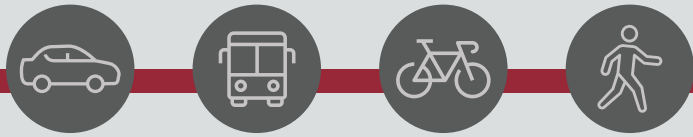




Troutman Mobility Plan



APPENDICES A - G

NOVEMBER 2023



Prepared by

RS&H



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APPENDIX:

A

Existing Conditions Maps

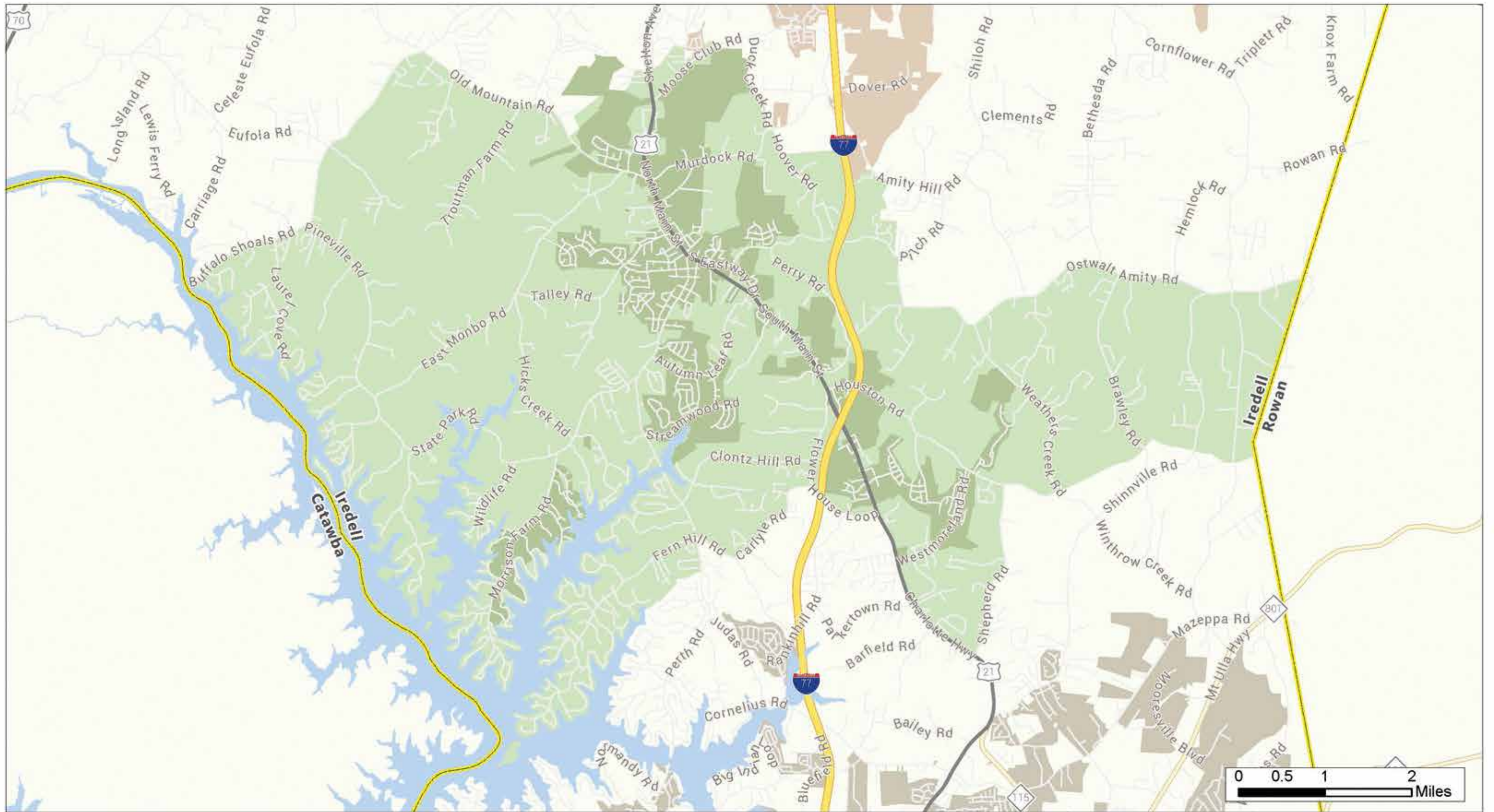


APPENDIX:

A

Existing Conditions Maps





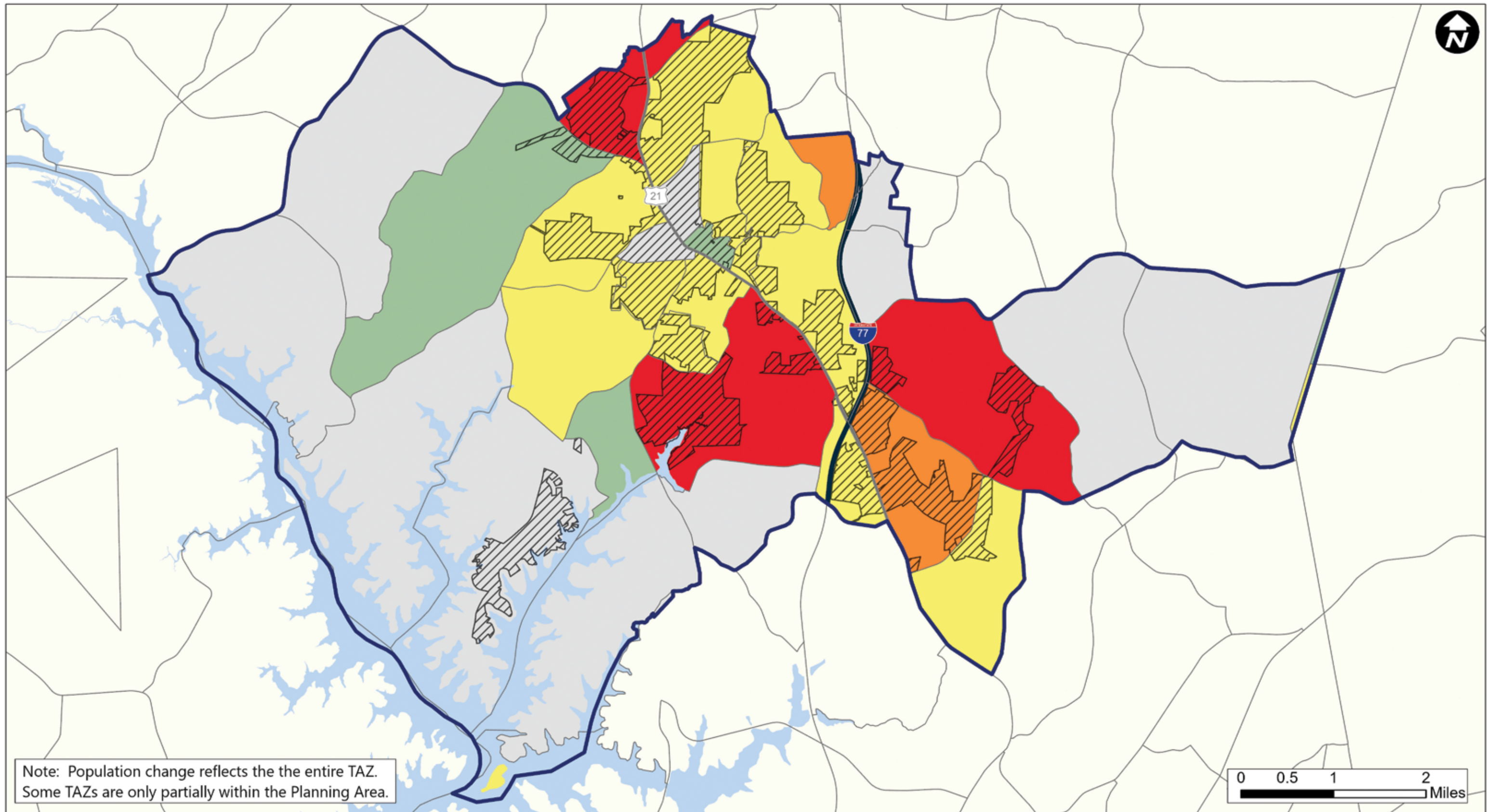
Planning Area	Lake Norman	Interstate
Troutman	County Boundary	US Route
Statesville		NC Route
Mooresville		Local Road



Source:
Town of Troutman
and NCDOT

Troutman Mobility Plan
Figure 1 - Planning Area

January 2023



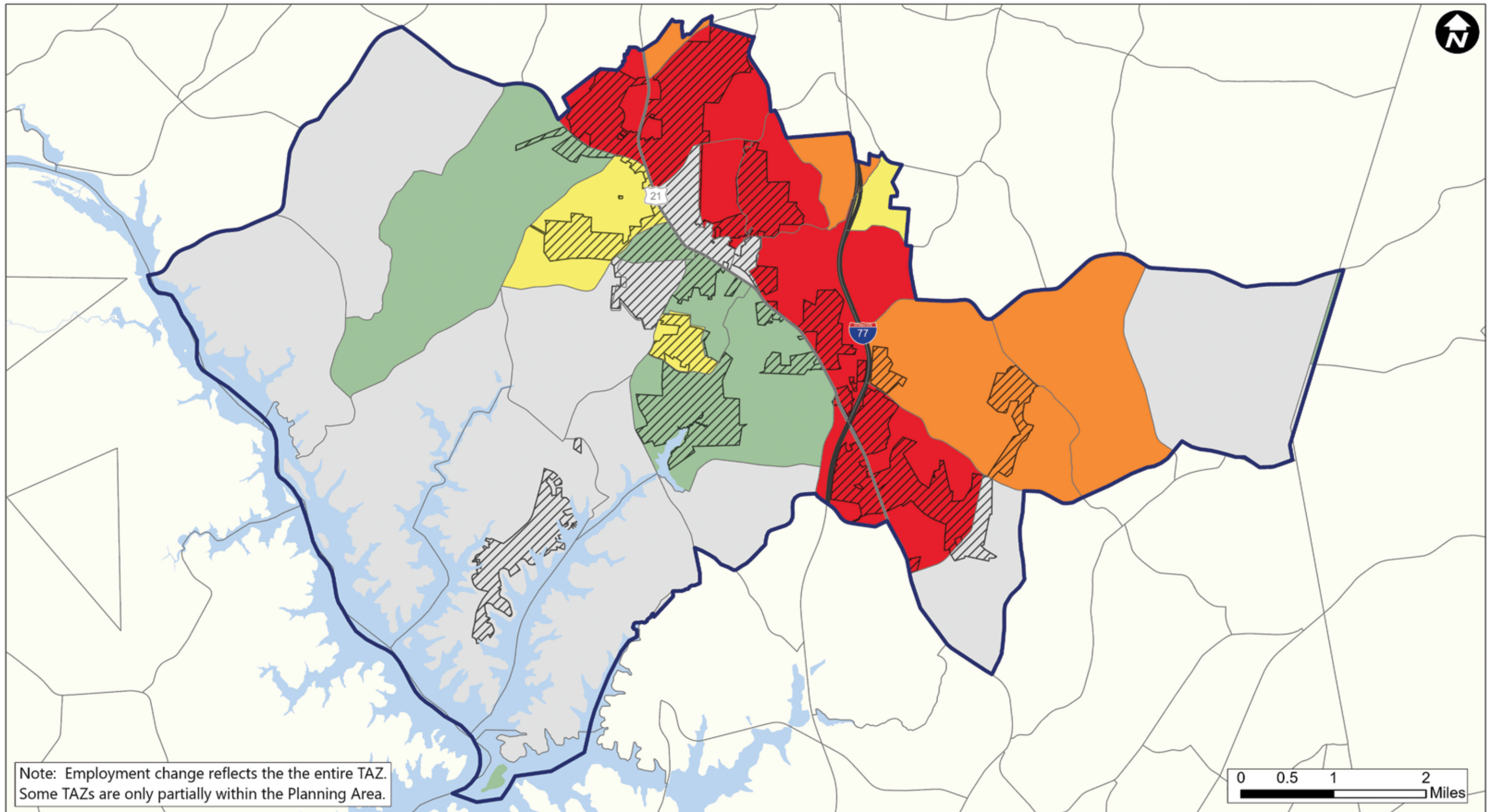
Note: Population change reflects the the entire TAZ. Some TAZs are only partially within the Planning Area.

Population Change (2018-2050) Per Traffic Analysis Zone (TAZ)	<ul style="list-style-type: none"> 101 - 500 501 - 2,000 > 2,000 0 1 - 100 	<ul style="list-style-type: none"> Planning Area Troutman Lake Norman Interstate US Route
--	--	---

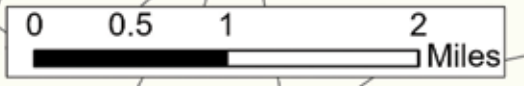



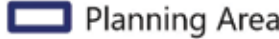

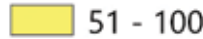






Source:
Metrolina Regional Model (MRM)

Troutman Mobility Plan
Figure 2 - 2018-2050
Population Growth
January 2023



Note: Employment change reflects the the entire TAZ. Some TAZs are only partially within the Planning Area.

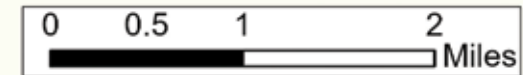
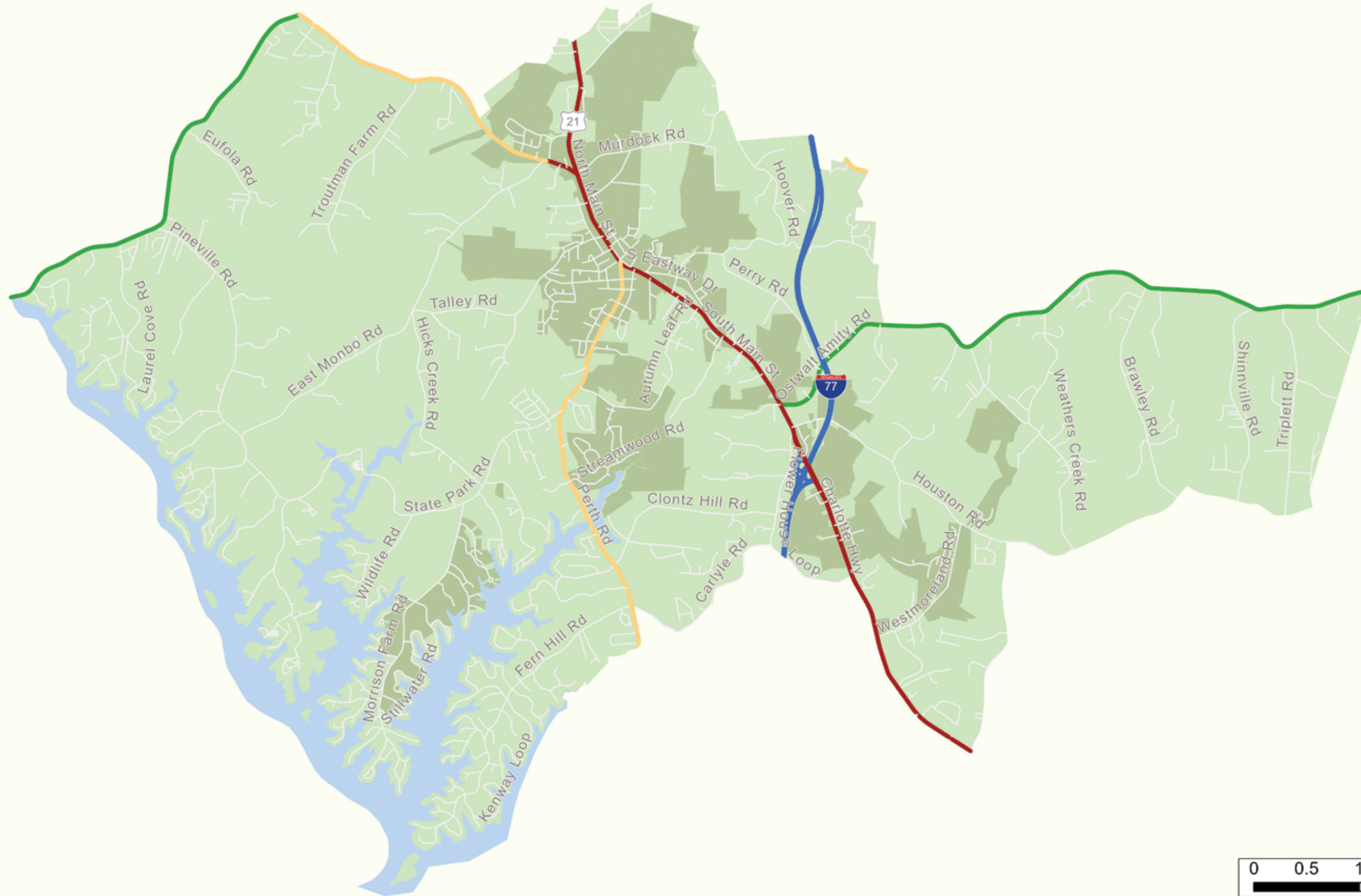


Employment Change (2018 - 2050) Per Traffic Analysis Zone (TAZ)	 1 - 50	 Planning Area	 Interstate
	 51 - 100	 Troutman	 US Route
	 101 - 500	 Lake Norman	
	 > 500		
	 0		



Source:
Metrolina Regional Model (MRM)

Troutman Mobility Plan
Figure 3 - 2018-2050
Employment Growth
January 2023



Functional Classification

- Interstate
- Minor Arterial

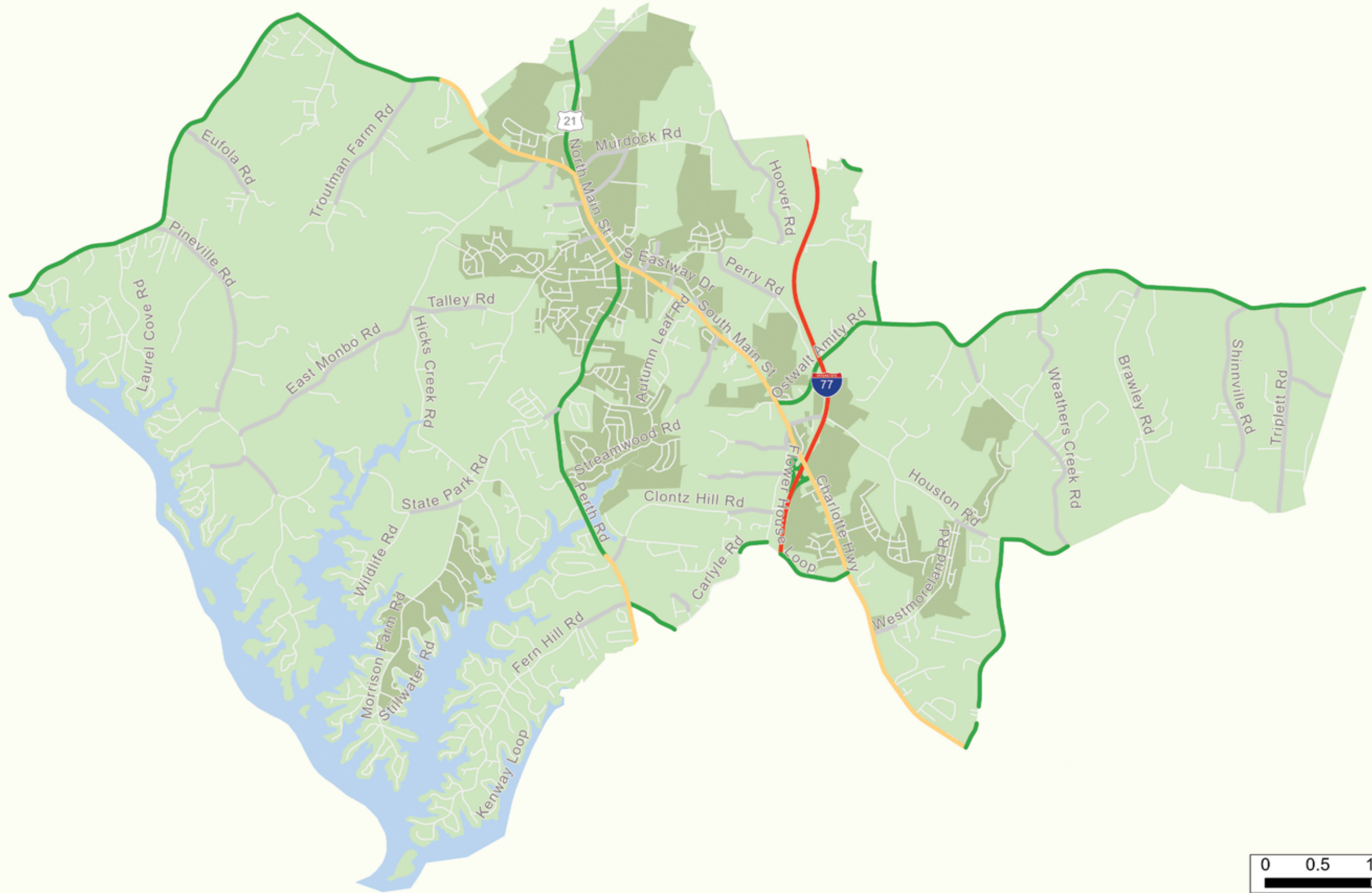
- Major Collector
- Minor Collector
- Local

- Planning Area
- Troutman
- Lake Norman



Source:
NCDOT

Troutman Mobility Plan
Figure 4 - Functional
Classification
January 2023



2019 AADT
 <5,000
 5,001 - 10,000

10,001 - 20,000
 20,001 - 50,000
 >50,000

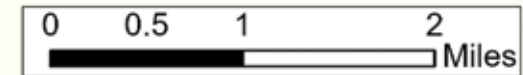
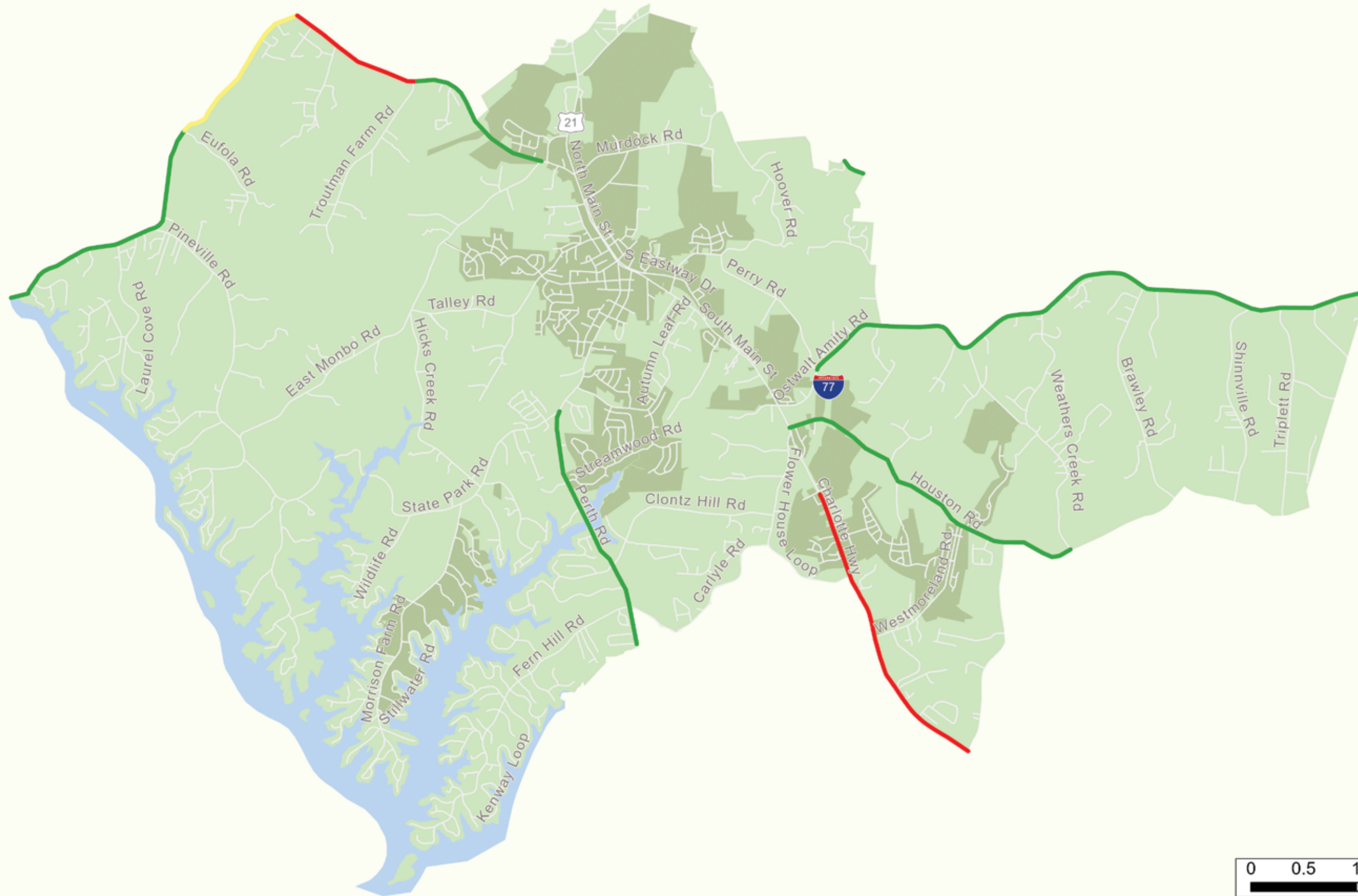
Local Road
 Planning Area
 Troutman

