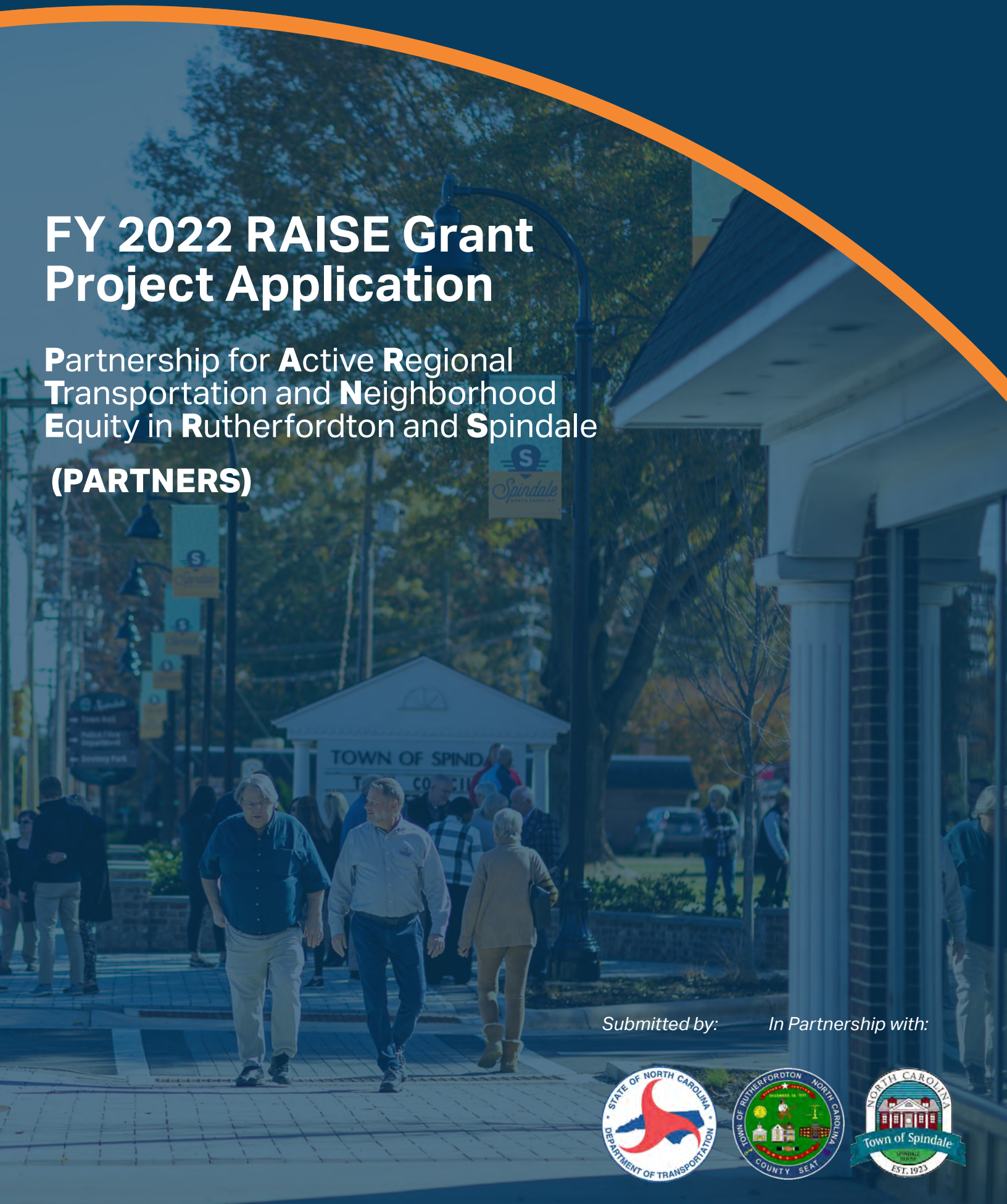
FY 2022 RAISE Grant Project Application

Partnership for **A**ctive **R**egional **T**ransportation and **N**eighborhood **E**quity in **R**utherfordton and **S**pindale

