a funding program to allocate section 5307 funds to urbanized areas for transit capital and operating assistance, as well as transit-related planning. These funds are subject to specific federal requirements and limitations but are generally applicable for funding a variety of transit activities including operating assistance for smaller operators in urbanized areas with a population over 200,000 with less than 100 buses. Iredell County Area Transportation System (ICATS) is a small operator in Iredell County. Since Iredell County is a member of CRTPO, ICATS is eligible for these funds. The amount of funds available to ICATS is based on a suballocation formula agreed upon by transit operators in the CRTPO planning area.

FTA also offers a variety of transit grants.

Transit projects and initiatives are also eligible for federal discretionary funding allocated by CRTPO. As non-roadway projects, transit projects are eligible for a minimum of 20% of all discretionary funding.

Implementation Plan

This implementation plan summarizes all of the recommendations discussed in this plan and outlines strategies, agencies, timeframe, and resources to execute them (see **Table 6**).

Table 6: Implementation Plan

Recommendation	Recommendation Type	Resource	Timeframe	Funding Source	Agencies Involved
Submit the US 21/Old Mountain Rd/Murdock Rd intersection to Division 12 for inclusion in P7.O. Should the project not be funded through P7.O, submit it as a candidate project in the 2055 MTP. Work with NCDOT Congestion Management and Division 12 to explore funding opportunities for short-term improvements at the intersection. Apply for discretionary funds through CRTPO for intersection improvements.	Key Intersections/ Focus Areas	NCDOT Division 12 Planning Engineer CRTPO staff	short-term	federal discretionary funds state discretionary funds developer funds	Town of Troutman CRTPO NCDOT
Work with the developer to construct the improvements recommended in the Wakefield TIA, specifically associated with the US 21/Old Mountain Rd/Murdock Rd intersection.	Key Intersections/ Focus Areas	NCDOT Congestion Management NCDOT Division 12	short-term	developer funds	Town of Troutman Developer NCDOT
Coordinate with CRTPO and NCDOT Division 12 to assign the maximum number of local points possible to R-2522 (widening of US 21 from Barium Ln to Cedar Ln) during P7.O.	Key Intersections	NCDOT Division 12 Planning Engineer CRTPO staff	short-term	N/A	Town of Troutman CRTPO NCDOT
Discuss the auxiliary thru lanes with Iredell County and work with the county to ensure the US 21/Old Mountain Rd/Murdock Rd intersection recommendations are considered when the redevelopment plan for the fairgrounds property is conducted.	Key Intersections/ Focus Areas	US 21/Old Mountain Rd/Murdock Road Design	short-term	N/A	Town of Troutman Iredell County NCDOT Consultant
Submit the US 21/Old Murdock Rd intersection for discretionary funds through CRTPO. Also explore short-term funding options with Division 12 and consider using local funds for improvements shown on design plans.	Key Intersections	US 21/Old Murdock Rd Design and Cost Estimate CRTPO staff/ Discretionary Funds Policy Document	short-term	federal discretionary funds state discretionary funds local funds	Town of Troutman CRTPO

Table 6: Implementation Plan (continued)

Recommendation	Recommendation Type	Resource	Timeframe	Funding Source	Agencies Involved
Work with NCDOT to install a traffic signal at the US 21/Old Murdock Road intersection when warranted.	Key Intersections	NCDOT Division 12	long-term	state discretionary funds	NCDOT Town of Troutman
Prior to the widening of US 21, work with NCDOT to determine if a traffic signal or dual lane roundabout is the preferred treatment at US 21/Old Murdock Road.	Key Intersections	NCDOT Division 12	long-term	N/A	NCDOT Town of Troutman
Submit the US 21/Church St intersection for discretionary funds through CRTPO. Also explore short-term funding options with Division 12 and consider using local funds for improvements shown on design plans.	Key Intersections	US 21/ Church St Design	short-term	federal discretionary funds state discretionary funds local funds	Town of Troutman NCDOT
Indicate support for the peanut roundabout at the intersection of US 21 and Wagner and Church streets when the US 21 widening project is funded.	Key Intersections	NCDOT public meeting maps	long-term	STI funds	NCDOT Town of Troutman
Prioritize remaining key intersections. Develop a preferred design and cost estimate for all key intersections and approve the preferred design. Develop a schedule for submitting key intersections for CRTPO discretionary funding.	Key Intersections/ Focus Areas	CRTPO traffic data program CRTPO cost estimating tools	ongoing	federal discretionary funds local funds	Town of Troutman CRTPO
Reserve local funds for the required 20% match for discretionary funds.	Key Intersections	CRTPO Discretionary Funds Policy Document	ongoing	local funds	Town Council
Monitor and update the list of key intersections over time as projects are constructed by analyzing available traffic and safety data and CRTPO discretionary scoring criteria. Add intersections to updated CTP when appropriate.	Key Intersections	NCDOT Traffic and Safety Data CRTPO Discretionary Funds Policy Document	ongoing	N/A	Town of Troutman CRTPO
Connect the stub out being constructed by the developer of the Wakefield Development to Murdock Rd.	Focus Areas	Wakefield Development plans	mid-term	local funds	Town of Troutman

Table 6: Implementation Plan (continued)