Lake Norman



Source:
 NCDOT

Troutman Mobility Plan
 Figure 5 - 2019 Traffic Volumes
 January 2023



2018 Volume to Capacity Ratio

- Up to 0.85
- >0.85 - 1.0
- >1.0

Local Road

- LowVCclip

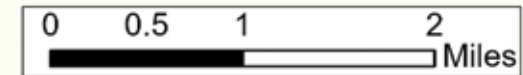
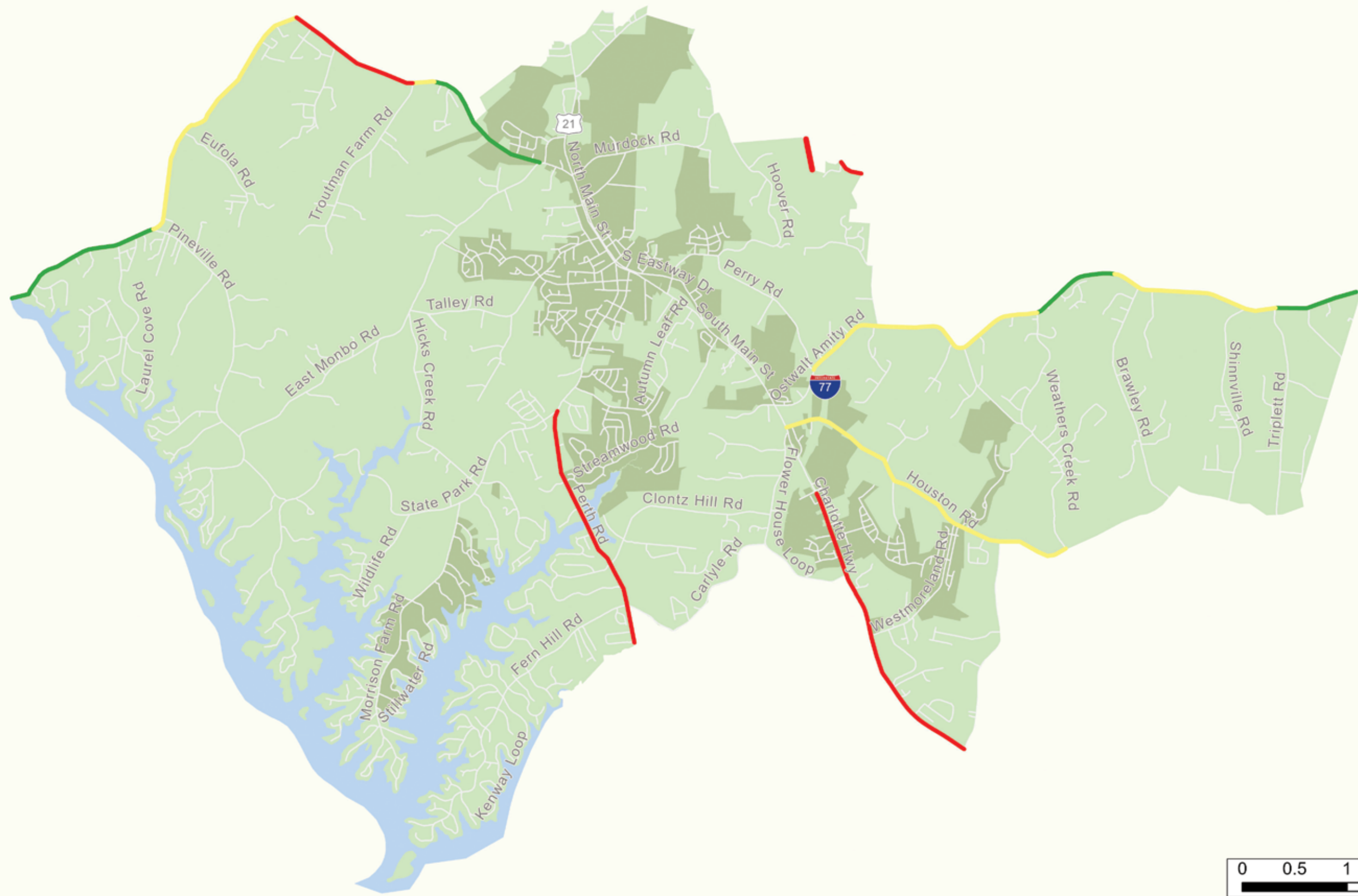
Planning Area

- Troutman
- Lake Norman



Source:
Metrolina Regional Model (MRM)

Troutman Mobility Plan
Figure 6 - 2018 Roadway Congestion
January 2023



2050 Volume to Capacity Ratio

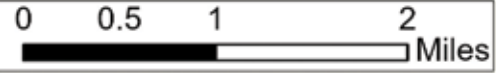
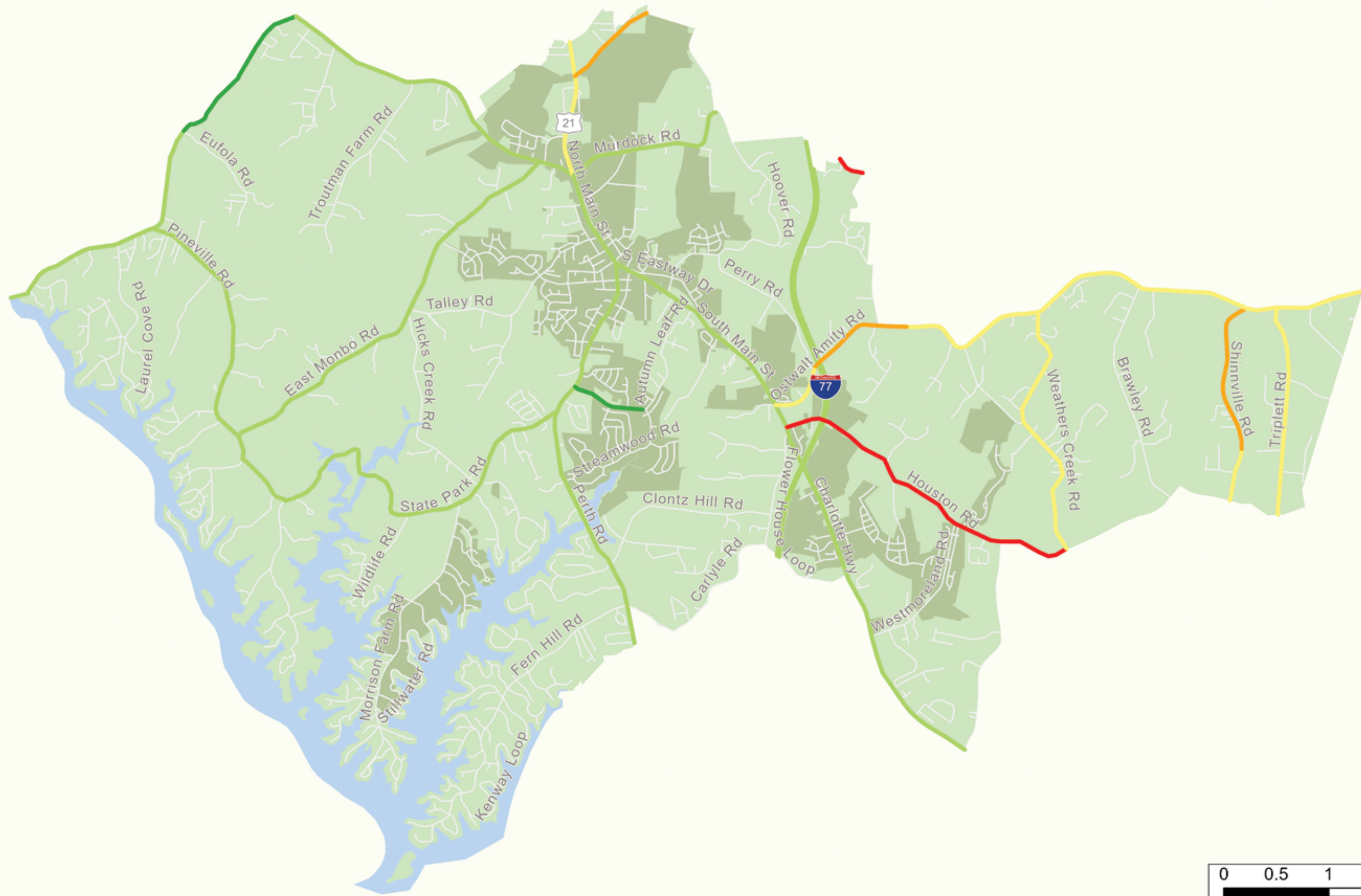
- Up to 0.85
- >0.85 to 1.0
- >1.0

Local Road
 Planning Area
 Troutman
 Lake Norman



Source:
Metrolina Regional Model (MRM)

Troutman Mobility Plan
Figure 7 - 2050 Roadway Congestion
January 2023



Annual Traffic Growth
(2018-2050)

- < 0%
- 0% - 1%

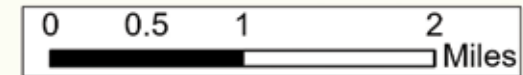
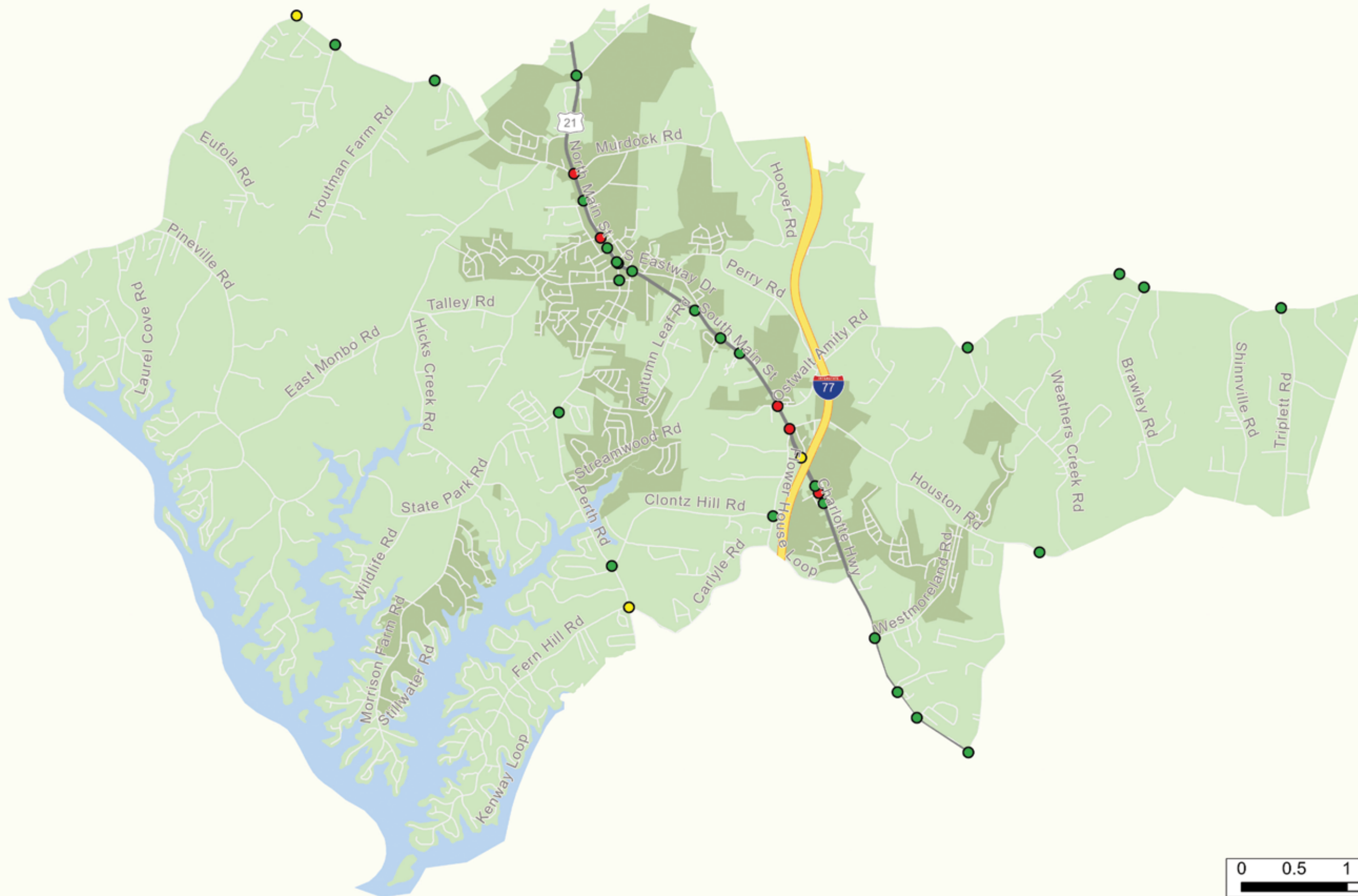
- 1% - 2%
- 2% - 3%
- > 3%

- Local Road
- Planning Area
- Troutman
- Lake Norman



Source:
Metrolina Regional Model
(MRM)

Troutman Mobility Plan
Figure 8 - 2018-2050
Annual Traffic Growth
January 2023



Number of Crashes By Intersection (2017 - 2021)

- 5-14
- 15-24
- 25 or more

- 5-14
- 15-24
- 25 or more

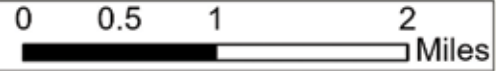
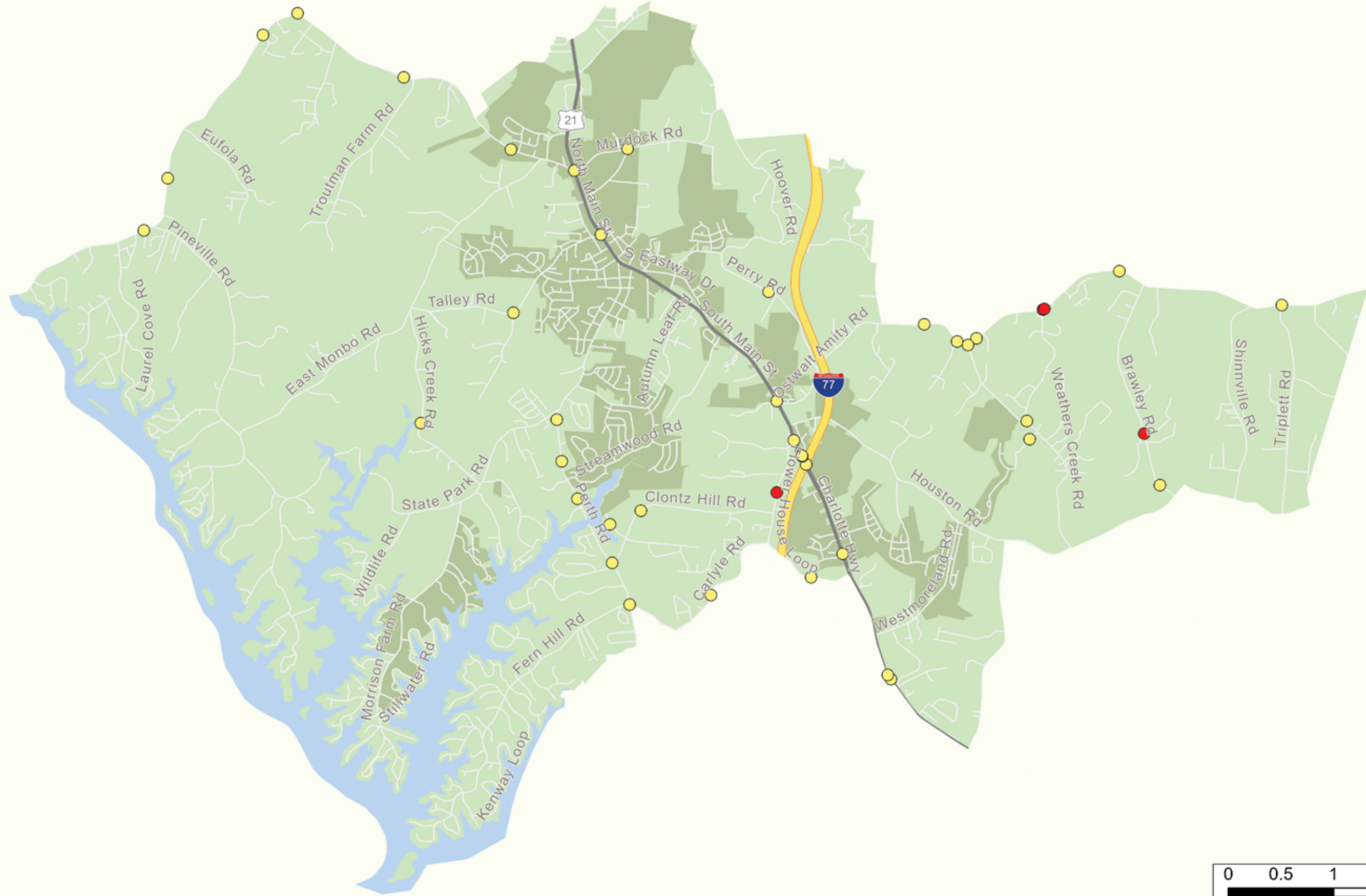
- Planning Area
- Troutman
- Lake Norman

- Interstate
- US Route
- NC Route
- Local Road



Source:
NCDOT Crash Data
(Jan 1, 2017 - Dec 31, 2021)

Troutman Mobility Plan
Figure 9 - Total Crash Frequency
By Intersection
January 2023

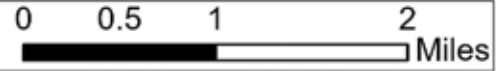
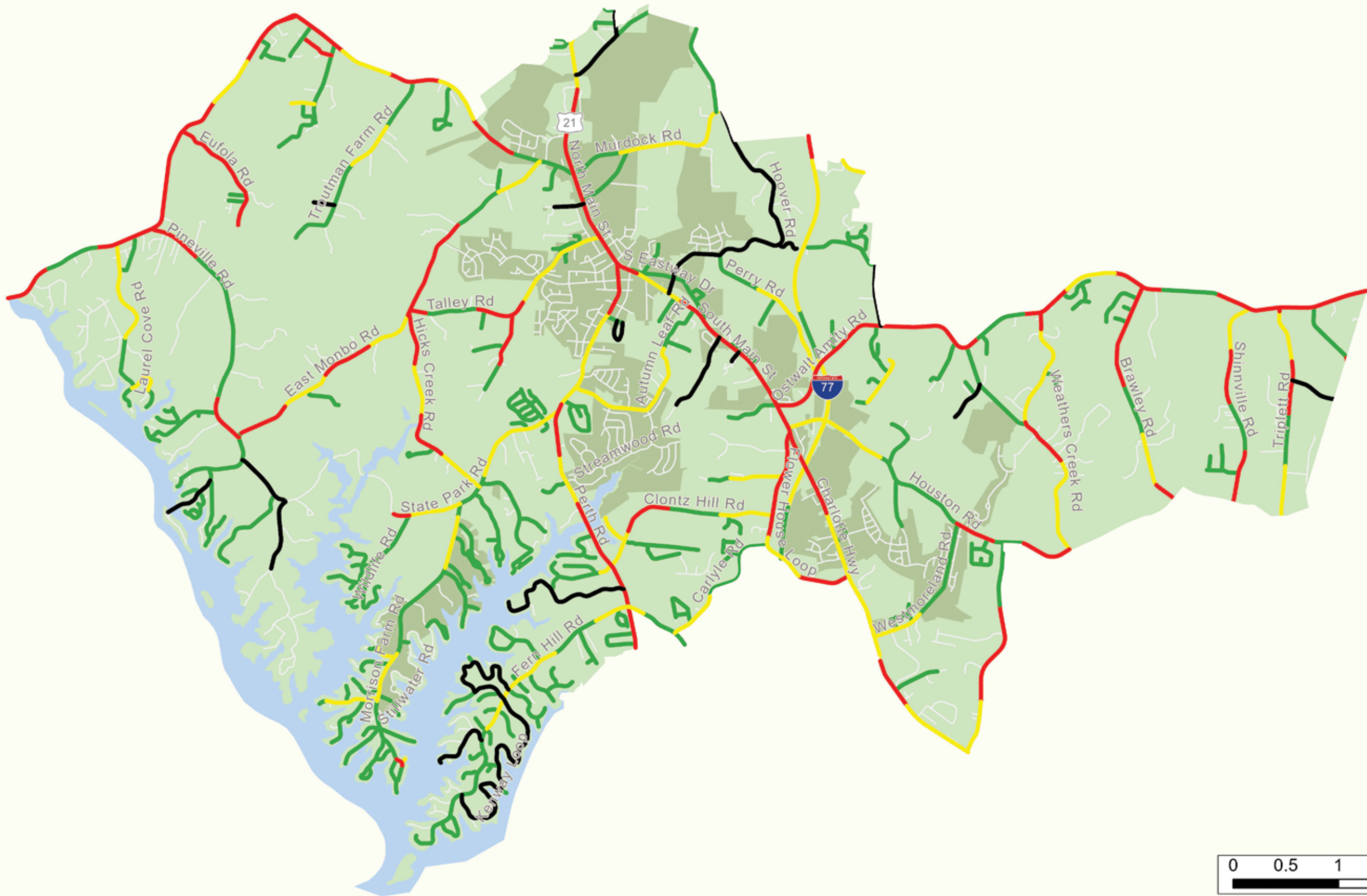


- Fatal Crash
- Serious Injury Crash
- Planning Area
- Troutman
- Lake Norman
- Interstate
- US Route
- NC Route
- Local Road



Source:
NCDOT Crash Data
(Jan 1, 2017 - Dec 31, 2021)