(PARTNERS)



Submitted by:

In Partnership with:

Table of Contents

Application Information

Supplemental Materials are available online at:	https://connect.ncdot.gov/resources/RAISE2022-IMD/Pages/default.aspx
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Project Type:	Capital Grant Request, Complete Streets, Rural

Project Snapshot

Purpose

PARTNERS will transform an existing 2.5-mile multilane roadway into a vibrant and inclusive complete street that improves safety, provides connectivity, and improves mobility by adding sidewalks, multi-use paths (MUPs), and improved transit facilities to equitably serve the community, including a census block group with a 58% minority population.

Location

Readiness & Risk

NCDOT will administer the Project, leveraging its extensive experience completing RAISE projects to reduce risk and deliver the Project by June 2027.

State Match: $2,360,000

Local Match: $1,010,000

Other Federal: $1,000,000

RAISE Funding Request
$20,040,000

Total Project Cost: $24,410,000

Cost-Benefit Ratio	Total Net Benefits
1.56	$8.3 Million

Safety Benefits
$17.6 Million in Benefits

State of Good Repair
$1.4 Million in Benefits

Economic Vitality
$5.7 Million in Benefits

Environmental Benefits
$100,000 in Benefits

Safety

Constructs a new roundabout at Railroad Ave, implements traffic calming measures, and provides safe facilities for bicyclists, pedestrians, and transit riders.

Environmental Sustainability

Links the Purple-Martin Greenway and Thermal Belt Rail Trail, connecting 19 miles of greenway.

Quality of Life

Improves accessibility to jobs, education and healthcare by mitigating physical barriers.

Mobility and Community Connectivity

Enhances transit service by optimizing routes, adding four shelters, and installing bus stop amenities.

Economic Competitiveness and Opportunity

Improves regional economic strength by increasing travel time reliability and strengthening a rural main street connection between two towns.

State of Good Repair

Restores and modernizes core infrastructure assets and addresses system vulnerabilities.

Partnership and Collaboration

Demonstrates the collaborative partnership between the Town of Rutherfordton, the Town of Spindale, and NCDOT to improve mobility and access for vulnerable communities.

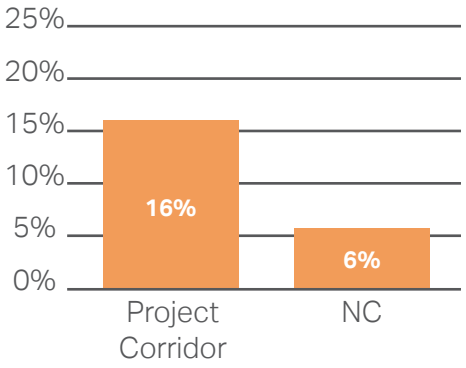
Innovation

Expands EV charging infrastructure to facilitate the transition to a more sustainable mode of transportation and utilizes signal synchronization to increase efficiency and safety.