Recommendation	Recommendation Type	Resource	Timeframe	Funding Source	Agencies Involved
Improve the intersection of Murdock Rd/ Old Murdock Rd to make it safer and easier to accommodate truck movements (add intersection to key intersection list).	Focus Areas	N/A	mid-term	federal discretionary funds state discretionary funds local funds	Town of Troutman CRTPO NCDOT
Monitor operations at the intersection of US 21/Lexus Dr/Garden Center Ave once TIA improvements are complete. Talk with NCDOT about closing the right-in/right-out driveway closest to the interchange and access management strategies for the driveways along US 21 between Lexus Dr and I-77.	Focus Areas	NCDOT Traffic and Safety Data	short-term	N/A	Town of Troutman NCDOT
Work with Division 12 and NCDOT partners to identify and address safety and operational issues at the US 21 interchange until the interchange is improved as a part of the I-77 widening project.	Focus Areas	STIP	ongoing	N/A	Town of Troutman NCDOT
Submit the US 21/NC 115 from Crosstie Ln to Julian Pl widening project to Division 12 for inclusion in P7.O. Should the project not be funded through P7.O, submit it as a candidate project in the 2055 MTP.	State and Regional Plans/Focus Areas	NCDOT Division 12 Planning Engineer CRTPO staff	short-term	STI funds	Town of Troutman CRTPO NCDOT
Submit the new roadway from Autumn Leaf Rd to US 21 to Division 12 for inclusion in P7.O. Should the project not be funded through P7.O, submit it as a candidate project in the 2055 MTP.	State and Regional Plans/Focus Areas	NCDOT Division 12 Planning Engineer CRTPO staff	short-term	STI funds	Town of Troutman CRTPO NCDOT
Submit the Flower House Lp modernization project to Division 12 for inclusion in P7.O. Should the project not be funded through P7.O, submit it as a candidate project in the 2055 MTP.	State and Regional Plans/Focus Areas	NCDOT Division 12 Planning Engineer CRTPO staff	short-term	STI funds	Town of Troutman CRTPO NCDOT
Coordinate with partners to determine logical termini for widening projects on Perth Rd and Murdock Rd and submit these projects as candidate projects to the 2055 MTP.	State and Regional Plans/Focus Areas	N/A	short-term	N/A	Town of Troutman Iredell County Mooresville CRTPO NCDOT

Table 6: Implementation Plan (continued)

Recommendation	Recommendation Type	Resource	Timeframe	Funding Source	Agencies Involved
Coordinate with partners to identify and submit candidate projects to the 2055 MTP when a call for projects is issued.	State and Regional Plans	2055 MTP materials	short-term	N/A	Town of Troutman Iredell County Mooreville Statesville NCDOT
Monitor any changes to project types accepted for the 2055 MTP and adjust candidate project submissions accordingly.	State and Regional Plans	2055 MTP materials	short-term	N/A	Town of Troutman CRTPO
Coordinate with CRTPO staff to ensure recommended CRTPO CTP amendments are approved by the Board and incorporated into the CRTPO CTP.	State and Regional Plans	CRTPO staff	short-term	N/A	Town of Troutman CRTPO
Begin conversations to change the functional classification of Autumn Leaf Road and Westmoreland Road. Once these roads become state roads, request that they be added to the CTP as 'needs improvement.'	State and Regional Plans/Focus Areas	Appendix C CRTPO staff NCDOT FHWA	short-term	N/A	Town of Troutman CRTPO NCDOT FHWA
Participate in the development of the CRTPO CTP update. Add all key intersections from this plan and any additional intersections as the list is updated.	State and Regional Plans	CRTPO staff	short-term	N/A	Town of Troutman CRTPO
Use the CTP to inform local land use decision-making and transportation planning initiatives and to communicate transportation expectations with residents, developers, and NCDOT. Review the CTP prior to approving new development to ensure preservation of corridors for planned future roadways.	State and Regional Plans	CRTPO CTP	ongoing	N/A	Town of Troutman Planning Staff and Town Council
Update the 2035 Comprehensive Land Use Plan (adopted May 2015).	Other	Land Use Plan	mid-term	local funds	Town of Troutman Consultant
Actively participate on the SEAM Trail Core Project Team.	Other	N/A	short-term	N/A	Town of Troutman CRTPO

Table 6: Implementation Plan (continued)

Recommendation	Recommendation Type	Resource	Timeframe	Funding Source	Agencies Involved
Take advantage of technical assistance programs and other resources offered through the MPO such as the traffic data program, alignment evaluation program, and cost estimating tools.	Other	CRTPO staff	ongoing	N/A	Town of Troutman CRTPO
Coordinate with ICATS once their plan is finalized and update the Mobility Plan if needed.	Other	ICATS Plan	mid-term	N/A	Town Council ICATS
Regularly coordinate with the NCDOT Division 12 Engineer to discuss needed improvements and funding opportunities.	Other	NCDOT Division 12	ongoing	N/A	Town of Troutman NCDOT
Develop TIA guidelines that outline what the Town wants to see as far as improvements from developers in their jurisdictional boundaries.	Other	Appendix G NCDOT	short-term	N/A	Town of Troutman NCDOT
Identify projects for IIJA grants, evaluate project competitiveness, and apply for appropriate grants.	Other	USDOT website	short-term	IIJA; look for match assistance from NCDOT and partners; in-kind contributions	Town of Troutman Neighboring Jurisdictions CRTPO
Stay up to date on alternative funding discussions and consider viable options as they are identified to fund needed transportation projects.	Other	CRTPO staff	ongoing	TBD	Town of Troutman CRTPO NCDOT

**short-term = <5 years, mid-term = 5-10 years, long-term = >10 years*

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Town of Troutman

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RS&H