Troutman Mobility Plan
Figure 10 - Fatal and Serious
Injury Crashes
January 2023



Section Safety Scores (2017 - 2021)

- 0 - 33
- 33 - 66

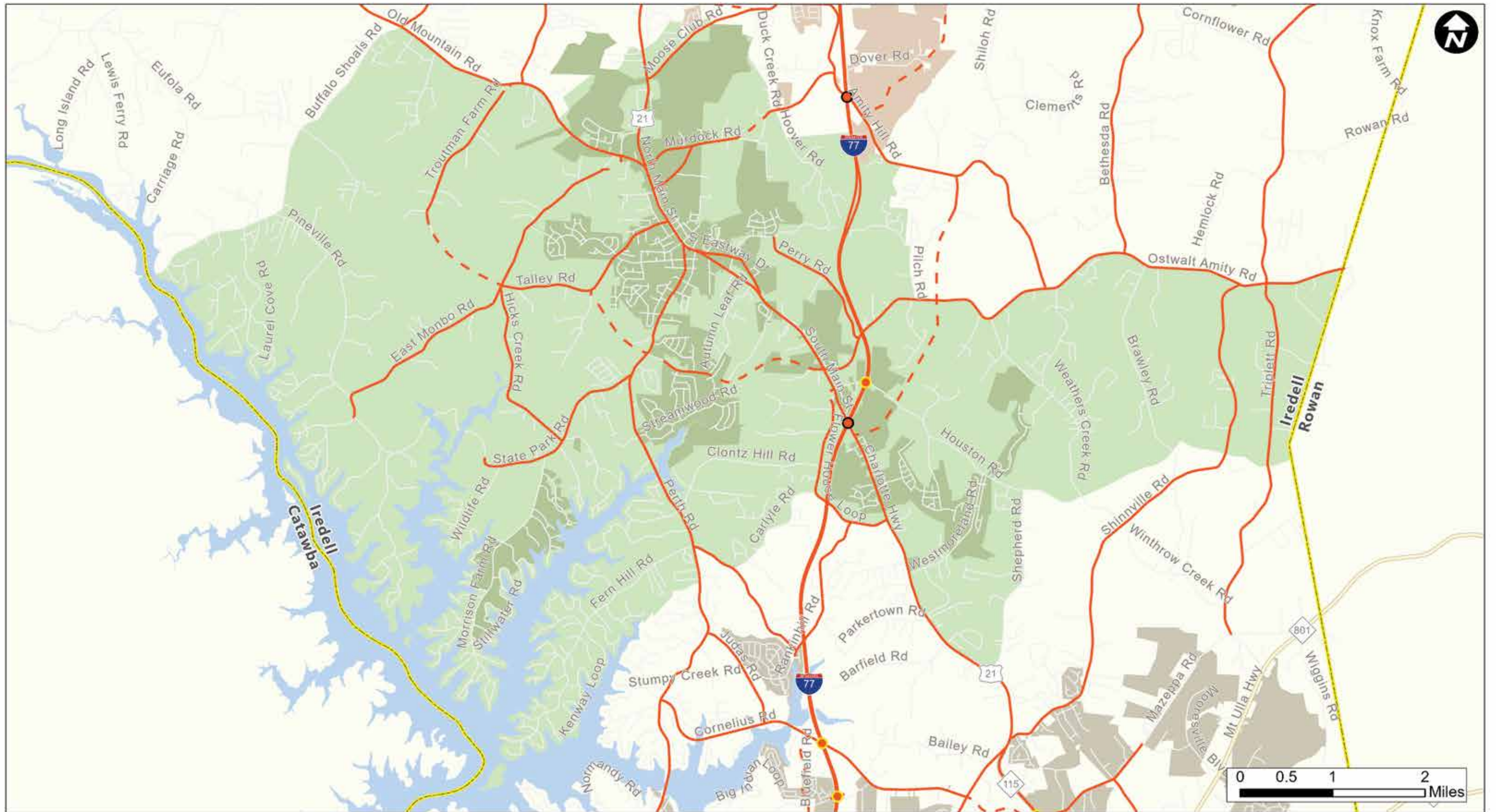
- 66 - 100
- Not Scored
- Local Road

- Planning Area
- Troutman
- Lake Norman



Source:
NCDOT Crash Data
(Jan 1, 2017 - Dec 31, 2021)

Troutman Mobility Plan
Figure 11 - Planning Level
Section Safety Scores
January 2023

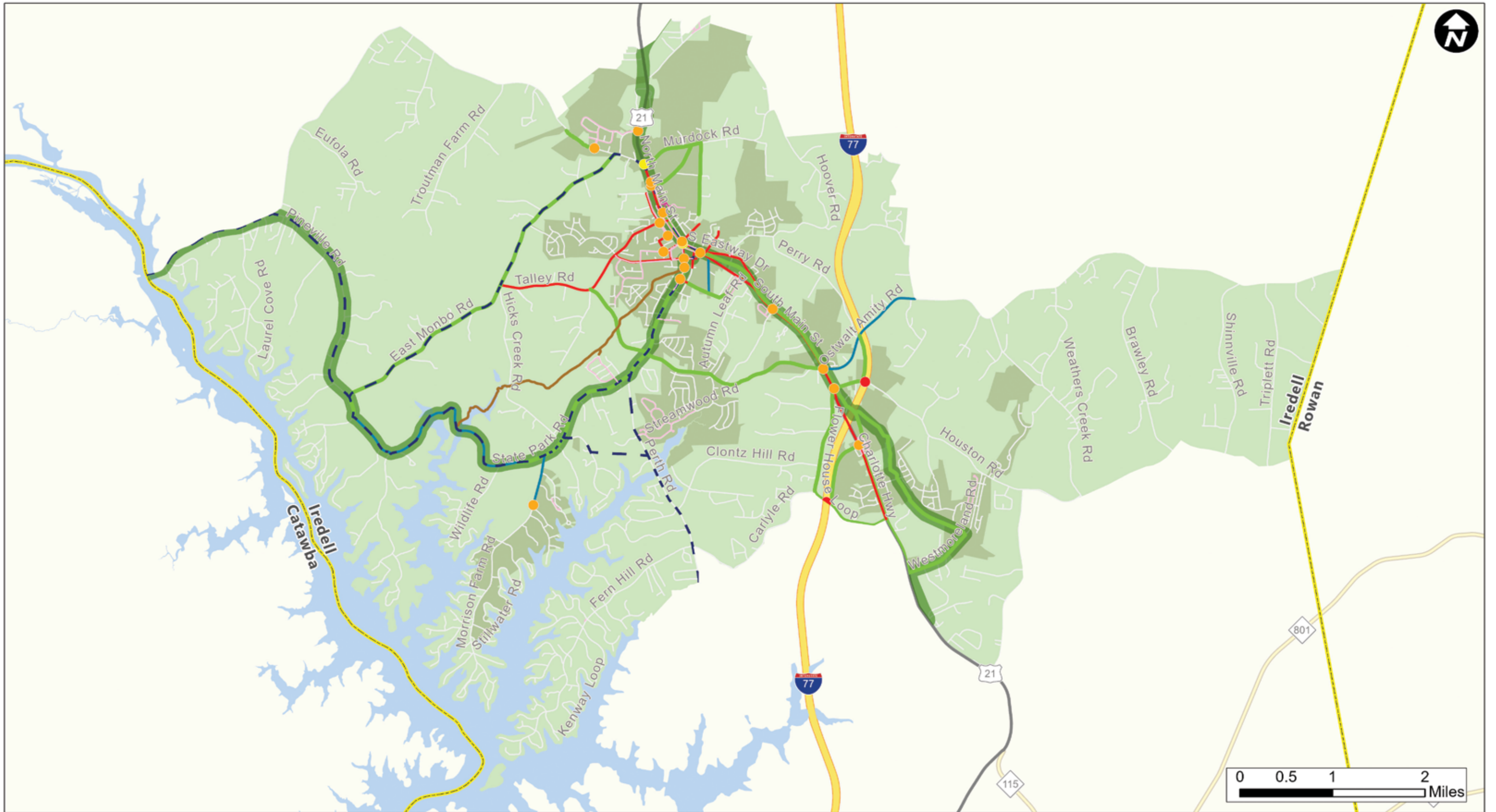


- | | | |
|---------------------|-------------------|---------------|
| ● Needs Improvement | ▭ County Boundary | ▭ Mooresville |
| ● Recommended | ▭ Planning Area | ▭ Lake Norman |
| — Needs Improvement | ▭ Troutman | ▭ Local Road |
| - - Recommended | ▭ Statesville | |



Source:
CRTPO CTP
(December 2022)

Troutman Mobility Plan
Figure 12 - CRTPO CTP
Highway
January 2023

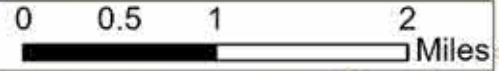
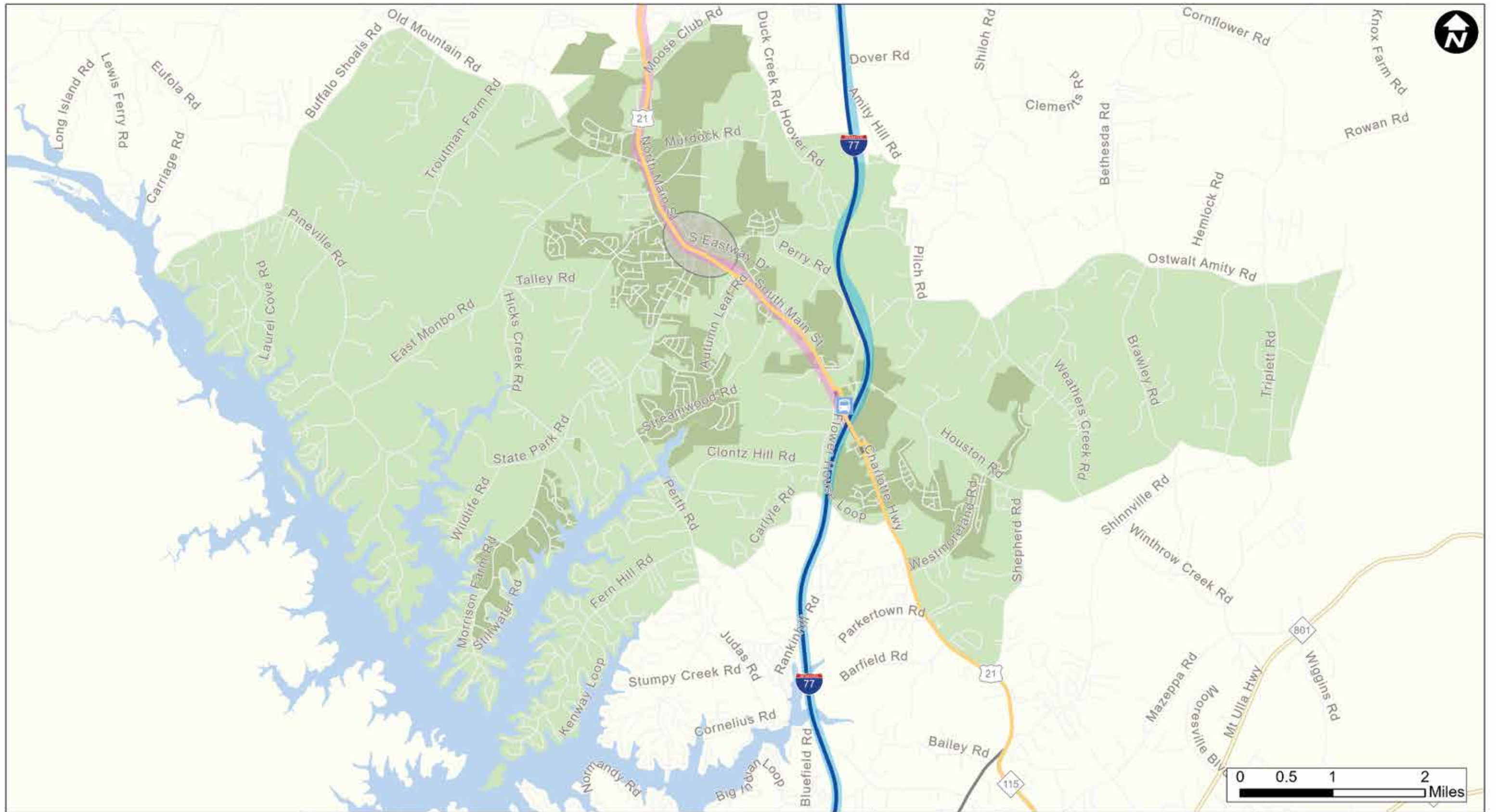


- | | | | | |
|-------------------------|--------------------------|---------------------|------------------------|-----------------------|
| Existing Sidewalk | Planned Bike/Ped Project | Pedestrian Crossing | Unpaved Trail | Carolina Thread Trail |
| Existing Multi-Use Path | Bridge Improvement | Sidewalk | Lake Norman | Planning Area |
| | Intersection Improvement | Multi-Use Path | Regional Bicycle Route | Troutman |
| | | On-Road Bicycle | | Lake Norman |



Source:
Town of Troutman
Bicycle and Pedestrian Plan

Troutman Mobility Plan
Figure 13 - Existing & Planned
Bicycle and Pedestrian
Infrastructure
January 2023

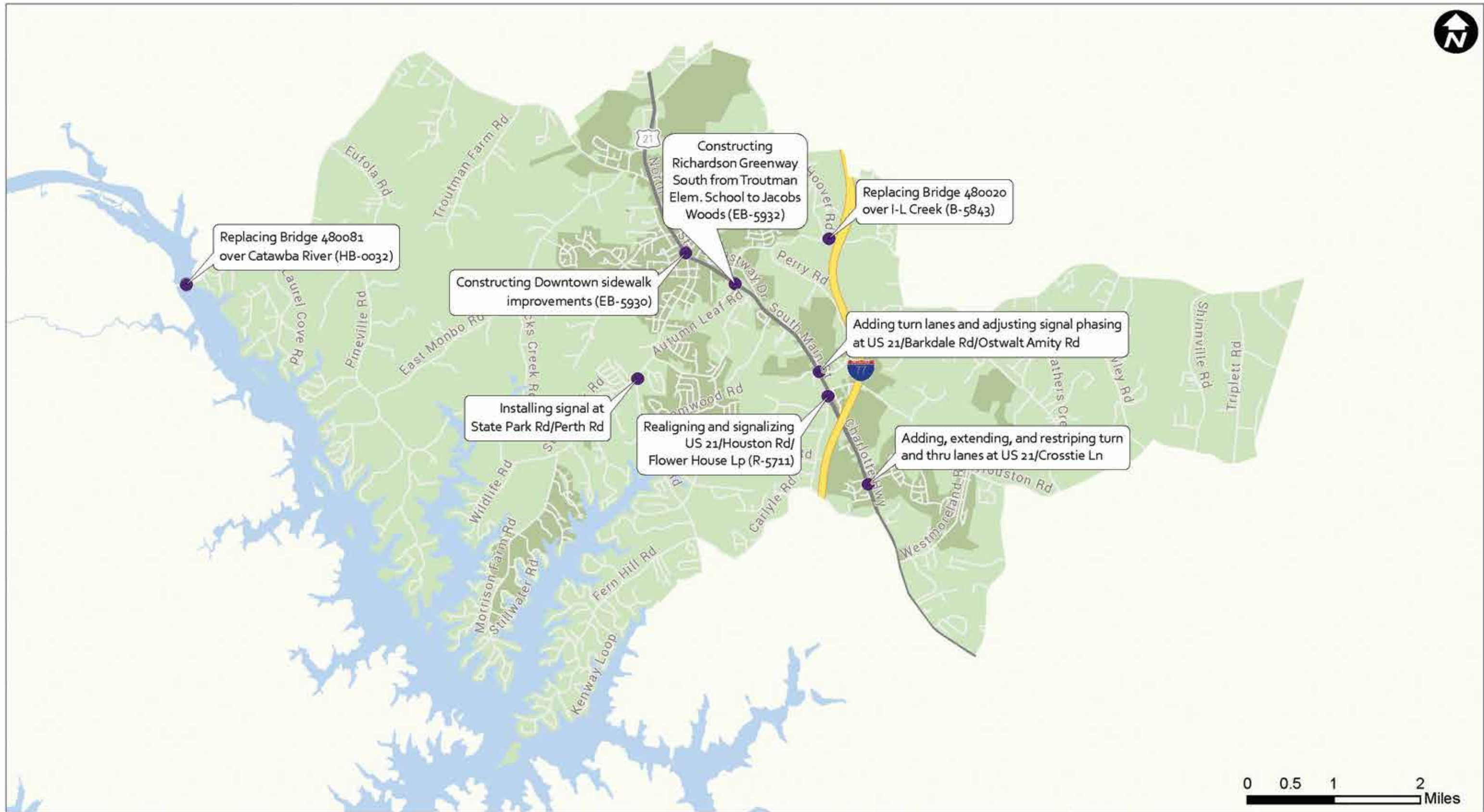



- | | | | | |
|--------------------------------------|----------------------------|--------------------------|------------------------------|---------------|
| CONNECT Beyond Transit Corridor | Emerging Mobility Corridor | The Community Connection | Existing ICATS Park and Ride | Planning Area |
| High Capacity Transit (HCT) Corridor | | The ICATS Express | Potential Transit Node | Troutman |
| | | | | Lake Norman |
| | | | | Local Road |

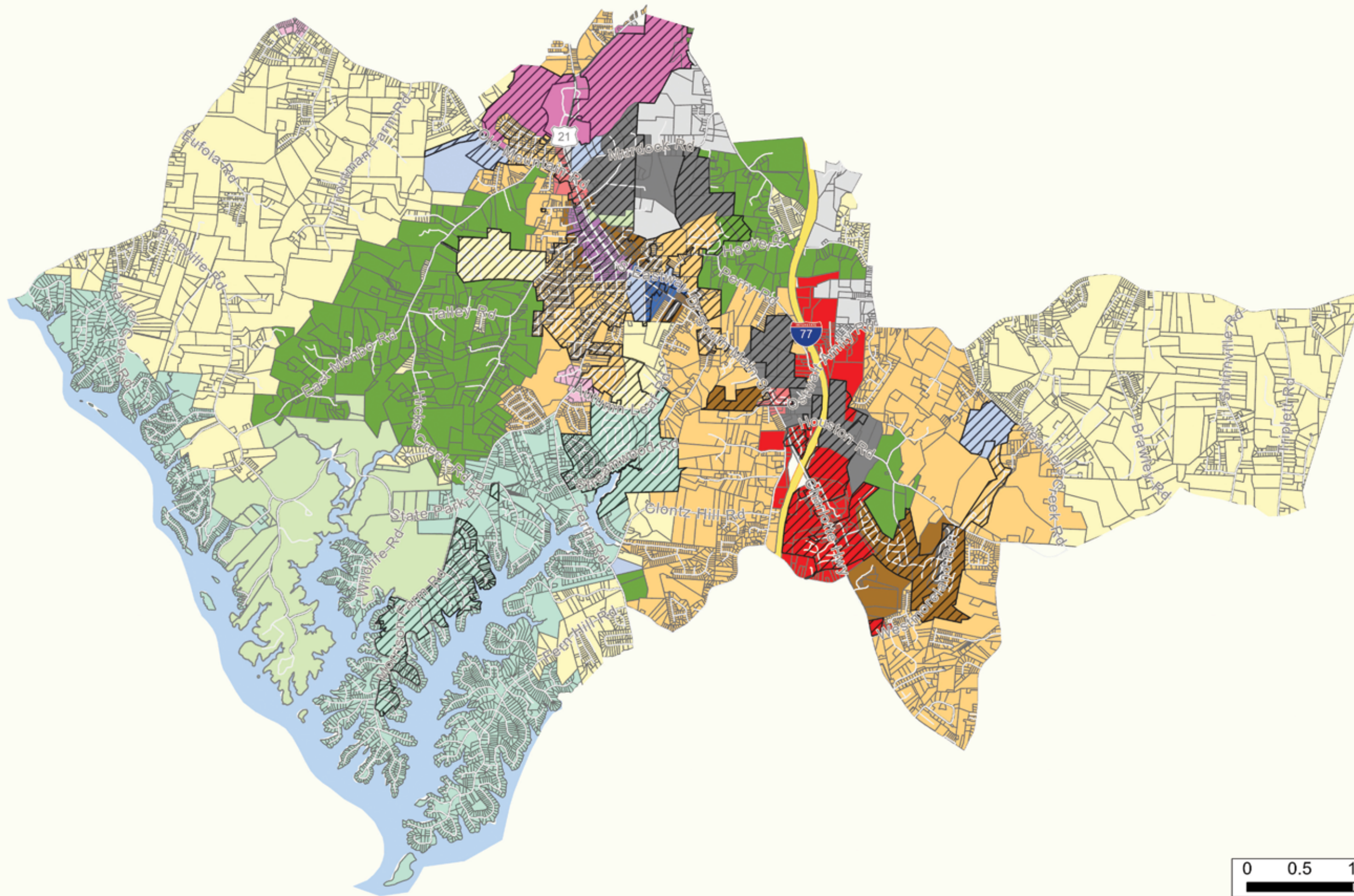


Source:
ICATS, CONNECT Beyond, ICTMP

Troutman Mobility Plan
Figure 14 - Existing & Planned Transit Facilities
January 2023