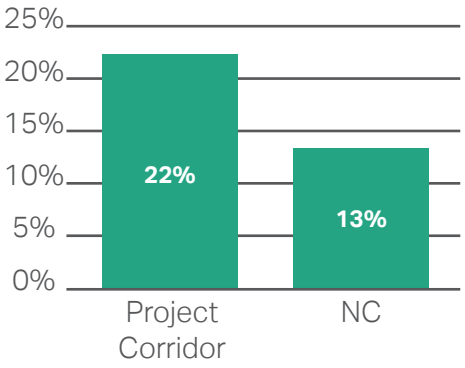
Application Materials

https://connect.ncdot.gov/resources/RAISE2022-IMD/Pages/default.aspx

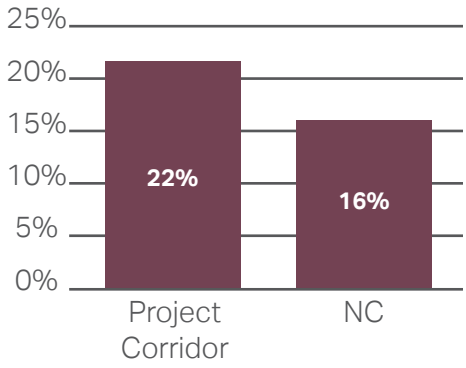
Zero Vehicle Households

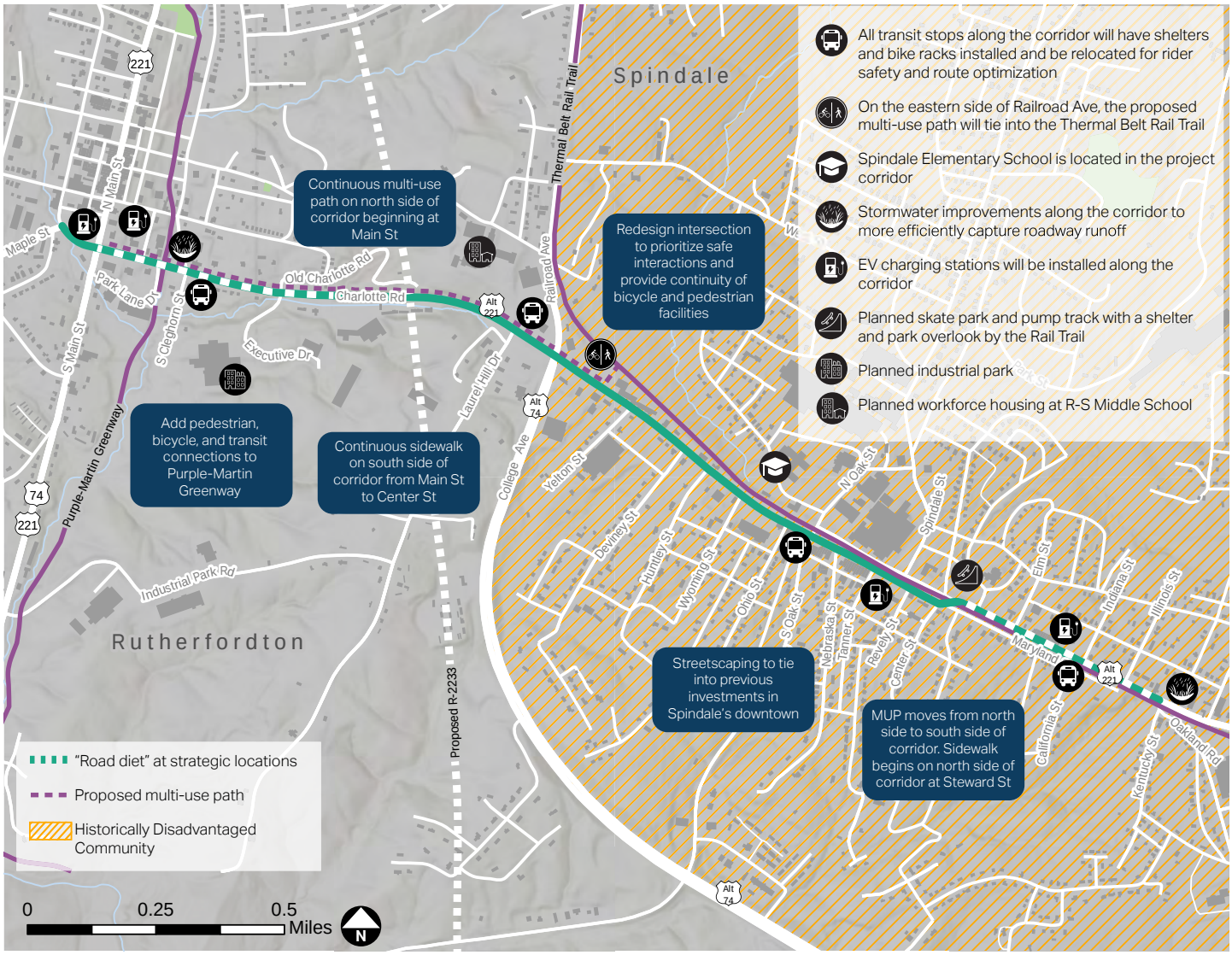


% Persons with Disability

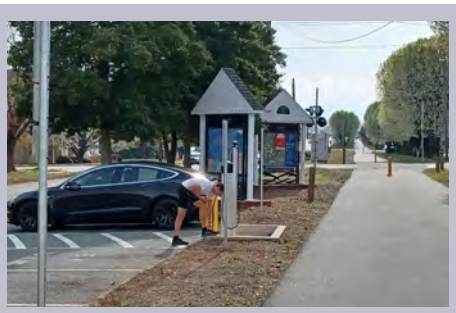


% Population 65+





Completed streetscape project in Spindale



Existing EV charging station in Spindale

BikeWalk Spindale Plan

01. Project Description

Partnership for **A**ctive **R**egional **T**ransportation and **N**eighborhood **E**quity in **R**utherfordton and **S**pindale (**PARTNERS** or Project) is the result of a collaborative partnership among the Town of Rutherfordton, the Town of Spindale, and the North Carolina Department of Transportation (NCDOT) to transform the Charlotte Rd./Main St. corridor into a complete street that improves the safety, mobility, quality of life, economic competitiveness, and sustainability of the surrounding community while strengthening the connection between the two rural communities.

PARTNERS will address transportation challenges related to equity, safety, mobility, and access along the corridor to create a safe and efficient facility for all users.

Safe, reliable, and affordable transportation is an urgent challenge faced by many across the nation. Historically, roadway design in many rural communities has prioritized speed and vehicle-oriented design over the needs of