<ul style="list-style-type: none"> ● Programmed Project Planning Area Troutman 	<ul style="list-style-type: none"> Lake Norman Interstate US Route 	<ul style="list-style-type: none"> NC Route Local Road 	 	<p>Source: NCDOT STIP (Draft 2024-2033 STIP) & Division 12</p>	<p>Troutman Mobility Plan Figure 15 - Programmed Transportation Projects March 2023</p>
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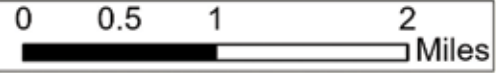
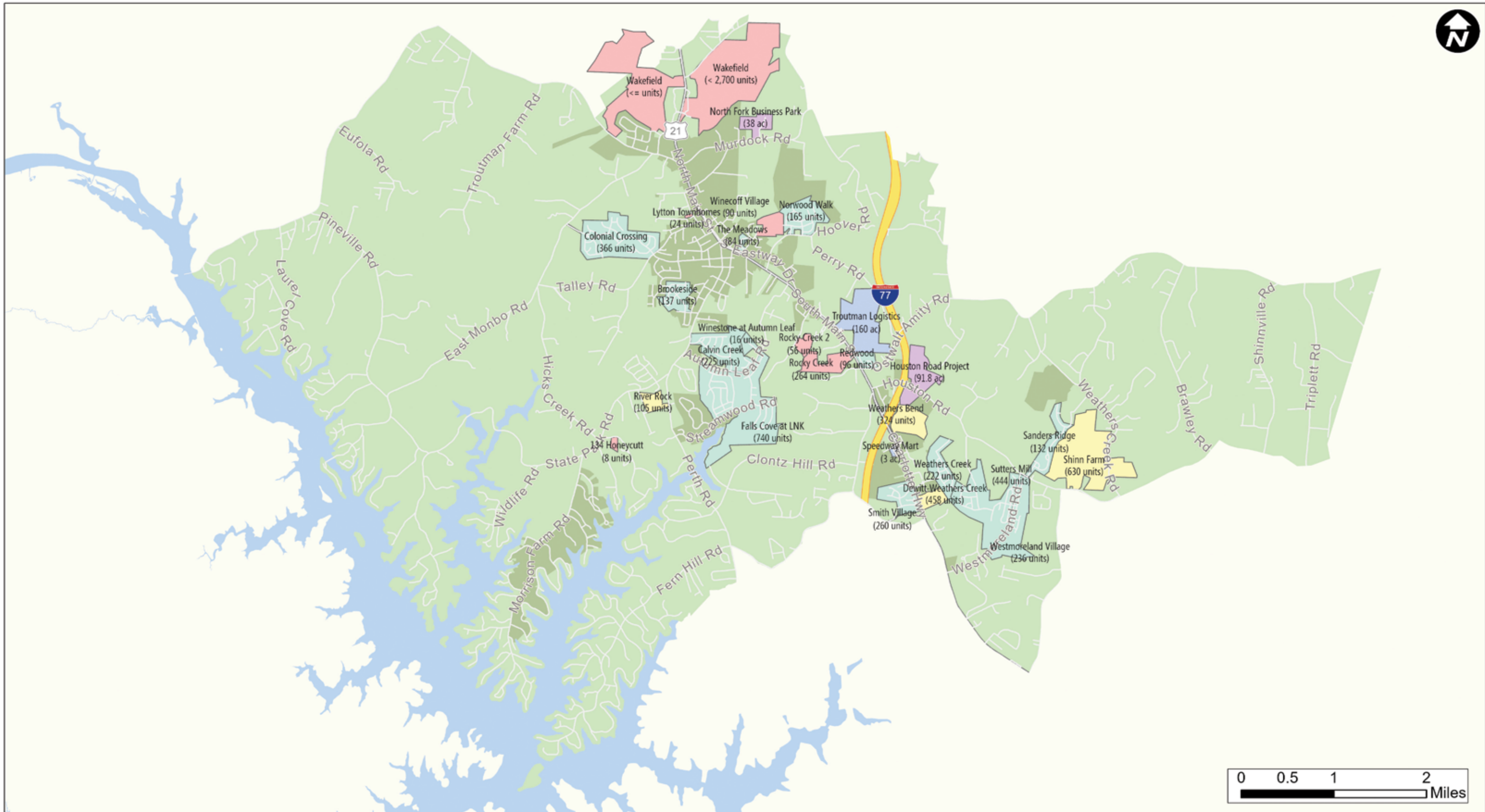
- | | | | | |
|--|--|--|--|---|
| <p>Future Land Use</p> <ul style="list-style-type: none"> Preserved-Park Rural Residential-Agricultural Low Density Residential | <ul style="list-style-type: none"> Medium Density Residential High Density Residential Civic Office-Institutions-Civic | <ul style="list-style-type: none"> Office-Institutions Neighborhood Commercial General Commercial Interchange Commercial | <ul style="list-style-type: none"> Mixed Use Town Center Employment Center - Light Industrial Heavy Industrial | <ul style="list-style-type: none"> Special Lake Uses Lake Norman Local Road Troutman |
|--|--|--|--|---|



Source:
Town of Troutman

Troutman Mobility Plan
Figure 16 - Future Land Use

January 2023



Residential Development Status

- Approved
- Proposed
- Under Construction

Non Residential Development Status

- Approved
- Proposed

■ Planning Area

- Troutman
- Lake Norman

— Interstate

- US Route
- NC Route
- Local Road



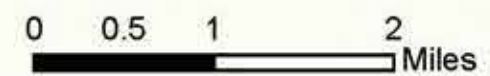
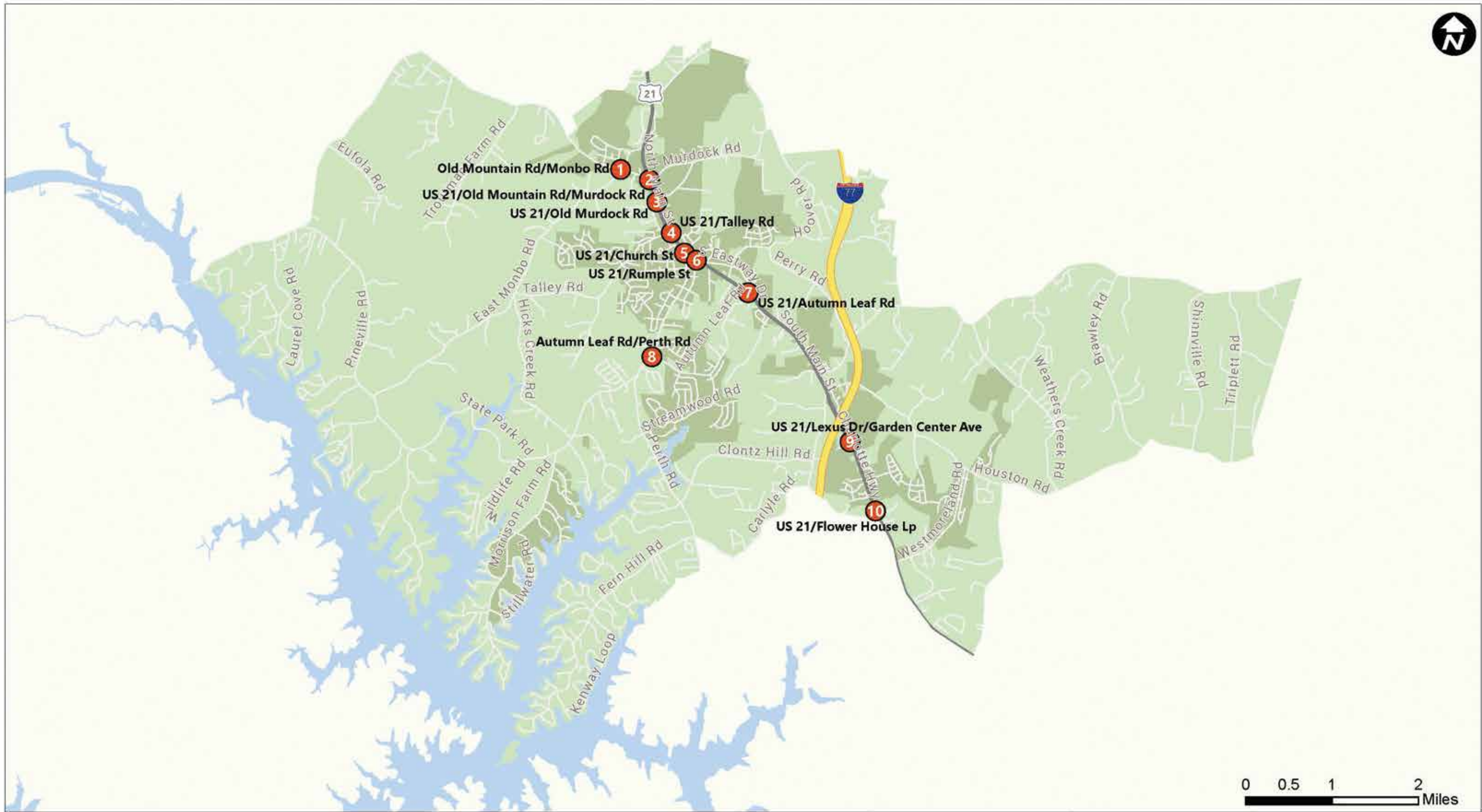
Source:

Town of Troutman

Troutman Mobility Plan

Figure 17 - Development Status

January 2023



- Candidate Intersection
- Planning Area
- Troutman
- Lake Norman
- Interstate
- US Route
- NC Route
- Local Road



Source:
Mobility Plan
Steering Committee

Troutman Mobility Plan
Figure 18 - Key Intersections
March 2023

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APPENDIX:

B

Public Input Results



APPENDIX:

B

Public Input Results

Survey was open from
4/1/23 to 4/30/23

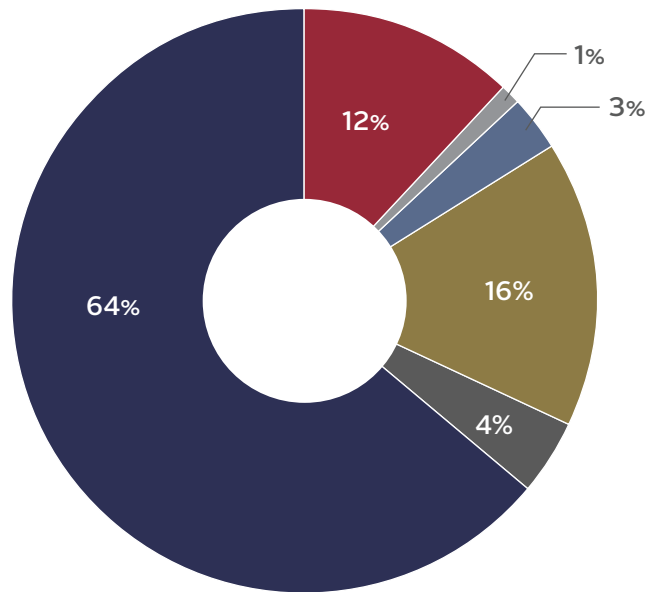
600 views
of the StoryMap

350 people
visited the Crowd-
SourceReporter



Public Survey #1

Q1: The biggest transportation issue in Town is (choose one):

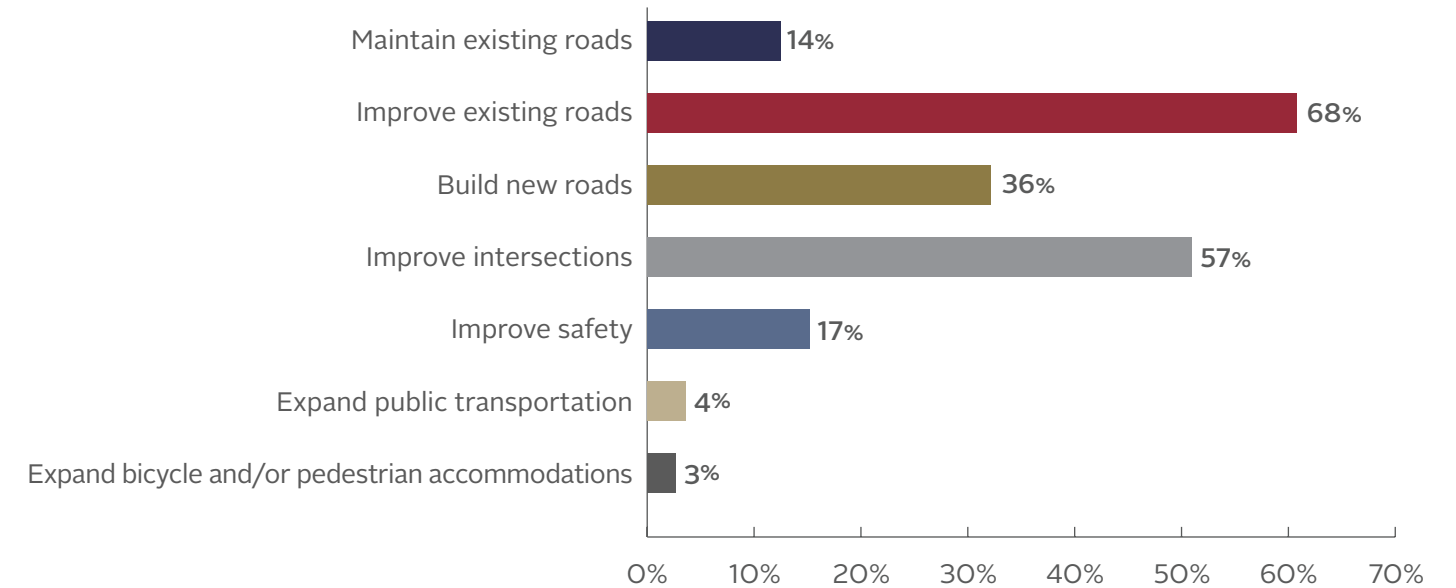


Total Number of Responses: 69

LEGEND

- Congestion on major roads (US 21/Main St, Perth Rd, Old Mountain Rd) (44 Responses)
- Congestion on local roads (Murdock Rd, Houston Rd, Autumn Leaf Rd) (8 Responses)
- Lack of east-west connectivity (1 Response)
- Lack of north-south connectivity (2 Responses)
- Unsafe roads and intersections (11 Responses)
- Lack of transportation options other than car (sidewalks, bicycle infrastructure, transit) (3 Responses)

Q2: Which two (2) of the following are your highest priorities for transportation investment in Town?

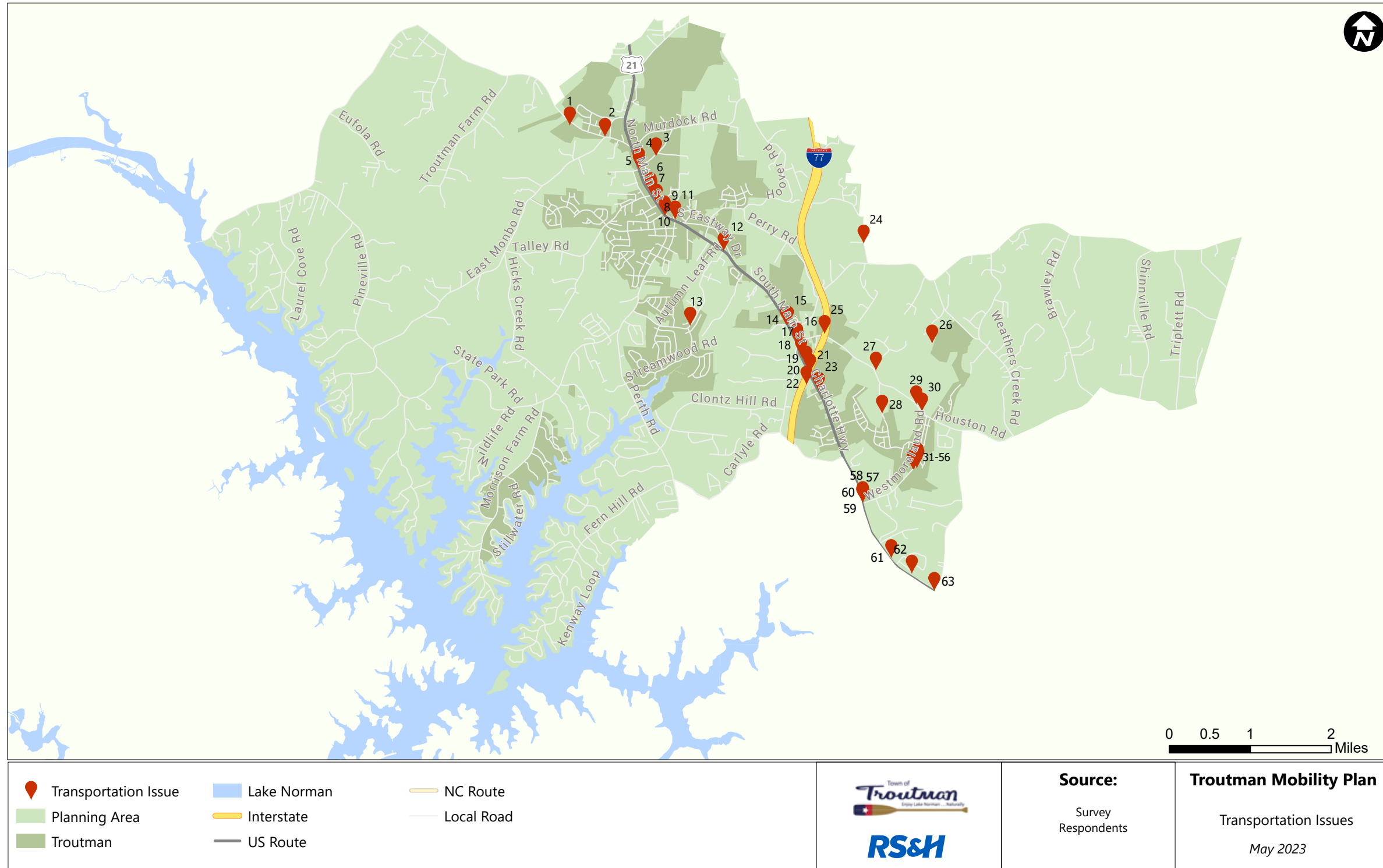


Total Number of Responses: 69

LEGEND

- Maintain existing roads (10 Responses)
- Improve existing roads (47 Responses)
- Build new roads (25 Responses)
- Improve intersections (39 Responses)
- Improve safety (12 Responses)
- Expand public transportation (3 Responses)
- Expand bicycle and/or pedestrian accommodations (2 Responses)

Q3: Let Us Know Where You Experience Transportation Issues in Town



Details on the issues as well as the number of likes each comment received can be found in the tables on the following three pages.

 	<p>Source: Survey Respondents</p>	<p>Troutman Mobility Plan Transportation Issues May 2023</p>
------	--	---

Q3: Let Us Know Where You Experience Transportation Issues in Town (*continued*)

Number	Problem Type	Problem Category	Problem Description	Likes
1	School	Congestion		1
2	School	Congestion	Unable to turn left during hours of school traffic. Because traffic is so congested, it is impossible to see if vehicles are coming or have stopped to let traffic coming from E. Monbo out.	0
3	Vehicle Safety	Safety	Trucks are prohibited on Old Murdock yet do not follow law	0
4	Vehicle Safety	Safety	Left turns onto US 21 should be prohibited during peak hours	1
5	Peak Hour	Congestion	heavy traffic	0
6	Vehicle Safety	Safety	Travelers use Eastway as alternative to US 21 and exceed 25 MPH limit greatly	0
7		Safety	Semi trucks speed through town. Needs to be enforced.	2
8	Travel Delays	Congestion	Traffic is noticeably heavier even during off-peak times. The newly installed light at Talley provides little relief of congestion for motorists making left hand turns. As a result, traffic is spilling over onto Eastway Dr.	0
9	Peak Hour	Congestion	The link between Church and Wagner is nearly impossible to navigate. Creating a dead space between the two streets on main with the lights stopping cars prior to both would eliminate the need to improve this street.	0
10	Connectivity	Congestion		0
11	Vehicle Safety	Safety	Lack of opportunities to make left hand turns onto US 21	3
12	Peak Hour	Congestion	US 21 from about here North needs to be four lanes, or at least a center turn lane to help congestion.	1
13	Vehicle Safety	Safety	People crossing center lane, almost been hit. Should be 25mph through the curves	0
14	Left Turns	Congestion		1

Number	Problem Type	Problem Category	Problem Description	Likes
15	Left Turns	Congestion	This is a major intersection and is only going to become bigger. This needs turn lanes, arrows and dedicated straight lanes or a traffic circle.	3
16	Left Turns	Congestion		2
17	Congestion		A merge into a no lighted common turn with no turning lane causes unnecessary backup.	2
18	Peak Hour	Congestion	Right side of road should be a dedicated straight past Flower House, and left lane should be a left turning lane for Flower House Loop.	2
19	Vehicle Safety	Safety	Many wrecks happen at this intersection	0
20	Vehicle Safety	Safety	Vehicles turning left onto Julian Pl. or turning left onto I77 cannot see oncoming traffic. The lights need to be reconfigured so that left turn arrows are part of the light sequence.	3
21	Vehicle Safety	Safety	This entire half cloverleaf is not designed well for trucks. Trucks making extreme merges to get over and lined up for entry block sight causing a lot of accidents.	3
22	Vehicle Safety	Safety	Semis parked on ramp. Parking should be made available elsewhere, especially if new warehousing is being approved. They park on should and block ramp while parking. Coordination with Highway Patrol for enforcement would be helpful.	8
23	Left Turns	Congestion	This whole area is not designed well for trucks. Trucks at this intersection should not be allowed to turn left and made to use the box around Sheets to enter 21 N. Too often trucks enter the left without enough space to make the turn blocking the intersec	1
24	Peak Hour	Congestion	Backup during special events creates a standstill on Pilch. Dedicated turn lanes could keep traffic flowing.	1
25	Left Turns	Congestion	Anywhere on main street going south. Houston rd athwy 21 is a nightmare	1

Q3: Let Us Know Where You Experience Transportation Issues in Town (*continued*)

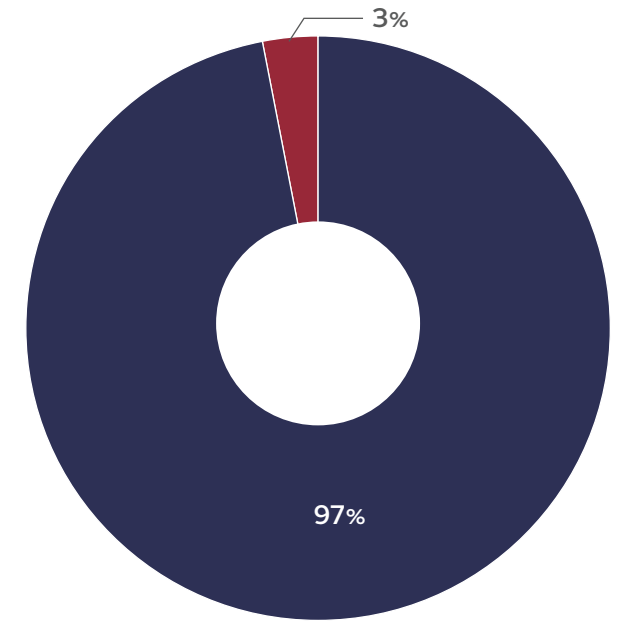
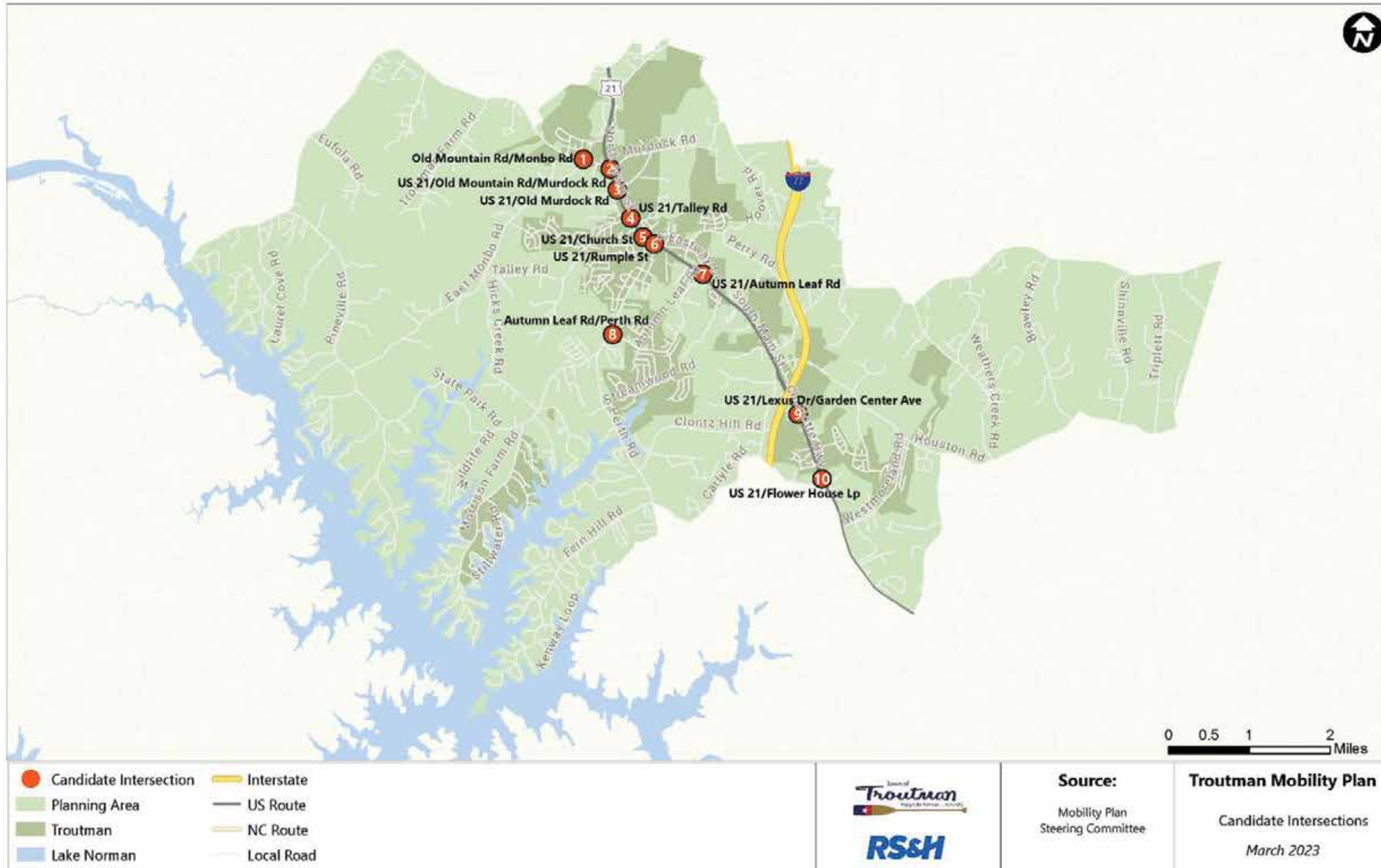
Number	Problem Type	Problem Category	Problem Description	Likes
26	Connectivity	Congestion	Whenever there is an accident on 77...traffic is more congested	0
27	Vehicle Safety	Safety	Houston Rd is entirely too narrow. There are no shoulders and lots of oversized trucks travel this road due to all of the construction and the trucks cannot travel on Westmoreland rd due to the 1 lane Bridge.	8
28		Accessibility	No connectivity because of gate. Eminent domain should be used to connect	3
29	Vehicle Safety	Safety	Houston Rd - needs to be widened as with the increase in population/traffic has become a major safety hazard. I have a boat and it is now impossible to pass another large vehicle/ tailor/bus/semi/etc. without being pushed off the road.	0
30	Vehicle Safety	Safety	All of Houston Road needs to be widened IMMEDIATELY. Not enough room for two buses to cross paths.	5
31	Vehicle Safety	Safety	Unsafe bridge conditions.	6
32	Vehicle Safety	Safety	One lane bridge on Westmoreland will not sustain current growth and I'd unsafe.	4
33	Vehicle Safety	Safety	Bridge on Westmoreland is way too small for so many cars and construction vehicles!!!	13
34	Vehicle Safety	Safety	This bridge is not suitable for the amount of cars and heavy machinery/truck(due to multiple new neighborhoods being built). It isn't sturdy or wide enough. Someone WILL get seriously injured if this bridge replaced with a normal two lane & sturdy bridge.	12
35	Vehicle Safety	Safety	Poor bridge infrastructure at 1 lane Bridge. Already a lot of traffic on this road and once people start moving into the new development across from Sutter's Mill, it will become a traffic nightmare.	56
36	Vehicle Safety	Safety	One lane bridge with minimal signage often risks two cars coming head on	4
37	Vehicle Safety	Safety	Small poorly made one lane bridge	3
38	Vehicle Safety	Safety		3

Number	Problem Type	Problem Category	Problem Description	Likes
39	Vehicle Safety	Safety	Small / uneven bridge. Too many cars going at high speeds when really only 1 car can fit over this at one time. So many upcoming housing and it's just going to get worse and possibly dangerous.	12
40	Vehicle Safety	Safety	Bridge is old and way too many cars for one law road, especially around a corner.	1
41	Vehicle Safety	Safety	Please consider replacing this one lane bridge with a functional two lane. The bridge is at the bottom of two hills. Cars speed down the hills both ways and not able to see each other. Will only get much worse with all the upcoming new neighborhoods..	10
42	Vehicle Safety	Safety	This bridge is a joke. If you take a quick look underneath it's easy to see it's not fit for the existing traffic let alone the incoming traffic due to new neighborhoods. Should have been fixed years ago ..	3
43	Vehicle Safety	Safety	If y'all don't fix this damn bridge... it's one lane and there's HUGE construction vehicles hauling dirt and gravel and building supplies BARRELING through here. It's falling apart. And soon there will be a big increase of high schoolers driving through.	4
44	Vehicle Safety	Safety	Westmoreland bridge needs to be widened. Entirely too narrow and is a major accident waiting to happen with the increase in population on Houston/Westmoreland roads.	0
45	Vehicle Safety	Safety	Fix the bridge! One lane is NOT enough!! Someone is going to die here.	5
46	Vehicle Safety	Safety	Too many cars driving on the Westmoreland Rd bridge to be a one lane bridge! Accidents almost happen all of the time. People do not see the one lane bridge sign and speed through. PLEASE consider expanding this as we have a new subdivision going in!	12
47	Vehicle Safety	Safety	This bridge can't accommodate this amount of traffic.	7
48	Vehicle Safety	Safety	Bridge is not safe to drive on with heavy construction vehicles and high amount of traffic	5
49	Vehicle Safety	Safety	The wooden one lane bridge on Westmoreland Rd is unsafe, especially with an upcoming increase in vehicles due to new home construction.	5

Q3: Let Us Know Where You Experience Transportation Issues in Town (*continued*)

Number	Problem Type	Problem Category	Problem Description	Likes
50	Vehicle Safety	Safety	The one lane bridge is very unsafe.	3
51	Vehicle Safety	Safety	Needs to be two lanes bridge with the increased traffic on this road with so many developments.	3
52	Vehicle Safety	Safety	Unsafe bridge	2
53	Vehicle Safety	Safety	This bridge needs to be reconstructed and become a 2 lane bridge!! It's unsafe and needs repairs consistently.	3
54	Vehicle Safety	Safety	I remember going over this bridge on the bus when i was a kid. There was nothing out here then. If the community grows, the roads need to grow with it. We need a new bridge before someone gets hurt!!	2
55	Vehicle Safety	Safety	One lane bridge rd on Westmoreland has too much congestion to support all the new homes and is also a safety hazard	0
56	Vehicle Safety	Safety	One lane bridge on Westmoreland	0
57	Left Turns	Congestion	Hwy 21 is too busy at times for cars to turn left on to Westmoreland and left onto hwy 21. Only going to get worse with more neighborhoods.	6
58	Vehicle Safety	Safety	We DESPERATELY need a light here. It's especially bad in the AM trying to get kids to shep elementary	1
59	Left Turns	Congestion	Westmoreland/HWY 21 - there needs to be a traffic light installed and it has become extremely difficult to turn right or left as the population has increased.	0
60	School	Congestion	US 21 needs to be two laned since congestion will only get worse over the next year or two.	1
61	School	Congestion		0
62	School	Congestion	Shepherd Rd/HWY 21 - there needs to be a traffic light installed and it has become extremely difficult to turn right or left as the population has increased. This is especially true during school hours.	1

Q4: Do you agree with the intersections identified as highest priority for improvement on the map?



Total Number of Responses: 29

LEGEND

- Yes (28 Responses)
- No (1 Response)

Q5: Are there intersections on the map you would not prioritize?

Total Number of Responses: 0

LEGEND

No Responses

Identify new locations

Are there intersections on the map you would not prioritize?

-Please select-

- 1. Old Mountain Rd / E. Monbo Rd
- 2. US 21 / Old Mountain Rd / Murdock Rd
- 3. US 21 / Old Murdock Rd
- 4. US 21 / Talley St

Q6: Are there any intersections you would designate as high priority that are not on the map?

Total Number of Responses: 0

LEGEND

No Responses

Priority Intersections (1)

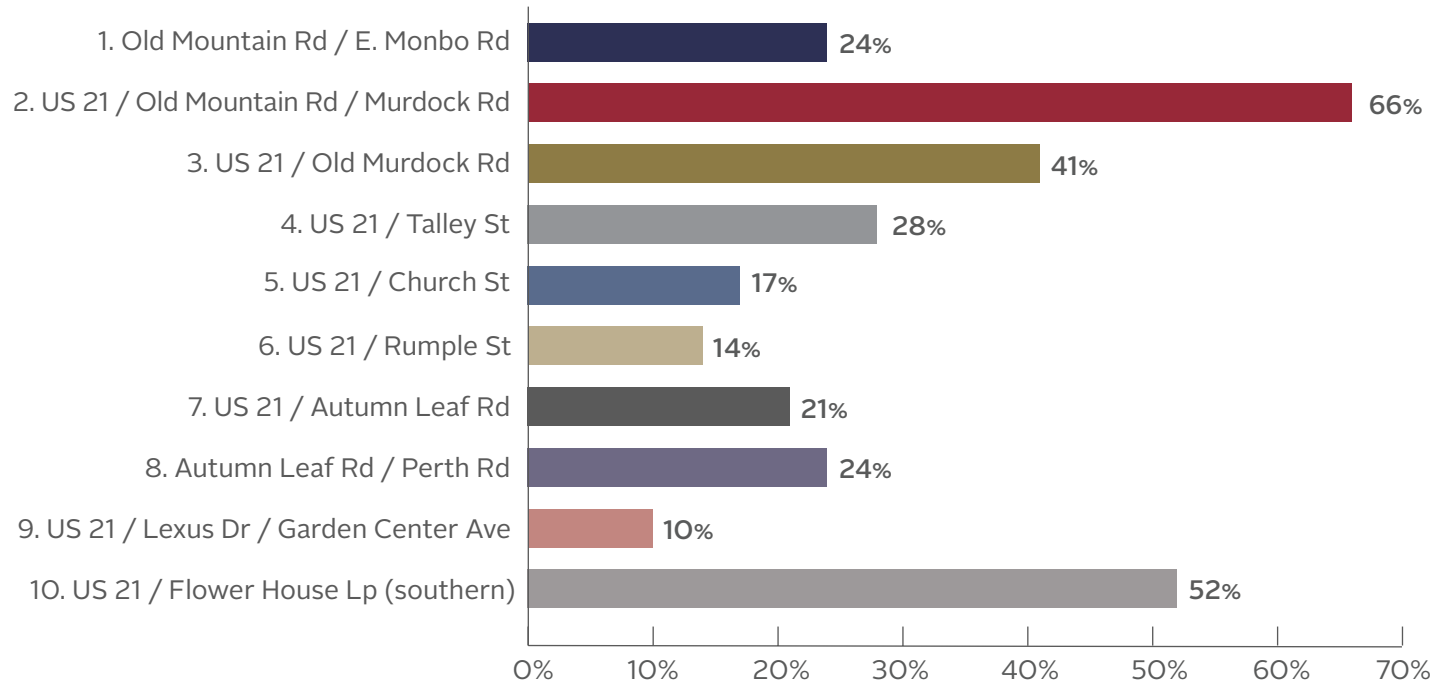
1

Are there any intersections you would designate as high priority that are not on the map? Pan around the map to find the intersection and then click to record the location.

Multiple points may be added by selecting the + above.



Q7: The top three (3) intersections that need improvements are:



Total Number of Respondents: 29

LEGEND

- 1. Old Mountain Rd / E. Monbo Rd (7 Responses)
- 2. US 21 / Old Mountain Rd / Murdock Rd (19 Responses)
- 3. US 21 / Old Murdock Rd (12 Responses)
- 4. US 21 / Talley St (8 Responses)
- 5. US 21 / Church St (5 Responses)
- 6. US 21 / Rumple St (4 Responses)
- 7. US 21 / Autumn Leaf Rd (6 Responses)
- 8. Autumn Leaf Rd / Perth Rd (7 Responses)
- 9. US 21 / Lexus Dr / Garden Center Ave (3 Responses)
- 10. US 21 / Flower House Lp (southern) (15 Responses)

Q8: Are there any new road connections needed?

Total Number of Responses: 0

LEGEND

No Responses

New Road Connections (1)



If you think a new road connection(s) is needed, draw a line to indicate the general location. Click the Freehand line in the upper right hand corner of the map to enable the drawing feature.

Multiple lines may be drawn.

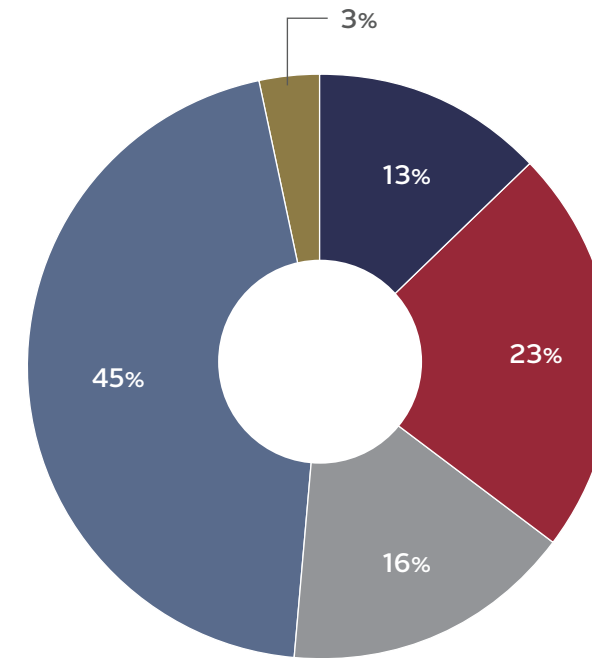


Q9: Do you have any questions about the mobility plan?

Responses:

- When will we see relief on US 21?
- Westmoreland Rd. one lane bridge Road is congested and unsafe for the amount of people and developments. We need a new road or to widen it, and a light at the end of Westmoreland and US 21 especially to turn left.
- The one lane Bridge on Westmoreland Rd desperately needs replaced. Please make sensible growth choices and upgrade roads to accommodate growth for Troutman instead of making Troutman the next Mooresville. I moved to Troutman to get away from that mess.
- No
- Flower House Loop and US 21 100% needs a light. Little visibility for such a fast road. We need a new bridge on Westmoreland before Sutter's Mill and across from two new neighborhoods. Safety is #1 and this has been a safety issue which has been ignored.
- As Troutman grows, please add a traffic light at Westmoreland Rd and 21. With the new neighborhood going in it will be nearly impossible to turn left at 21. Also, consider widening Houston Rd. Or add shoulders. That road is an accident waiting to happen.
- A decade is too long to wait for road improvements especially with the housing and population growth of Troutman.

Q10: How did you hear about this survey?



Total Number of Respondents: 31

LEGEND

- Website (4 Responses)
- Email (7 Responses)
- In Person Event (5 Responses)
- Social Media (14 Responses)
- Word of Mouth (1 Response)
- Other (0 Responses)

Public Survey #2

A second online survey was open from August 21, 2023 - September 22, 2023 to get feedback on the designs for the three key intersections and the proposed CRTPO CTP amendments. Respondents were asked if they supported the proposed improvements and amendments or if they had concerns. A summary of the input received is provided below.

- 7 respondents
- All 7 supported the proposed improvements to the US 21/Old Mountain Rd/Murdock Rd intersection
- 6 of 7 supported the proposed improvements to the US 21/Old Murdock Rd intersection
 - The respondent that did not support the proposed improvements said that the intersection needs a traffic light with turning lanes
- 6 of 7 supported the proposed improvements at US 21/Church St
 - The respondent that did not support the proposed improvements said the barrier will be a huge problem for the fire department as well as EMS
- 4 of 7 respondents supported the proposed CTP amendments
 - The remaining three respondents expressed the following concerns:
 - Flower House Lp needs to be extended to meet with Houston Road at US 21 and it needs a traffic light
 - Who is going to pay for my property on Houston Road for the Pilch Road Extension?
 - Why should an approved plan change for the Autumn Leaf Road Extension? There was a plan in place but the town board elected to allow development to occur in the proposed area. Now private residence (not big companies) may be negatively impacted!
- Two respondents requested to be contacted to discuss their concerns further

The Town also followed the CRTPO CTP Amendment Guidelines to obtain feedback on the proposed CTP amendments. The CRTPO CTP amendments were part of the online survey. The Town and CRTPO advertised the survey through social media and a 30-day public comment period was provided. Additionally, the Town mailed letters to property owners within 300 feet of the two proposed realignments (60 property owners were contacted) (see the sample letters opposite).

Autumn Leaf Letter to Affected Property Owners



August 21, 2023

RE: Autumn Leaf Road Extension Alignment Modification

Dear Property Owner,

The Town of Troutman is in the process of developing a new mobility plan focusing on improving existing intersections and looking at future roadway alignments. As part of the process the Town is looking to show the alignments in the CRTPO's Comprehensive Transportation Plan (CTP). The CTP is a long-range plan that outlines future improvements for the entire transportation network, from roadways and transit to bicycle and pedestrian accommodation. The Autumn Leaf Extension would be a new roadway between Barkdale Road and Autumn Leaf Road providing additional mobility options from Exit 42 to developing areas south of Troutman Proper. The reason for this modification is that a portion of the current alignment in the CTP is unfeasible due to development.

The map included with this letter shows the proposed alignment in yellow and current alignment in red. **Be advised that this is not a funded project nor is the town planning on constructing the roadway. The alignment is for purposes of reserving right-of-way in the case that the properties it impacts are developed or redeveloped in the future. Troutman is not looking to purchase or take any property along the proposed alignments.**

You are receiving this notification because public records indicate that you own property in the general vicinity of the proposed alignment. You may submit written questions or comments via email. Comments should include "Autumn Leaf Road Extension" in the subject line to be considered. Email comments should be sent to aventresca@troutmannnc.gov by **September 22, 2023**. You may also leave comments on the public survey for the Mobility Plan at <https://survey123.arcgis.com/share/884d0473692b4d1ebc4d419693bfd877> or the QR code at the end of this letter.

A summary of public comments received by email will be provided to the Troutman Town Council prior to public hearing on adopting the plan. To find out more about CRPTO and its CTP please visit <https://crtpo.org/>

Sincerely,

Andrew Ventresca
Andrew Ventresca
Associate Planner
(704) 528-7600



Pilch Road Letter to Affected Property Owners



August 21, 2023

RE: Pilch Road Extension Alignment Modification

Dear Property Owner,

The Town of Troutman is in the process of developing a new mobility plan focusing on improving existing intersections and looking at future roadway alignments. As part of the process the Town is looking to show the alignments in the CRTPO's Comprehensive Transportation Plan (CTP). The CTP is a long-range plan that outlines future improvements for the entire transportation network, from roadways and transit to bicycle and pedestrian accommodation. The Pilch Road Extension would be a new roadway between US 21 and Houston Road providing additional mobility options east of Exit 42 off Interstate 77. The reason for this modification is that a portion of the current alignment is unfeasible due to approved development.

The map included with this letter shows the proposed alignment in yellow and the existing alignment in red. **Be advised that this is not a funded project nor is the town planning on constructing the roadway. The alignment is for purposes of reserving right-of-way in the case that the properties it impacts are developed or redeveloped in the future. Troutman is not looking to purchase or take any property along the proposed alignments.**

You are receiving this notification because public records indicate that you own property in the general vicinity of the proposed alignment. You may submit written questions or comments via email. Comments should include "Pilch Road Extension" in the subject line to be considered. Email comments should be sent to aventresca@troutmannnc.gov by **September 22, 2023**. You may also leave comments on the public survey for the Mobility Plan at <https://survey123.arcgis.com/share/884d0473692b4d1ebc4d419693bfd877> or the QR code at the end of this letter.

A summary of public comments received by email will be provided to the Troutman Town Council prior to public hearing on adopting the plan. To find out more about CRPTO and its CTP please visit <https://crtpo.org/>

Sincerely,

Andrew Ventresca
Andrew Ventresca
Associate Planner
(704) 528-7600



The following responses were received:

1.

Andrew, engineer Gerald Grant recently forwarded to me the attached map showing a modification of the Pilch Road extension alignment under consideration. Due to the scale of the map, it is difficult to interpret accurately. However, I believe the alignment shown in yellow would cross and affect access to at least 4 parcels owned by Piedmont Landco, LLC, of which I am sole owner. It would cross and split 4 or 5 parcels owned by Superior Properties of Iredell Limited partnership. Superior Properties and I have worked tirelessly at great expense for 20 years to acquire and re-combine these parcels along with 12 other adjoining parcels totaling 41.9 acres fronting on Charlotte Highway (US 21). That is in addition to the 18.2 acres of adjoining property Superior Properties and I assembled during the same period and recently conveyed to Food Lion, LLC, for their grocery anchored commercial development. And the 31 acres we assembled and conveyed to Lowes in 2007 for their store and 6 outparcels.

We recently requested and were approved unanimously by the Town Council for annexation into Troutman and zoning of all the 41.9 acres to Troutman Highway business zoning for commercial development. As I stated at the public hearing, we are in the process of planning a major retail development for this 41.9 acre site. That process is moving along well. The entire site is under contract to a single developer, and substantial sums have been obligated and/or already spent on environmental assessments, engineering and surveying, traffic plans and studies, and storm water plans. Our concept plan for this 41.9 acre property has been in existence since 2006 and shared on many occasions with Troutman planning staff and Town representatives.

The relocation of the present red line route of the Pilch Road extension to the yellow line route shown on the attached map, will make it impossible to continue with our plans for this 41.9 acre site. Once our development plans are available, you will easily see why this is true. Our development schedule is to have plans available for your initial consideration in November, if not earlier. Our plans include completing Home Improvement Street from Lowes to the Food Lion development, and the installation of a multi-lane entrance and traffic signal midway between existing traffic signals at Lexus Drive and Crosstie Lane, where we have had an existing DOT commercial driveway permit since 2008.

There are 4 property owners in the 41.9 acre assemblage that is under contract and has been in this active development stage since August 2022. We all understand the time, study, and expense required to implement the best traffic plan for public transportation, as well as providing customer access and deliveries to much needed commercial buildings and parking areas. We are committed to a current and future transportation plan that works for all. We have marked in green on the attached map a couple of routes that we feel would accomplish long range goals, without unduly restricting the highest and best use of long planned commercial sites. I am in constant communication with all owners and the development activities underway. I will be glad to share any comments or questions with the owners and development partners, or meet with Planning Staff to discuss our concerns and requests that the yellow line route not run through the center of this 41.9 acre commercial site.

Thank you for your consideration.



Map attached to email

2.

My husband and I have a home on Barkdale Road, we cannot believe that the new proposed road is coming down our road. We know why because you do NOT want to go through the 54 acres, also you have NO consideration for our neighbors by the road going through their yard and splitting up their property. Also what about the traffic light, you can't even turn left now coming from Mooresville, you sit forever or take a chance turning. We don't know who comes up with this, but it must be someone getting benefits out of it. We will have all kinds of traffic if you do this, which our say doesn't mean anything to the ones doing this. It is a dead end road and we have all kinds of traffic now and they use our driveways to turn around. What was wrong with the way it was proposed, going through the 54 acres, why no go through Byres Road, or do some important people live on it? Like I said someone is benefiting from this. I could wright you a book but I am trying to be nice, how some considerations for us and especially our neighbors at the end of our road. Also it seems to me the 54 acres should have not got granted for development knowing a proposed road way was going through it.

3.

I recently purchase a lot off Byers road and intended to build my retirement home there. I now have this letter that shows you wanting to put a road directly through the center of my lot! Are you kidding me? You allow all these developers to come in and build hundreds of homes and you don't bother to solve the infrastructure problem first? Have you heard of a planning committee!? I would think that you would be widening Perth road and hwy 21 to 4 lanes, not running a new road across the middle of what is left of rural areas between Mooresville and Troutman. I now have no idea what to do. You have ruined the dream of me quietly retiring on my 3 acres. I will have to always wonder when the city of Troutman will come knocking on my door wanting to take away my property. I'm sure nothing I say will mean a thing as money is always the priority. As long as you have these big developers lining your pockets, people like me don't exist. Isn't that always the way of government. Power and hypocrisy.