other travel modes. Located within an economically distressed county, the towns of Rutherfordton and Spindale have made strides to improve their transportation network by investing in their transit system and developing greenways, knowing that strategic transportation investment is critical to meeting the needs of all citizens, particularly those in transportation disadvantaged communities.

Rutherfordton and Spindale have planned improvements along a 2.5 mile stretch of US 221-A (known as Charlotte Rd. in Rutherfordton and Main St. in Spindale), a vital connection between the two towns, as an important strategic investment needed to create a vibrant, multi-modal corridor that meets local needs and prepares for the future in a safe and equitable way.

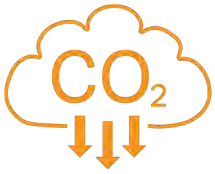
Safety

Signal Preemption: Saves **$832,000** per year in emergency response

Reduction of **95 crashes** over **20 years** or almost **5 per year**

GHG Emissions

838 tons from avoided idling at the roundabout and 11 tons from modal diversion over 20 years



1,201 metric tons avoided over 20 years

Travel Time Savings

917,900 person-hours saved over 20 years

Transit Operating Cost Savings

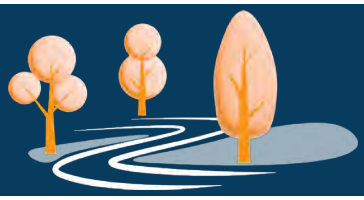
$9,500 per year = **$190,000** over 20 years

Multimodal Benefits

Bike and Ped Health and Recreation benefit results in **138,200** new walking and **182,600** new bike trips over 20 years, totaling **$677,500**.