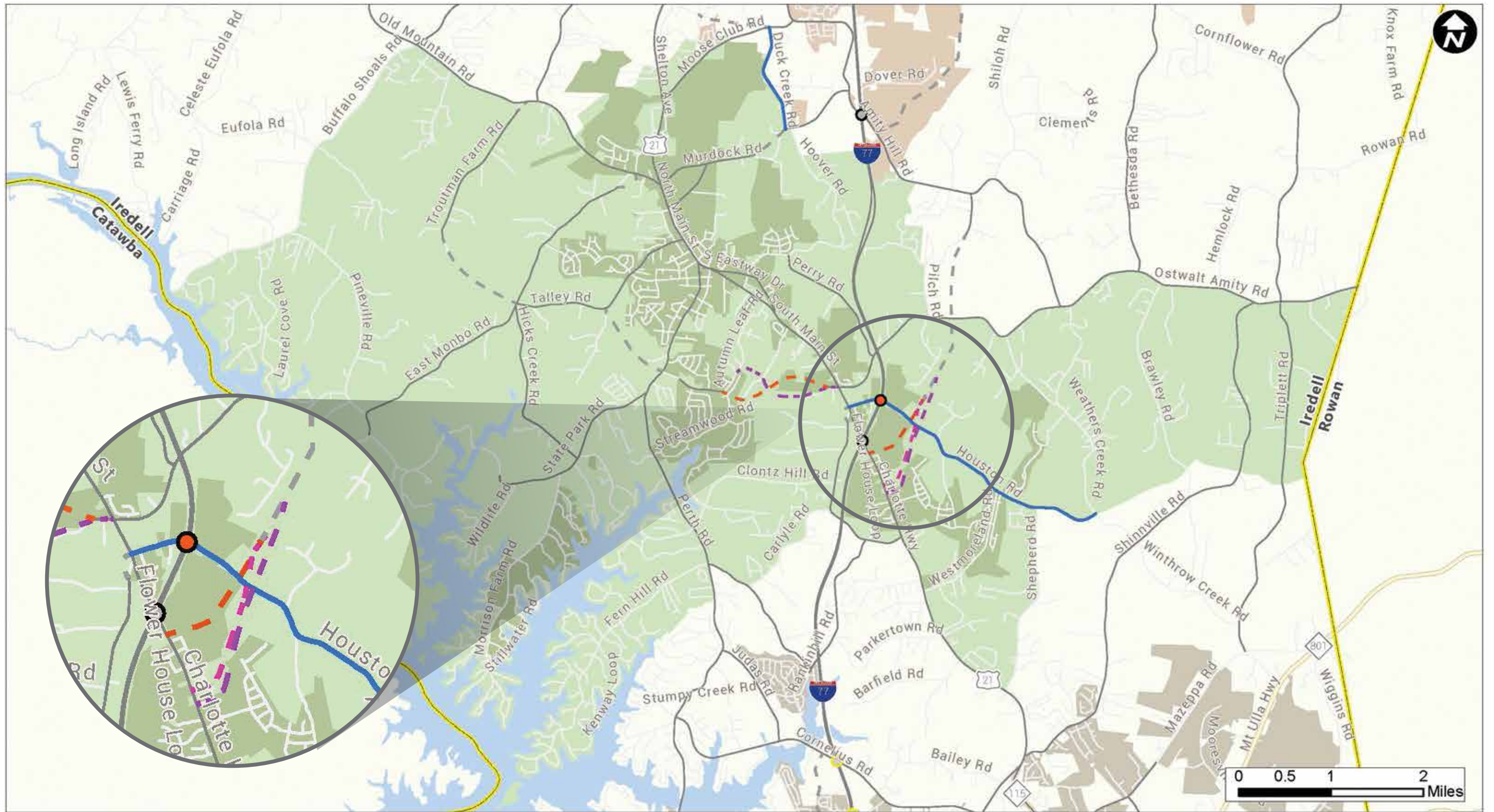
4.

I understand the realignment for the potential Pilch Rd. Ext Modification, however my property is already incumbered by a gas line easement and now you are trying to incumber it again right through the middle? Could the alignment be considered on the property line on the east side? The topography is much more gradual there and would take much less grading work to make feasible through this property as well properties to the north. The west side of our property has a lot of topography and a very large gulley with a stream at the base. We are in the preliminary phase of site plan development for this site as commercial/ industrial space. We will be presenting a plan for consideration by year end.

5.

After reviewing the current plan for the Pilch Connector Road, that would run through our property and pastures, we propose that the entire road is placed within the Duke Power right of way for the already placed transmission lines. Not only will this help preserve our pasture lands, but the right of way is already a straight path that is mostly cleared, which would cost the town of Troutman less money for grading, prepping, and clearing for the road. It also would be straighter and easier for future project developments.

Based on the feedback received, the Pilch Road Extn alignment was modified. The map shows the original recommended alignment and the modified alignment based on public feedback.



Recommended CTP Amendments

- Remove
- - - Remove
- Change Designation from Existing to Needs Improvement
- - - Add as Recommended (Original)
- - - Add as Recommended (Modified)

Already in CTP

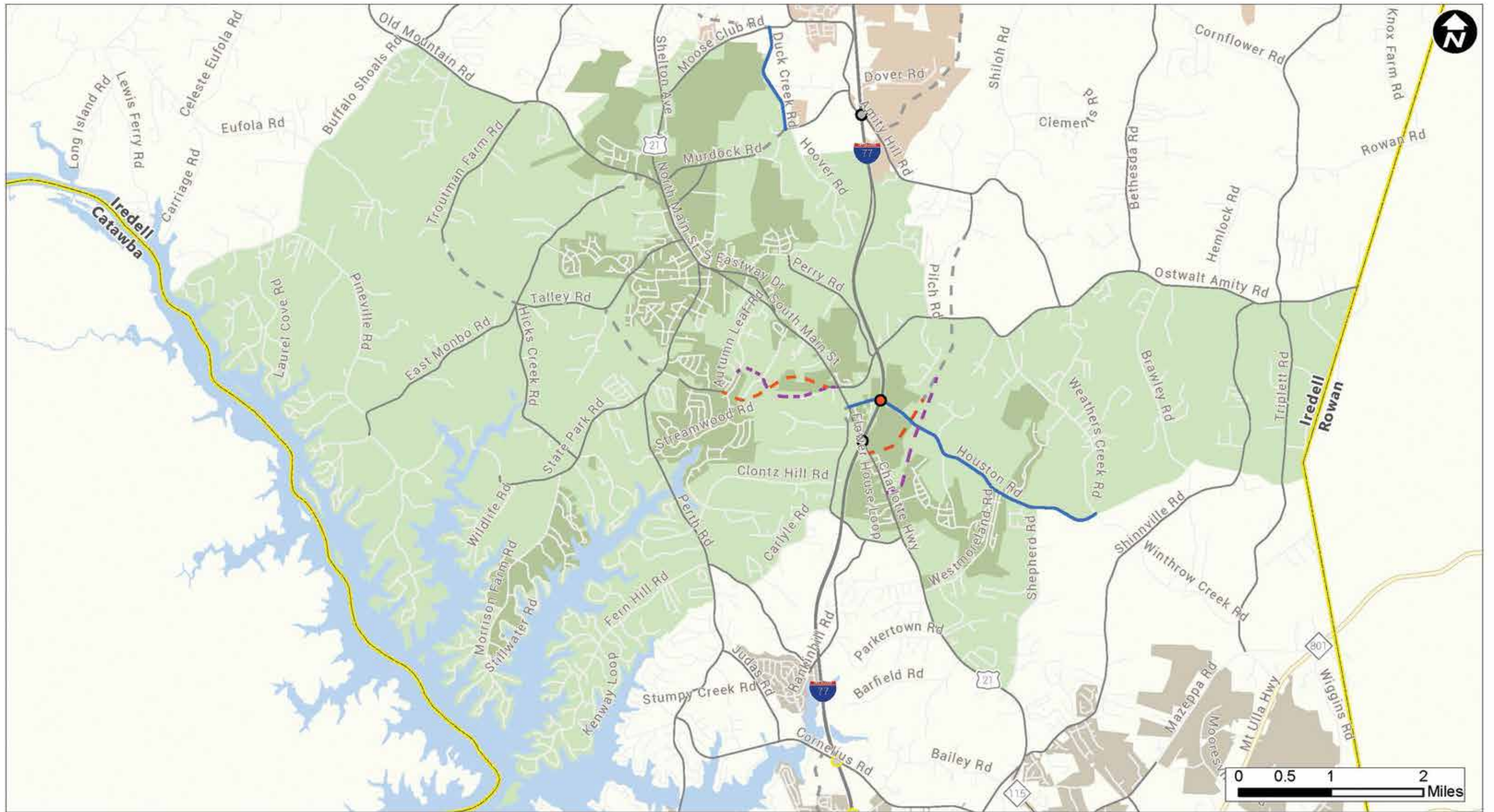
- Needs Improvement
- Recommended
- Needs Improvement
- - - Recommended
- County Boundary
- Troutman
- Statesville

- Mooresville
- Lake Norman
- Local Road



Source:
CRTPO CTP
(December 2022)

Troutman Mobility Plan
Final CRTPO
CTP Amendments
September 2023



Recommended CTP Amendments

- Remove
- - - Remove
- Change Designation from Existing to Needs Improvement
- - - Add as Recommended

Already in CTP

- Needs Improvement
- Recommended
- Needs Improvement
- - - Recommended

- County Boundary
- Troutman
- Statesville

- Mooresville
- Lake Norman
- Local Road



Source:
CRTPO CTP
(December 2022)

Troutman Mobility Plan
Final CRTPO
CTP Amendments
September 2023





APPENDIX:

C

Functional Classification



APPENDIX:

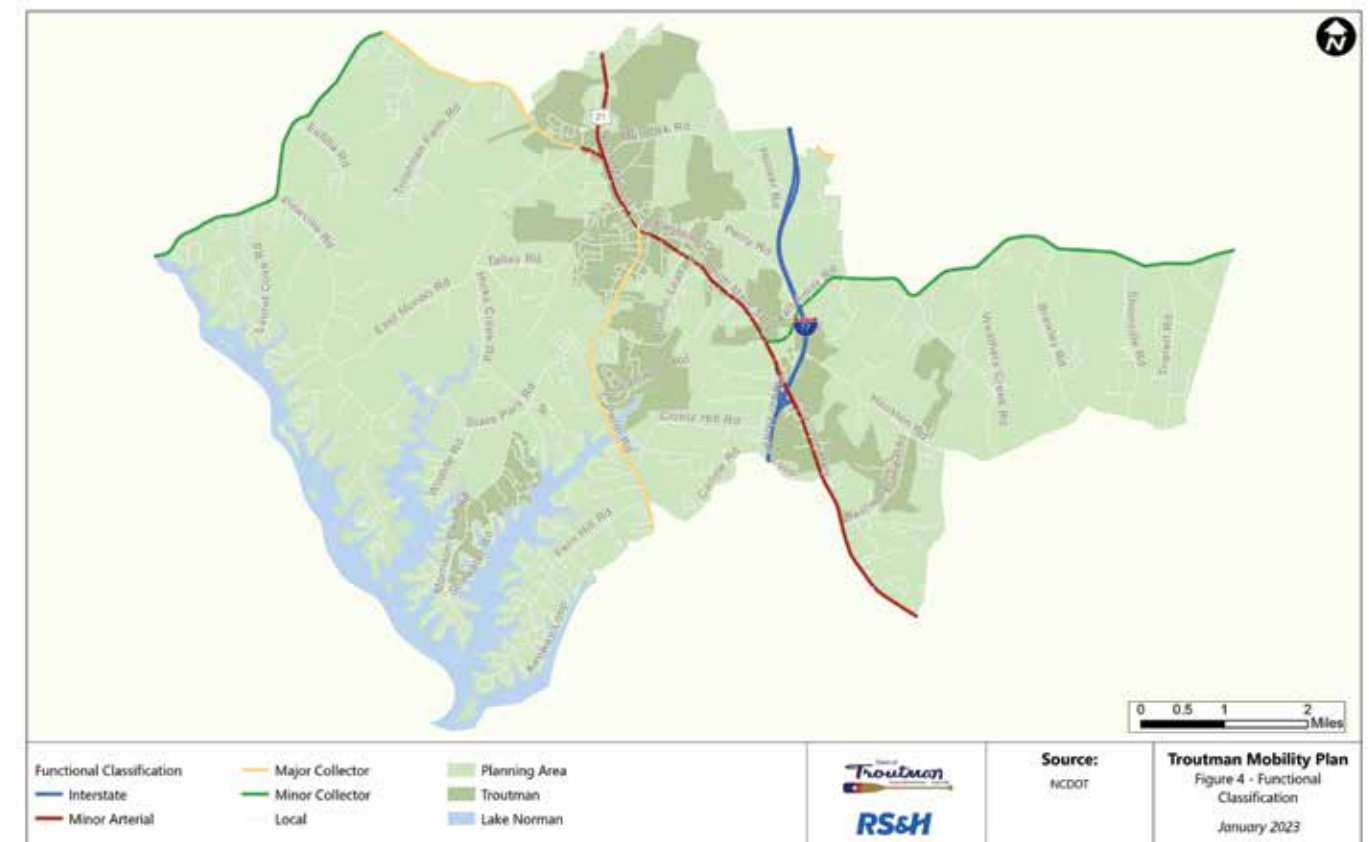
C

Functional
Classification



Review Criteria

- Reasons for the proposed change
 - Land use changes
 - Improvements to roadway
 - Improvements to another roadway that affects traffic patterns of roadway, etc.
- FHWA guidelines for inclusion in a particular category
- Connectivity of the system
- Functional classification network system consistency with surrounding counties, urban areas, or MPO that will be affected by this proposal



See full size Figure 4 in Appendix A

Steps to Changing Functional Classification

- Jurisdiction notifies MPO of desire for a change in functional classification
- MPO reviews to ensure compliance with functional classification criteria
- MPO discusses request at a Transportation Staff Meeting
- MPO places item on TCC/Board agenda for information
- MPO places item on TCC/Board agenda for action
- Board Chair signs a resolution endorsing functional classification map changes
- MPO prepares a request letter and sends it to the MPO Planning Engineer at NCDOT TPD Division. Must contain the following:
 - Roadway name, route and segment
 - Current classification
 - Proposed classification
 - Justification for proposed change
 - Assessment of existing and proposed land use
 - Current and forecasted traffic
 - Any other pertinent information that will help to justify the request
 - Map of the area with the route indicated on the map
 - Documentation of MPO/RPO support in letter or resolution form

Note: functional classification requests cannot be approved solely for Federal funding eligibility.

- Once NCDOT TPD receives the request letter, the Planning Engineer will send the requestor the [NCDOT Functional Classification Change Request Form](#) and instruct that the form be submitted to the FC Project Manager (copy the Planning Engineer and Planning Group Supervisor).
 - Send to Rockne Bryant, TPB (rbryant@ncdot.gov)
- NCDOT TPB reviews the request. If the State DOT approves a change, the unit notifies the MPO (who notifies the jurisdiction) and submits a change, along with supporting information, to the FHWA Division Office for their review and approval.
 - Functional classification system revision request transmittal letter including the maps for each change
- FHWA reviews the request. Upon receipt of FHWA approval (or disapproval), the DOT should notify the affected local jurisdiction of the decision. Upon FHWA's approval of the change request, the FC Project Manager will generate a functional classification system revision distribution memorandum and send it out to all parties involved.
- The FC Project Manager will update the NCDOT Roads and Highways System with the changes and close out the project. The updated functional classification data will then be published with the quarterly NCDOT data publication.

Resources

- **Functional Classification- Routine Changes:**
https://connect.ncdot.gov/projects/planning/TransPlanManuals/2022%20Functional_Classification_Routine.pdf
- **FHWA Functional Classification Guidelines:**
https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/





APPENDIX:

D

Project Prioritization



APPENDIX:

D

Project Prioritization

- Project Screening
- Project Prioritization
- Rationale



Project Screening

Intersection	Old Mountain Rd/E Monbo Rd	US 21/Old Mountain Rd/Murdock Rd	Perth Rd/State Park Rd	US 21/Old Murdock Rd
Location Suggested By	Steering Committee	Steering Committee	Steering Committee	Steering Committee
Within or Adjacent to High Population or Employment TAZ	Yes	Yes	Yes	Yes
Crash Frequency (2017-2021)	Less than 5	68 (top crash location)	9	13
Fatal or Serious Injury Crash	0	Signal	0	0
Existing Intersection Control	Stop	Yes (and slip Lane on Old Mountain Rd)	Stop	Stop
Existing Turn Lanes	N/A	Yes (and slip Lane on Old Mountain Rd)	N/A	N/A
2019 AADT	Old Mountain Rd: 11,500 Monbo Rd: 2,000	US 21: 18,000 south of Old Mountain Rd and 9,300 north of Old Mountain Rd Old Mountain Rd: 11,500	State Park Rd: 5,000 Perth Rd: 8,900	US 21: 18,000 Old Murdock Rd: 2,700
Recommended Bike/Ped Improvements	MUP-10: MUP along Monbo Rd Monbo Rd is part of LNRBR	INT-06: Add ped heads and striped crosswalks across all approaches at Old Mountain Rd / Murdock Rd intersection, update intersection geometrics for ped safety; remove right-turn slip lane on Old Mountain Rd One of six pilot projects in bike/ped plan (includes high level designs and cost estimates) Part of LNRBR and CTT	Part of LNRBR and CTT	INT-05: Add pedestrian crossing north of Old Murdock Rd with US 21/NC 115 at striped median Part of LNRBR and CTT
Studied by Others	Yes - Colonial Crossing TIA U-6175 funded in current STIP but unfunded in DRAFT STIP - widening of Old Mountain Rd	Yes - Colonial Crossing TIA U-6175 (widening of Old Mountain Rd) funded in current STIP but unfunded in DRAFT STIP	Yes - Falls Cove TIA - Yes - Signal being installed by NCDOT.	No
District's Comments	NCDOT required a 100 ft right turn lane on Monbo Road and 100 ft left turn lane on Old Mountain Road. Turn lanes have been installed and are operational.	No improvements required at the intersection.	Falls Cove - 100 ft right turn lane on State Park Road has been completed and accepted by NCDOT.	N/A
RS&H Recommendation	Medium Priority skewed, land availability	High Priority Possibly a good candidate for a roundabout	Low Priority Installing a signal now	High Priority due to wide NB US 21 typical section and crash history Possibly would meet signal warrants.
SC Recommendation	High Priority - Keep on List Proximity to high school (peak hr issues), future middle school, uncertainty of future high school off Overcash Rd	High Priority - Keep on List More truck traffic expected due to development on Murdock Rd; would roundabout help with truck traffic?	Remove from List add to Planned Improvements Map	High Priority - Keep on List one of the more dangerous intersections; Town is not opposed to restrictions (RIRO)

Project Screening (Continued)

Intersection	US 21/Tally St	US 21/Church St	US 21/Autumn Leaf Rd	Autumn Leaf Rd/Perth Rd
Location Suggested By	Steering Committee	Steering Committee	Steering Committee	Steering Committee
Within or Adjacent to High Population or Employment TAZ	No	No	Yes	Yes
Crash Frequency (2017-2021)	28 (4th highest)	14	6	Less than 5
Fatal or Serious Injury Crash	1 SI	0	0	0
Existing Intersection Control	Signal	Stop	Stop	Stop
Existing Turn Lanes	N/A	N/A	N/A	N/A
2019 AADT	US 21: 19,500 Talley St: 2,200	US 21: 19,500 Church St: local street	US 21: 12,500 Autumn Leaf Rd : local street	Autumn Leaf Rd : local street Perth Rd: 8,900
Recommended Bike/Ped Improvements	Part of LNRBR and CTT	INT-03: Upgrade existing rail-trail crossing and add warning signage at E. Church St at US 21/NC 115 and add crossing across Eastway Dr on northern edge Note: Top 10 Bike/Ped Project Part of LNRBR and CTT	Ped-18: Add sidewalks on west side of US 21 from Troutman Elementary School to Barkdale Rd/Oswalt Amity Rd Part of CTT	MUP-13: Add new greenway from Talley St to Autumn Leaf Rd MUP-14: Add new greenway from Perth Rd to bend in Autumn Leaf Rd Perth Rd is part of LNRBR and CTT
Studied by Others	Yes - Colonial Crossing TIA Yes - Signal recently installed by NCDOT.	Yes - Winecoff Village TIA	Yes - Calvins Creek TIA EB-5932: Extend Richardson Creek Greeway from Rumble St to Byers Rd	Yes - Calvins Creek and Falls Cove TIAs
District's Comments	Traffic signal installed roughly 6 months ago.	No improvements required at the intersection.	Calvins Creek TIA recommends 175 ft left turn lane on US 21 onto Autumn Leaf Road. Plans shows a 200 ft left turn lane.	NCDOT will require no improvements.
RS&H Recommendation	Medium Priority Could use additional improvements beyond signal.	High Priority Not an easy fix Could consider turn restrictions off of Church St. onto US 21	Low priority Turn lane is needed, but is being added as part of TIA	Low Priority based on crashes and volumes
SC Recommendation	Medium Priority - Keep on List very visible; need at least a LTL from US US 21	High Priority - Keep on List Were interested in shared signal idea with Wagner St as well as turn restrictions	Medium Priority - Keep on List Anticipate this will be a priority for citizens; mentioned by Town Council during interview	Medium Priority - Keep on List Anticipate this will be a priority for citizens; mentioned by Town Council during interview

Project Screening (Continued)

Intersection	US 21/Barkdale Rd/Ostwalt Amity Rd	Ostwalt Amity Rd/Weathers Creek Rd	US 21/Lexus Dr/Garden Center Ave
Location Suggested By	Steering Committee	Steering Committee	Steering Committee
Within or Adjacent to High Population or Employment TAZ	Yes	Yes	Yes
Crash Frequency (2017-2021)	40 (3rd highest)	Less than 5	49 (2nd highest)
Fatal or Serious Injury Crash	1 SI	2 F (half of fatal crashes occurred at this intersection)	0
Existing Intersection Control	Signal	Stop	Signal
Existing Turn Lanes	N/A	N/A	Yes
2019 AADT	US 21: 12,500 north of Ostwalt Amity Rd and 18,500 south of Ostwalt Amity Rd Ostwalt Amity Rd: 5,700	Ostwalt Amity Rd: 4,200 Weathers Creek Rd: 800	US 21: 16,500 Lexus Dr/Garden Center Ave: local street
Recommended Bike/Ped Improvements	INT-16: Add pedestrian crosswalks, ped heads MUP-15: Add new greenway from bend of Autumn Leaf Rd to US 21/NC 115 Bike-06: Add bikeable shoulder on Ostwalt Amity Rd from US 21/NC 115 to Pilch Rd US 21 is part of CTT	None	INT-11: Upgrade to pedestrian crossings on all sides, ped signal heads MUP 29: Add MUP along Smith Village Development from US 21/NC 115 to Flower House Lp (southern)
Studied by Others	Yes - Rocky Creek and Douglas Industrial Site TIAs	Yes- Shinn Property TIA	Yes - Smith Village and Sutters Mill TIAs
District's Comments	NCDOT will require the following: 1. Construction of a northbound left-turn lane along South Main Street (US 21) with 150 ft of storage and protected phasing during both peak hours. 2. Construction of a southbound left-turn lane along South Main Street (US 21) with 125 ft of storage. 3. Construction of an eastbound right-turn lane along Barkdale Road with 125 ft of storage and permitted-overlap phasing. 4. Construction of a westbound right-turn lane along Ostwalt Amity Road with 100 ft of storage and permitted-overlap phasing.	NCDOT will require no improvements to this intersection No intersection recommendations from the two fatal crashes. One involved a motorcycle in a curve adjacent to the intersection.	NCDOT will require no improvements.
RS&H Recommendation	Low Priority Fairly newly installed signal. Installed between April 2016 and May 2019. Several improvements planned at this intersection	Low Priority based on crashes	High Priority based on crash history
SC Recommendation	Remove from List add to Planned Improvements Map	Remove from List Outside of Town Limits; NCDOT studied 2 fatalities and no design changes were recommended	High Priority - Keep on List More development planned in this area

Project Screening (Continued)

Intersection	US 21/Crosstie Ln	US 21/Flower House Lp (southern)	US 21/Westmoreland Rd
Location Suggested By	Steering Committee	Steering Committee	Steering Committee
Within or Adjacent to High Population or Employment TAZ	Yes	Yes	Yes
Crash Frequency (2017-2021)	Less than 5	Less than 5	11
Fatal or Serious Injury Crash	0	0	0
Existing Intersection Control	Signal	Stop	Stop
Existing Turn Lanes	Yes	N/A	N/A
2019 AADT	US 21: 16,500 Crosstie Ln : local street	US 21: 16,500 Flower House Lp (southern): 2,100	US 21: 14,000 Westmoreland Rd: 850
Recommended Bike/Ped Improvements	MUP-28: Add MUP along US 21/NC 115 from Garden Center Ave to Westmoreland Rd Ped-22: Add sidewalk along US 21/NC 115 from Garden Center Ave to Flower House Lp (southern)	MUP-27: Add MUP along Flower House Lp from US 21/NC 115 to US 21/NC 115 MUP-28: Add MUP along US 21/NC 115 from Garden Center Ave to Westmoreland Rd Ped-22: Add sidewalk along US 21/NC 115 from Garden Center Ave to Flower House Lp (southern)	MUP-20: Add new MUP to Westmoreland Rd from US 21/NC 115 to Richardson Creek Greenway Extn MUP-28: Add MUP along US 21/NC 115 from Garden Center Ave to Westmoreland Rd Part of CTT
Studied by Others	Yes - Smith Village and Sutters Mill TIAs	Yes - Smith Village TIA	Yes - Sutters Mill, Westmoreland Village, and Smith Village TIAs
District's Comments	Smith Village Site Access one NCDOT will require: 1. a northbound 250 ft left-turn Lane on US 21 2. a 400 ft thru lane (Developer required if not done by others) 3. Extend right turn lane to 300 ft 4. Maximize dual left-turn lanes southbound 5. Restripe existing left-turn to thru/left lane on Crosstie westbound Sutters Mill - NCDOT will require no improvements.	NCDOT will require no improvements.	NCDOT will require no improvements.
RS&H Recommendation	Low Priority based on crashes Several improvements planned at this intersection.	Low Priority based on crashes	Low Priority based on crashes
SC Recommendation	Remove from List add to Planned Improvements Map	Medium Priority - Keep on List a lot of development activity in area; may not need improvements now, but will in the future	Remove from List Outside of Town Limits

Project Screening (Continued)

Intersection	Murdock Rd/Duck Creek Rd/Hoover Rd	US 21/Rumple St	US 21/S Eastway Dr
Location Suggested By	Steering Committee	Steering Committee	Lynne
Within or Adjacent to High Population or Employment TAZ	Yes	No	Yes
Crash Frequency (2017-2021)	Less than 5	10	Less than 5
Fatal or Serious Injury Crash	0	0	0
Existing Intersection Control	Stop	Stop	Stop
Existing Turn Lanes	N/A	N/A	N/A
2019 AADT	Murdock Rd: local street Duck Creek Rd: local street Hoover Rd: 450	US 21: 12,500 Rumple St: local street	US 21: 12,500 S Eastway Dr: 950
Recommended Bike/Ped Improvements	None	INT-01: Add new pedestrian crosswalk to connect from rail-trail across US 21/NC115 towards Troutman Elementary and across Eastway Dr. Evaluate for PHB, RRF, and/or high visibility crossing markings Note: Top 10 Bike/Ped Project Part of CTT	Ped-21: Add sidewalk on Eastway Dr
Studied by Others	No	Yes - Winecoff Village TIA	Yes - Perry Road TIA
District's Comments	N/A	NCDOT will require no improvements.	No improvements recommended in TIA. SB Approach will drop to LOS E with a 26% increase in delay but almost exclusive left-turn movements so exclusive left-turn lane will only provide minimal benefits. A traffic signal is not feasible since projected traffic volumes would not warrant a signal.
RS&H Recommendation	Low Priority based on crashes and volumes	High Bike/Ped Priority Medium Roadway Priority A main emphasis should be pedestrian accommodations. Not a pilot project in bike/ped plan (no designs or cost estimates).	Low Priority
SC Recommendation	Remove from List Outside of Town Limits	High Priority - Keep on List Heavily used to get to I-77	Low Priority Given TIA results

Project Prioritization

Project	SCORE												
	Local Commitment			System Benefit				Total	Rank	Requested \$ Amt	Total Project Cost	Cost Effectiveness	Min Cost Effectiveness
	Local Match* Points	Critical Opportunity Points	Project Readiness Points	Safety Points	Congestion Points	Total Subpoints	Cost Effectiveness Points						
Old Mountain Rd/E Monbo Rd	0	0	0	2.35	9.44	11.79	5.62	17.41	9	\$1,200,000.00	\$1,500,000.00	\$101,781.00	\$38,132.00
US 21/Old Mountain Rd/Murdock Rd	0	0	0	10	15	25	11.92	36.92	1	\$1,200,000.00	\$1,500,000.00	\$48,000.00	\$38,132.00
US 21/Old Murdock Rd	0	0	0	2.01	14.33	16.34	11.68	28.02	4	\$800,000.00	\$1,000,000.00	\$48,960.00	\$38,132.00
US 21/Talley Rd	0	0	0	4.2	14.67	18.87	13.49	32.36	3	\$800,000.00	\$1,000,000.00	\$42,395.00	\$38,132.00
US 21/Church St	0	0	0	2.23	13.78	16.01	7.63	23.64	5	\$1,200,000.00	\$1,500,000.00	\$74,953.00	\$38,132.00
US 21/Autumn Leaf Rd	0	0	0	1.5	8.78	10.28	4.9	15.18	10	\$1,200,000.00	\$1,500,000.00	\$116,732.00	\$38,132.00
Autumn Leaf Rd/Perth Rd	0	0	0	0.88	7.44	8.32	11.9	20.22	7	\$400,000.00	\$500,000.00	\$48,077.00	\$38,132.00
US 21/Lexus Dr/Garden Center Ave	0	0	0	8.87	12.11	20.98	15	35.98	2	\$800,000.00	\$1,000,000.00	\$38,132.00	\$38,132.00
US 21/Flower House Lp (southern)	0	0	0	1.03	10.78	11.81	8.44	20.25	6	\$800,000.00	\$1,000,000.00	\$67,739.00	\$38,132.00
US 21/Rumple St	0	0	0	2.13	10.44	12.57	5.99	18.56	8	\$1,200,000.00	\$1,500,000.00	\$95,465.00	\$38,132.00

*Assumes 20% match

Appendix 3 - Application Scoring Criteria

Requested \$ Amt is high level estimate generated by RS&H (high - \$1,500,000, medium - \$1,000,000, low - \$500,000)

RATIONALE FOR SELECTION OF TOP THREE INTERSECTIONS

1. US 21/Old Mountain Rd/Murdock Rd
 - a. Ranked 1st in both CRTPO scoring criteria and public survey
2. US 21/Old Murdock Road
 - a. Ranked 4th in CRTPO criteria and 3rd in public survey
 - b. The intersection is narrow and tough to access US 21 at peak times
 - c. It also serves as access to the main shopping center in Town which increases its importance
3. US 21/Church Street
 - a. Ranked 5th in CRTPO criteria and 8th in public survey
 - b. Staff feels this is the kind of intersection this plan is made for
 - c. Any access onto Main Street is nearly impossible in this section of town and improvements are necessary
 - d. Scores better than US 21/Rumple St

RATIONALE FOR NOT INCLUDING AS A TOP THREE INTERSECTION

- US 21/Talley Rd
 - New traffic signal installed less than six months ago
- US 21/Lexus Dr/Garden Center Ave
 - Improvements will likely be required in near future with all the new development in this area
- US 21/Flower House Lp (South)
 - This intersection is getting a traffic signal with the new Food Lion development
 - Believe public may have confused this intersection with US 21/Flower House Lp (North) which is part of a STIP project to be complete in FY 2025







APPENDIX:

E

Cost Estimates and Designs



US 21 and Old Mountain Rd/Murdock Rd Concept

3) US21 and Old Mountain Rd/Murdock Rd - Realign

Activity	Cost
Preliminary Engineering/Design (25% of Construction Cost)	\$ 373,000.00
PE Contingency (40%)	\$ 150,000.00
Total PE Phase	\$ 530,000.00
Right-of-Way Cost	\$ 212,000.00
ROW & Utilities Contingency (40%)	\$ 85,000.00
Total ROW Phase	\$ 300,000.00
Pedestrian Crossing North of Old Murdock Road*	\$ 410,000.00
Traffic Signal @ \$150,000	\$ 150,000.00
Removal of Existing Asphalt @ \$6/SY	\$ 7,620.00
0.45 Mi. Closed Drainage System @ \$750,000/mile	\$ 337,500.00
630' New Location Roadway @ \$795.45/LF	\$ 501,133.50
2400' Curb and Gutter @ \$35/LF	\$ 84,000.00
Construction Cost	\$ 1,490,253.50
Construction Cost Estimate (10% of Construction Cost)	\$ 149,025.35
Construction Inspection (20% of Construction Cost)	\$ 299,000.00
Construction + CEI Contingency (40%)	\$ 716,000.00
Total Construction Phase	\$ 2,660,000.00
Project Total	\$ 3,490,000.00
Project Total For FFY 2024 (+10% Inflation)	\$ 3,839,000.00

Right-of-Way Cost						
Parcel #	GIS Land Value	Total Parcel Area (Acres)	Cost/Acre	ROW Impact (Acres)	ROW Impact Value	2.0 * ROW Impact Value + \$5,000 Appraisal
3-1	\$ 219,300.00	2.150	\$ 102,000.00	0.0154	\$ 1,570.80	\$ 10,000.00
3-2	\$ 142,200.00	2.550	\$ 55,764.71	0.2252	\$ 12,558.21	\$ 30,116.42
3-3	\$ 169,870.00	1.050	\$ 161,780.95	0.3276	\$ 52,999.44	\$ 110,998.88
3-4	\$ 3,100.00	0.155	\$ 20,000.00	0.0417	\$ 834.00	\$ 10,000.00
3-5	\$ 44,200.00	0.884	\$ 50,000.00	0.0241	\$ 1,205.00	\$ 10,000.00
3-6	\$ 311,220.00	1.482	\$ 210,000.00	0.0210	\$ 4,410.00	\$ 10,000.00
3-7	\$ 90,000.00	0.450	\$ 200,000.00	0.008	\$ 1,660.00	\$ 10,000.00
3-8	\$ 46,000.00	0.230	\$ 200,000.00	0.004	\$ 800.00	\$ 10,000.00
3-9	\$ 30,000.00	0.030	\$ 1,000,000.00	0.007	\$ 7,000.00	\$ 10,000.00
3-10	\$ 136,120.00	1.194	\$ 114,003.35	0.024	\$ 2,736.08	\$ 10,000.00
Total				0.6743	\$ 83,037.45	\$ 211,115.30

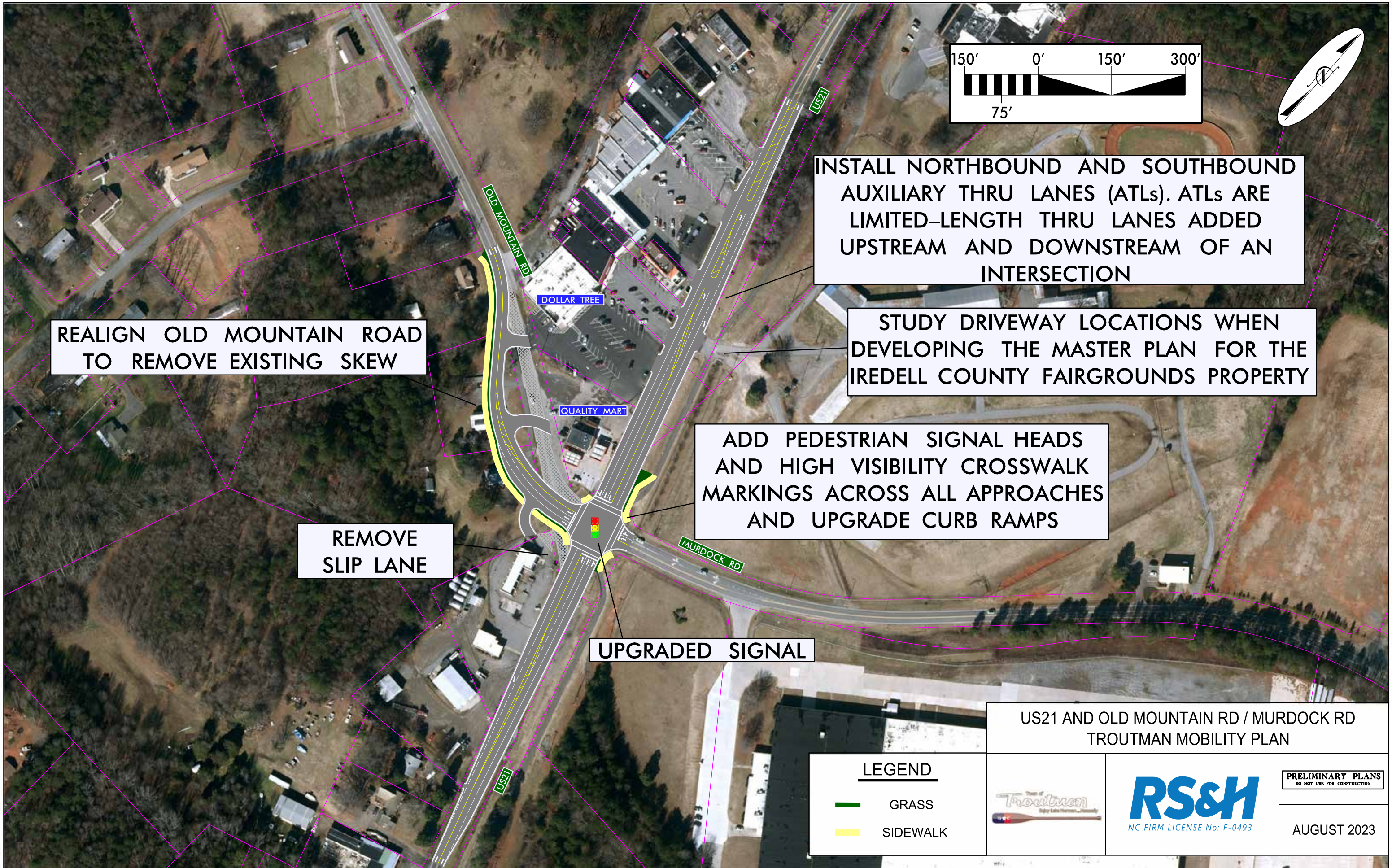
Notes

Total values rounded using 4 significant figures.

A minimum of \$10,000 used per impacted parcel.

Cost for new location roadway based on 2/1/21 Cost Per Mile spreadsheet provided by NCDOT.

*Cost pulled from August 2022 Troutman Bicycle and Pedestrian Plan



REALIGN OLD MOUNTAIN ROAD TO REMOVE EXISTING SKEW

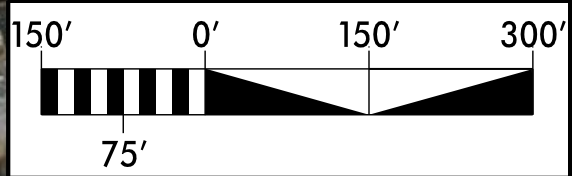
REMOVE SLIP LANE

UPGRADED SIGNAL



ADD PEDESTRIAN SIGNAL HEADS AND HIGH VISIBILITY CROSSWALK MARKINGS ACROSS ALL APPROACHES AND UPGRADE CURB RAMPS

STUDY DRIVEWAY LOCATIONS WHEN DEVELOPING THE MASTER PLAN FOR THE IREDELL COUNTY FAIRGROUNDS PROPERTY

INSTALL NORTHBOUND AND SOUTHBOUND AUXILIARY THRU LANES (ATLs). ATLs ARE LIMITED-LENGTH THRU LANES ADDED UPSTREAM AND DOWNSTREAM OF AN INTERSECTION



US21 AND OLD MOUNTAIN RD / MURDOCK RD
TROUTMAN MOBILITY PLAN

LEGEND	
	GRASS
	SIDEWALK



PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
AUGUST 2023

US 21 and Murdock Rd Concept

2) US21 and Old Murdock Rd - Turn Lane Improvements

Activity	Cost
Preliminary Engineering/Design (25% of Construction Cost)	\$ 66,000.00
PE Contingency (40%)	\$ 27,000.00
Total PE Phase	\$ 100,000.00
Right-of-Way Cost	\$ 30,000.00
ROW & Utilities Contingency (40%)	\$ 12,000.00
Total ROW Phase	\$ 50,000.00
Pedestrian Crossing North of Old Murdock Road*	\$ 105,000.00
225' Left Turn Lane @ \$475/LF	\$ 106,875.00
0.02 Mi. Closed Drainage System @ \$750,000/mile	\$ 15,000.00
1024' Curb and Gutter @ \$35/LF	\$ 35,840.00
Construction Cost	\$ 262,715.00
Construction Cost Estimate (10% of Construction Cost)	\$ 26,271.50
Construction Inspection (20% of Construction Cost)	\$ 53,000.00
Construction + CEI Contingency (40%)	\$ 127,000.00
Total Construction Phase	\$ 320,000.00
Project Total	\$ 470,000.00
Project Total For FFY 2024 (+10% Inflation)	\$ 517,000.00

Right-of-Way Cost						
Parcel #	GIS Land Value	Total Parcel Area (Acres)	Cost/Acre	ROW Impact (Acres)	ROW Impact Value	2.0 * ROW Impact Value + \$5,000 Appraisal
3-1	\$ 4,000.00	0.100	\$ 40,000.00	0.0022	\$ 88.00	\$ 10,000.00
3-2	\$ 25,000.00	0.244	\$ 102,585.15	0.0084	\$ 861.72	\$ 10,000.00
3-3	\$ 25,000.00	0.289	\$ 86,505.19	0.0109	\$ 942.91	\$ 10,000.00
Total				0.0215	\$ 1,892.62	\$ 30,000.00

Notes

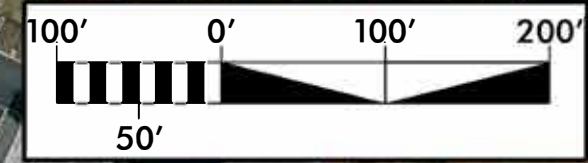
Turn Lane Cost (per LF) based on 2/1/21 Cost Per Mile spreadsheet provided by NCDOT. Cost to add turn lane to existing 2 lane undivided roadway.

Total values rounded using 4 significant figures.

A minimum of \$10,000 used per impacted parcel.

*Cost pulled from August 2022 *Troutman Bicycle and Pedestrian Plan*

CLOSE OFF DRIVEWAY CONNECTION TO AID IN PEDESTRIAN CROSSING AND SAFETY



WORK WITH NCDOT TO INSTALL A PEDESTRIAN CROSSING ACROSS US 21 NORTH OF OLD MURDOCK RD WITH A FLASHING LIGHT OR BEACON

UNSIGNALIZED INTERSECTION

225' LEFT TURN LANE

LYTTON STREET



GOODMAN RD

OLD MURDOCK RD

CONSIDER EXTENDING LYTTON ST TO THE NORTH (REVISIT THE ALIGNMENT PROPOSED IN THE TROUTMAN STRATEGIC PLAN AND CONSIDER AN ALTERNATIVE CONNECTION TO US 21)

PEDESTRIAN CROSSING FOR OLD MURDOCK RD RELOCATED

US21 AND MURDOCK RD
TROUTMAN MOBILITY PLAN

LEGEND	
	GRASS
	SIDEWALK



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AUGUST 2023

US 21 and Church St Estimate

1) US21 and Church St - Intersection Improvements

Activity	Cost
Preliminary Engineering/Design (25% of Construction Cost)	\$ 39,000.00
PE Contingency (40%)	\$ 16,000.00
Total PE Phase	\$ 60,000.00
Right-of-Way Cost	
Right-of-Way Cost	\$ 20,000.00
ROW & Utilities Contingency (40%)	\$ 8,000.00
Total ROW Phase	\$ 30,000.00
Construction Phase	
Pedestrian Improvements and Signage*	\$ 110,000.00
Removal of Existing Asphalt @ \$6/SY	\$ 742.32
50' Temporary Concrete Barrier @ \$59/LF	\$ 2,950.00
0.02 Mi. Closed Drainage System @ \$750,000/mile	\$ 15,000.00
750' Curb and Gutter @ \$35/LF	\$ 26,250.00
Construction Cost	\$ 154,942.32
Construction Cost Estimate (10% of Construction Cost)	\$ 15,494.23
Construction Inspection (20% of Construction Cost)	\$ 31,000.00
Construction + CEI Contingency (40%)	\$ 75,000.00
Total Construction Phase	\$ 280,000.00
Project Total	\$ 370,000.00
Project Total For FFY 2024 (+10% Inflation)	\$ 407,000.00

Right-of-Way Cost						
Parcel #	GIS Land Value	Total Parcel Area (Acres)	Cost/Acre	ROW Impact (Acres)	ROW Impact Value	2.0 * ROW Impact Value + \$5,000 Appraisal
1-1	\$ 470.00	0.063	\$ 7,460.32	0.0089	\$ 66.40	\$ 10,000.00
1-2	\$ 13,200.00	1.169	\$ 11,287.84	0.0125	\$ 141.10	\$ 10,000.00
Total				0.0214	\$ 207.49	\$ 20,000.00

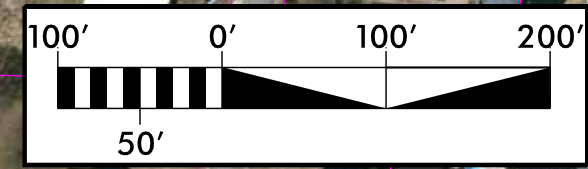
Notes

Total values rounded using 4 significant figures.

A minimum of \$10,000 used per impacted parcel.

Unit prices were calculated based on NCDOT 2020 bid results.