Connectivity

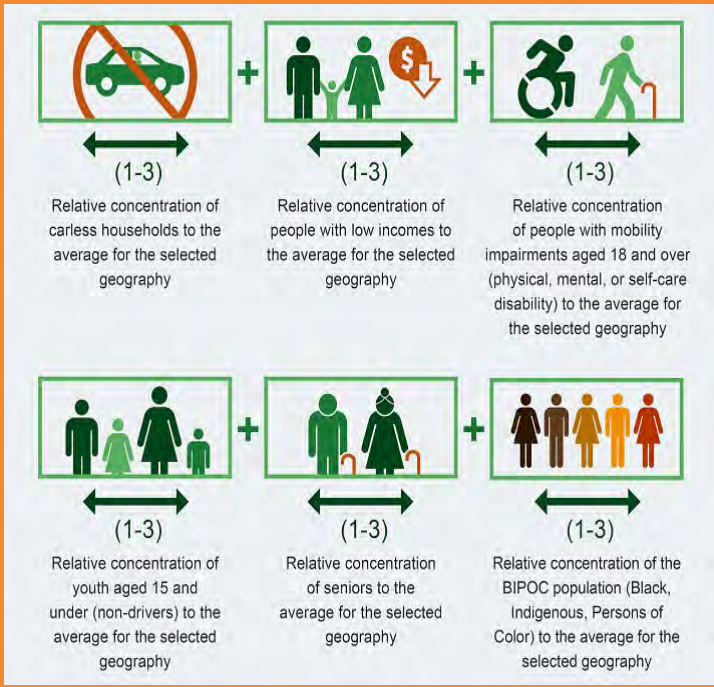
connects **19 miles** of greenway



Transportation Challenges

PARTNERS invests in safety and access improvements for the transportation disadvantaged communities along the corridor, in alignment with EO 13985 and the Justice40 initiative. NCDOT has developed an Equity and Transportation Disadvantage Screening Tool that provides data on six indicators of transportation disadvantage as shown in the figure to the right. These indicators are combined into a composite score (0-18) for all block groups in NC.

The project corridor exceeds the state and county rates for multiple transportation disadvantage indicators as discussed further in Project Location. Moreover, a historically disadvantaged community is located in Spindale (Census Tract 371619606). These transportation disadvantaged communities are disproportionately impacted by the several transportation challenges found along the corridor.



Transportation disadvantage scoring criteria: Higher concentrations receive higher scores

Unsafe Community Connection

The intersection where US 74A (Railroad Ave./ College Ave.) crosses the project corridor is a key area of concern for multimodal connectivity and is the gateway between Rutherfordton and Spindale. US 74A provides access to numerous employment centers and amenities, including Isothermal Community College. The existing intersection prioritizes automobile travel, posing hazards for bicyclists and pedestrians. The sidewalk switches from the north to south side of the roadway at this location without pedestrian crossings.

The Charlotte Rd/Railroad Ave intersection has dangerous crossing conditions for pedestrians

A popular transit stop is located in the northwest quadrant of the intersection but does not have connecting sidewalks for riders to safely access the services, amenities, and employment opportunities nearby. **PARTNERS** will invest in infrastructure that serves the needs of all users in this location, including the transportation disadvantaged.

Lack of Transportation Options

While the Railroad Ave. intersection is a critical concern for multimodal safety and accessibility, adequate bicycle and pedestrian accommodations as well as traffic calming measures are needed throughout the corridor. Intersections will be modernized with crosswalks, pedestrian signals, and curb extensions that are conducive to pedestrian access and safety, while reducing vehicular traffic moving through the corridor. The inclusion of landscaped medians in key sections of the roadway will provide additional traffic calming as well as create opportunities to beautify the streetscape and improve stormwater management.

Inefficient Emergency Response

The project corridor is a critical route to essential healthcare resources such as the Rutherford Regional Medical Center in Rutherfordton and the Rutherford County Health Department Building in Spindale. Rutherford County Emergency services reports that the corridor sees very high levels of EMS vehicle traffic, with an average of 20-30 trips per day to transport patients to the hospital and respond to emergencies.[1]

The towns have established a fire-response partnership in which the Fire Departments from Rutherfordton and Spindale agree to mutually respond to fire emergencies in both Towns. The project corridor is the primary route used for these vehicles. The synchronization of traffic signals and introduction of emergency vehicle preemption will improve the efficiency with which emergency responders are able travel between the two towns.