*Cost pulled from August 2022 *Troutman Bicycle and Pedestrian Plan*



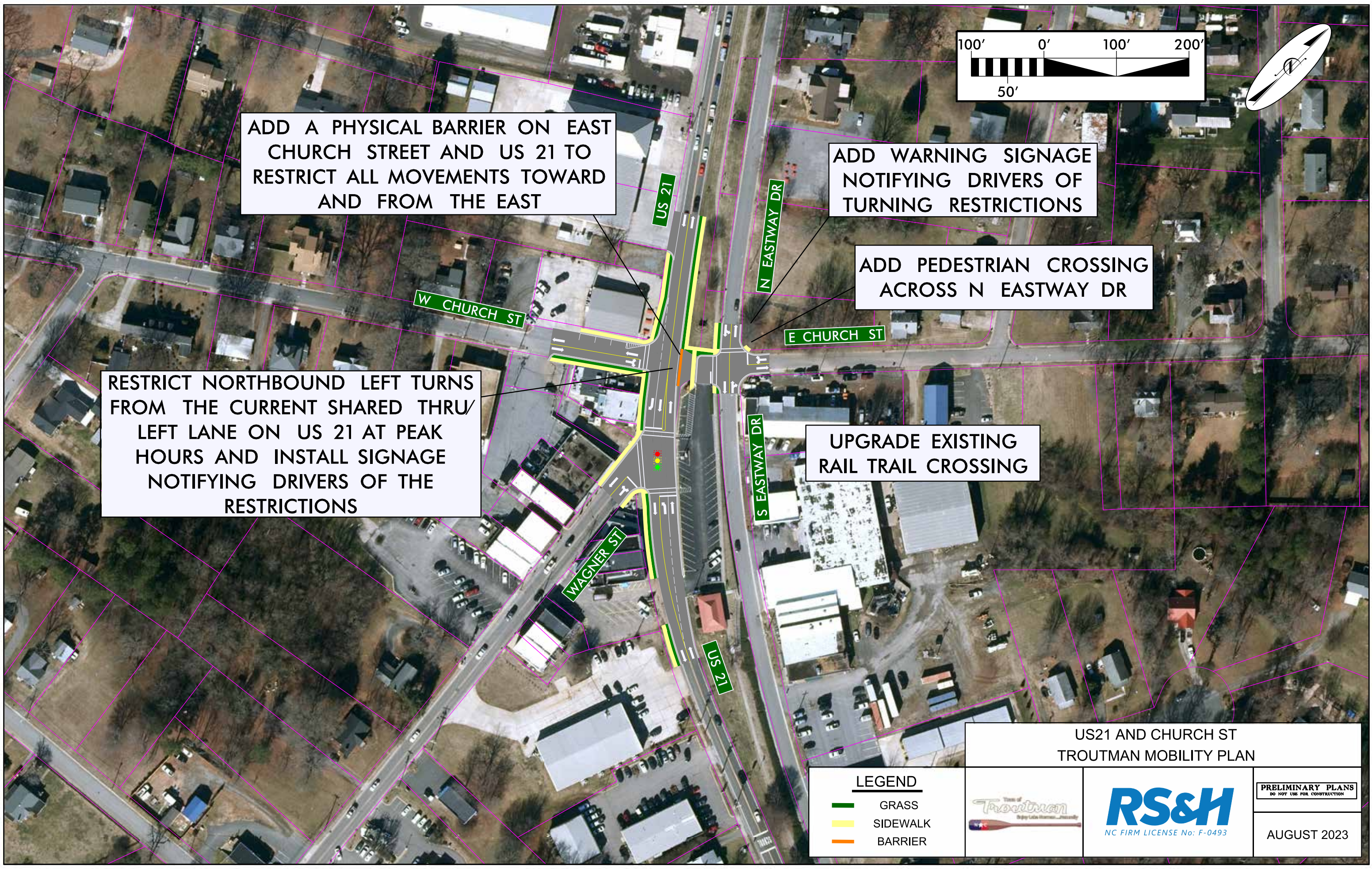
ADD A PHYSICAL BARRIER ON EAST CHURCH STREET AND US 21 TO RESTRICT ALL MOVEMENTS TOWARD AND FROM THE EAST

ADD WARNING SIGNAGE NOTIFYING DRIVERS OF TURNING RESTRICTIONS

ADD PEDESTRIAN CROSSING ACROSS N EASTWAY DR

RESTRICT NORTHBOUND LEFT TURNS FROM THE CURRENT SHARED THRU/LEFT LANE ON US 21 AT PEAK HOURS AND INSTALL SIGNAGE NOTIFYING DRIVERS OF THE RESTRICTIONS

UPGRADE EXISTING RAIL TRAIL CROSSING



US21 AND CHURCH ST
TROUTMAN MOBILITY PLAN

LEGEND

	GRASS
	SIDEWALK
	BARRIER



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AUGUST 2023





APPENDIX:

F

Focus Areas



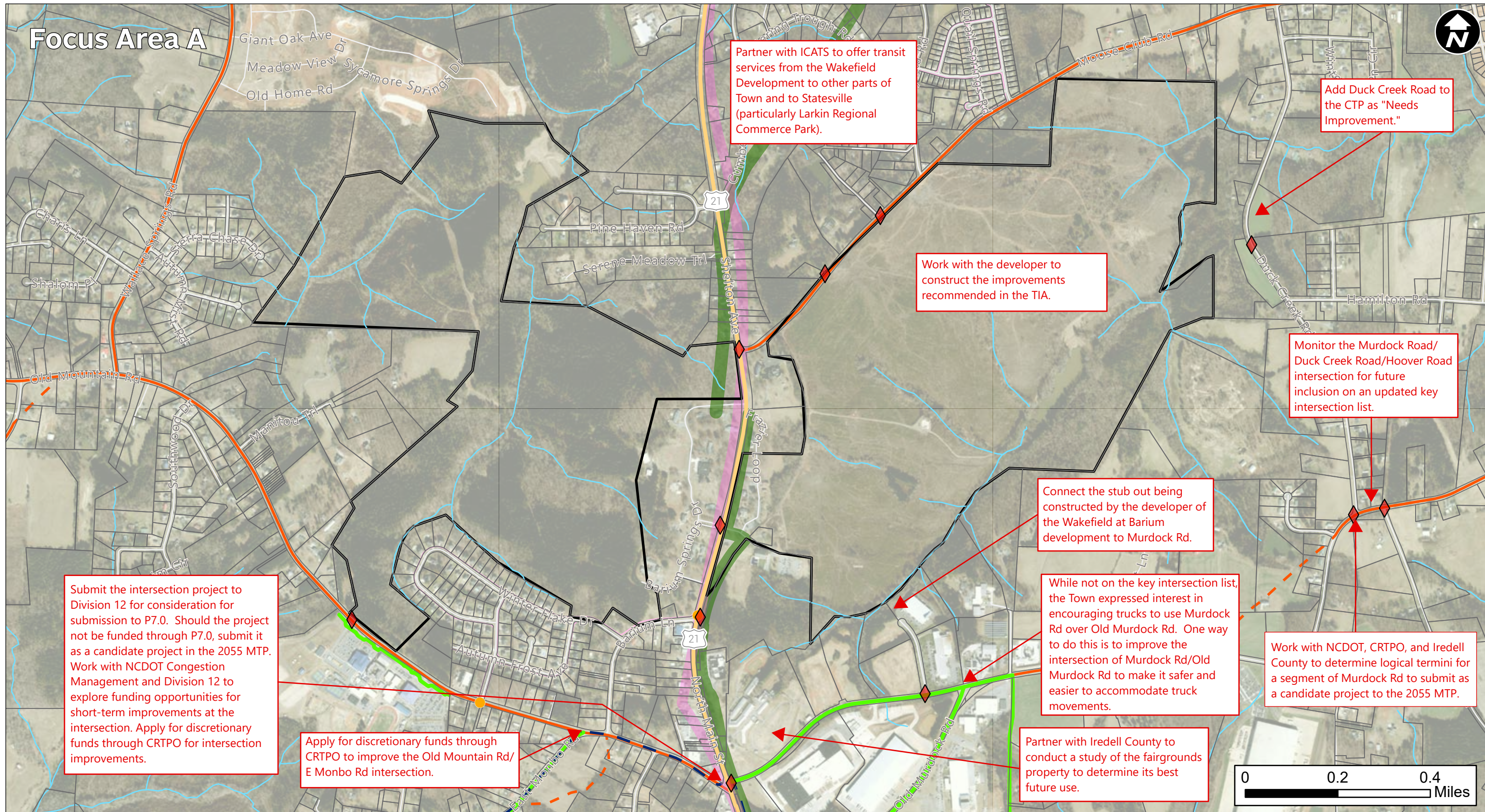
APPENDIX:

F

Focus Areas



Focus Area A



Submit the intersection project to Division 12 for consideration for submission to P7.0. Should the project not be funded through P7.0, 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.

Apply for discretionary funds through CRTPO to improve the Old Mountain Rd/ E Monbo Rd intersection.

Partner with ICATS to offer transit services from the Wakefield Development to other parts of Town and to Statesville (particularly Larkin Regional Commerce Park).

Work with the developer to construct the improvements recommended in the TIA.

Add Duck Creek Road to the CTP as "Needs Improvement."

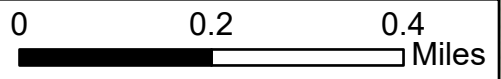
Monitor the Murdock Road/ Duck Creek Road/Hoover Road intersection for future inclusion on an updated key intersection list.

Connect the stub out being constructed by the developer of the Wakefield at Barium development to Murdock Rd.

While not on the key intersection list, the Town expressed interest in encouraging trucks to use Murdock Rd over Old Murdock Rd. One way to do this is to improve the intersection of Murdock Rd/Old Murdock Rd to make it safer and easier to accommodate truck movements.

Work with NCDOT, CRTPO, and Iredell County to determine logical termini for a segment of Murdock Rd to submit as a candidate project to the 2055 MTP.

Partner with Iredell County to conduct a study of the fairgrounds property to determine its best future use.

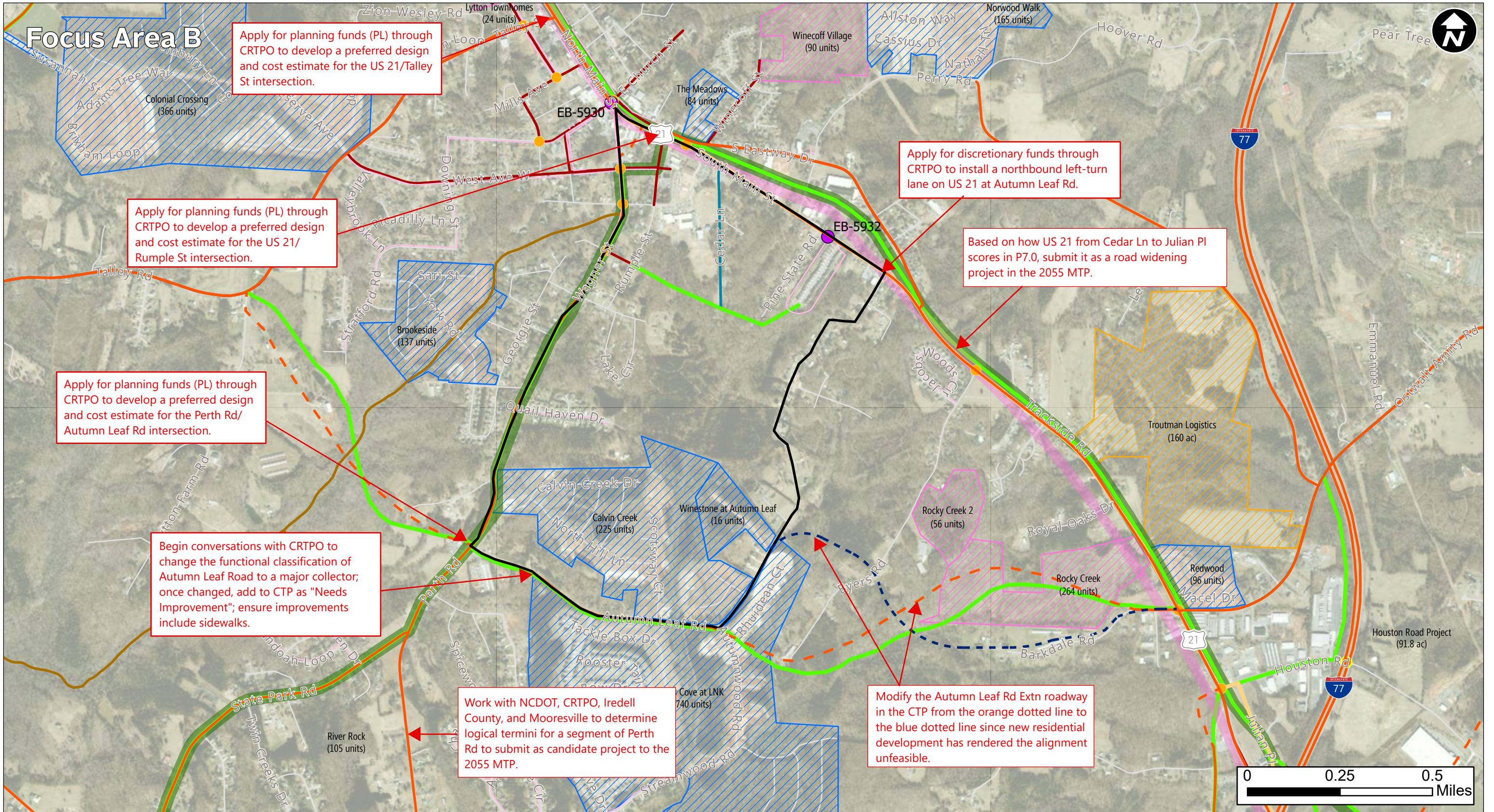


Focus Area	Needs Improvement Roadway	Recommended Multi-Use Path	TIA Study Intersection	Carolina Thread Trail	The Community Connection
Pedestrian Crossing	Recommended Roadway	Lake Norman Regional Bicycle Route	Existing Sidewalk	Emerging Mobility Corridor	Stream/Creek



Source:
Town of Troutman

Troutman Mobility Plan
Barium Springs Focus Area Recommendations
July 2023

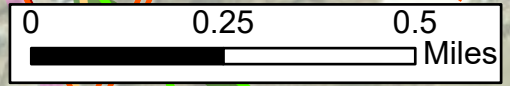


- Focus Area
- Needs Improvement
- Recommended
- Emerging Mobility Corridor
- Pedestrian Crossing
- Existing Sidewalk
- Sidewalk
- Multi-Use Path
- On-Road Bicycle
- Unpaved Trail
- Carolina Thread Trail
- CTP Needs Improvement Roadway
- CTP Recommended Roadway
- Revised CTP
- Recommended Roadway
- STIP Project
- The Community Connection
- Approved Residential Development
- Approved Non-Residential Development
- Under Construction Residential Development
- Approved Non-Residential Development

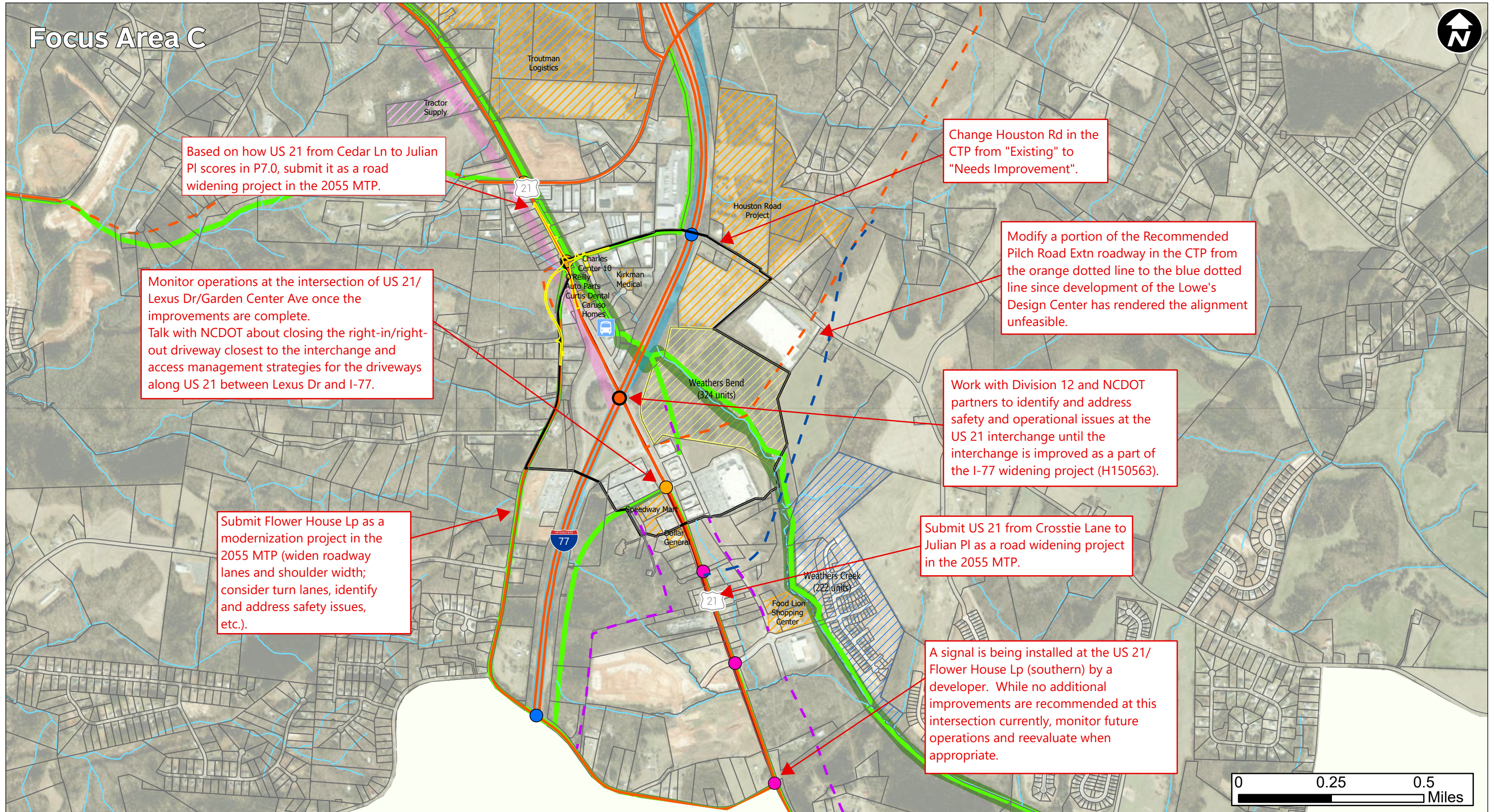


Source:
Town of Troutman

Troutman Mobility Plan
Autumn Leaf Rd
Focus Area Recommendations
July 2023



Focus Area C



<ul style="list-style-type: none"> Focus Area Existing ICATS Stop 	<ul style="list-style-type: none"> Bike/Ped Improvements On Bridge Pedestrian Crossing Improvements Needs Improvement 	<ul style="list-style-type: none"> Sidewalk Multi-Use Path Carolina Thread Trail CTP Roadway Needs Improvement 	<ul style="list-style-type: none"> CTP Recommended Roadway Revised CTP Recommended Roadway Candidate New Roadway 	<ul style="list-style-type: none"> Potential New Traffic Signal High Capacity Transit (HCT) Corridor Emerging Mobility Corridor R-5711 STIP Project 	<ul style="list-style-type: none"> Stream/Creek Proposed Residential Development Under Construction Residential Development 	<ul style="list-style-type: none"> Approved Non-Residential Development Proposed Non-Residential Development 		<p>Source:</p> <p>Town of Troutman</p>	<p>Troutman Mobility Plan</p> <p>Exit 42 Focus Area Recommendations</p> <p>July 2023</p>
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APPENDIX:

G

Transportation Impact Analyses



APPENDIX:

G

Transportation Impact Analyses

Interview with the Town of Mooresville

Interview Date: 6/29/23

Topic: Transportation
Impact Analyses



Town of Mooresville

Interview Date: 6/29/23

Topic: Transportation Impact Analyses

Resources:

- TIA Ordinance
 - Part of UDO, sections 5.13 (Transportation Infrastructure Sufficiency) and 5.14 (Transportation Impact Analysis Standards)
 - <https://cms5.revize.com/revize/mooresvillenc/Site%20Documents/Planning/Unified%20Development%20Ordinance.pdf>
- TIA Policy (TIA Procedures Manual)
 - More technical and is focused on the required components of a TIA vs what requires a TIA
 - https://cms5.revize.com/revize/mooresvillenc/Site%20Documents/Planning/TIA_Policy.pdf
- TIA Memorandum of Understanding
 - Part of TIA policy
 - Signed by Town staff, NCDOT, and the developer
 - Must be in place before consultant begins work on TIA
- Mitigation Measures Agreement
 - Part of TIA policy
 - Signed by Town staff, NCDOT, and the developer
 - Summarizes the mitigation measures that will be required by the developer; must be implemented prior to receipt of a CO or final plat approval

Mooresville's Approach

- Mooresville recently updated its TIA ordinance (Nov 2022); it was previously in the land development/zoning ordinance and not its own ordinance.
- Looked at other examples (Charlotte, Cary)
- Have a TIA Ordinance and TIA Policy. The TIA Ordinance provides information on what requires a TIA, and the TIA Policy details what goes in the TIA.
- UDO Section Chapter 5 (Development Standards)
 - 5.13 Transportation Infrastructure Sufficiency
 - Every site plan is subject to a determination of the sufficiency of transportation infrastructure (LOS C or better)
 - 5.14 Transportation Impact Analysis Standards
 - Purpose
 - Capacity Analysis
 - Queuing Analysis
 - Easy to determine if a developer triggers any of these three things that would require an offsite improvement
 - Identify site specific impacts are not existing deficiencies - unless it's a safety concern
- A Mandatory Scoping Meeting is part of the TIA policy.
- The Town used to have on-call consultants a developer would have to use to conduct the TIA. This proved to be an administrative nightmare. The consultant was unsure if their client was the town or a developer. This was changed to allow the developer to choose who conducts the TIA as long as it is completed under NCDOT's guidelines and meets the Town's policy. This approach is straightforward and has worked out better for all parties.
- Sometimes the ultimate improvements are what is in the TIA. Sometimes additional improvements are requested from the Town or NCDOT. The TIA does not have to be amended (even if it gets approved), rather the improvements get included in a final agreement. Most developers are open to conversation when the improvements are easy to justify (like from a public safety perspective).
- Originally required the TIA to be complete and agreement signed before concept plan approval. This was challenging for developers due to a lot of upfront costs so when the TIA was pulled out into its own ordinance it was modified to start the TIA and concept plan at the same time.

Best Practices

- Allow the developer to choose who conducts the TIA as long as it is completed under NCDOT's guidelines and meets the local policy.
- Improvements require negotiations. Negotiations should be based in technical backing.
- Make the TIA its own ordinance (separating from land development guidelines allows for more ownership).
- Tie improvements to the rezoning; get the Mitigation Measures Agreement in place first.
- Start TIA and concept plan at the same time instead of waiting for the TIA to be completed and agreement signed before concept plan approval.
- Assumptions are made when developing MOU and Mitigation Measures Agreement. If those assumptions change, require the developer to provide an update via a technical memo.
- Review the TIA before NCDOT and communicate local concerns/local knowledge to NCDOT before any decisions are made.
- Have an updated plan in place.
- Bring in a representative from the Planning Department to scoping meetings.
- Check to see what the CTP says regarding future right-of-way when a concept plan comes in (before the TIA and before a rezoning). It provides guidance on what can be required for dedication vs reservation.

Challenges

- State is the owning entity and control the driveway permits, but does not have the authority/legal backing to make requirements like a municipality does through its ordinances.
- Onsite measures are required as a part of private development, but it can be challenging to require developers to install offsite measures or purchasing property they don't own to put in public infrastructure.
- A property owner does not have to sell their property. If the property owner doesn't want to sell, the property has to be condemned. NCDOT does not get into condemnation.
- The Town has been challenged and has lost. Prohibits the ability to stop the developer from progressing with their development.
- Off-site measures require a lot of interpretation; uncertainties associated with timing of STIP projects and TIA recommendations.
- There are a lot of intricacies between the TIA Policy and TIA Ordinance to ensure everything works together; it is important to have a consistent person involved in the process.
- Difficult to keep up to date on the state planning side with the STIP, CRTPO processes, and private development on other sites.

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Town of Troutman

Troutman Planning Department
364 N Eastway Drive
Troutman, NC 28166