The corridor is a critical route for emergency services, including the Rutherfordton Fire Department

Disconnected Greenways

The Purple-Martin Greenway in Rutherfordton and the Thermal Belt Rail Trail in Spindale see tens of thousands of bicyclists and pedestrians each year and are key recreational and tourist attractions in the region, attracting tourists from across the state.[2] While the greenways support bicycle and pedestrian mobility, they are geared more towards recreation, and the existing facilities largely fail to provide continuous and safe facilities for active modes of transportation to access the many destinations and services along the corridor, placing pedestrians and bicyclists at disproportionate risk.

The project connects existing greenways like the Thermal Belt Rail Trail (pictured) to create a strong multimodal network

[1]Data provided by the Rutherford County EMS Director
[2]Counts provided by Foothills RPO

Project Scope and Goals

The Project will consist of a combination of infrastructure and technological improvements to address transportation challenges along the corridor and create a safe and efficient facility for all modes. These improvements were strategically developed to address to the following goals:

Improve safety

Provide safer multimodal facilities by separating bicyclists and pedestrians from motorized traffic and adding crosswalks, pedestrian signals, and curb extensions at intersections.

Construct a roundabout with full pedestrian accommodations at the Railroad Ave. intersection to improve safety and mobility.

Install signal synchronization and preemption for EMS vehicles to reduce response times and improve roadway efficiency.

Increase access

Construct a new multi-use path (MUP) along the north side of Charlotte Rd., connecting 19 miles of existing greenways.

Enhance access to the Purple-Martin Greenway and the Thermal Belt Rail Trail.

Optimize transit

Relocate and upgrade four transit stops in the corridor to optimize transit routes and improve safety and access for riders.

Equip bus stops with shelters, bike racks, and pullouts, to improve passenger safety and comfort while reducing ride times.

Support equity

Optimize transit stops and complete the bicycle and pedestrian network to provide transportation options for all roadway users, particularly those with no access to a vehicle.

Promote active transportation

Construct a continuous sidewalk along the south side of the project corridor from Main St. in Rutherfordton to Center St. in Spindale to provide continuous pedestrian facilities.

Include vegetated buffers between roadway and bicycle and pedestrian facilities.

Spur economic development

Include streetscape enhancements complementing the unique characteristics of the towns to promote rural main street revitalization and recreational tourism.

Provide critical connections to planned developments in Rutherfordton and Spindale.

Promote environmental sustainability

Install stormwater improvements to reduce runoff, control erosion, and improve water quality.

Install four electric vehicle (EV) charging stations along the corridor and increase the use of transit and active transportation to reduce Greenhouse Gas (GHG) emissions.

Regional Context

PARTNERS is guided and informed by several planning studies that were developed by Rutherfordton and Spindale, which identify the objective of converting this key corridor to a complete street that works for all modes of travel.

Given the location, proximity to resources, and demographics served, the corridor's significance is recognized by the towns of Rutherfordton and Spindale and their partners. From a planned industrial park and workforce housing development to streetscaping and a new skate park, both towns have prioritized economic development along this corridor. Projects such as these will support the continued revitalization of the towns' central business districts (CBDs) while increasing access to jobs, housing, recreational facilities, and community events.

The **PARTNERS** Project leverages previous transportation and economic development investments along the corridor to prioritize equitable transportation and remove barriers to access and opportunity faced by pedestrians, bicyclists, and transit riders. The Project ensures transportation investments benefit the entire community, especially those with limited mobility options.

Planned skatepark in Spindale will be integrated with PARTNERS along Main Street and EB-5915 (at park entrance)

Guiding Plans for PARTNERS

2013: Isothermal Regional Trails Plan

2015: Community Transportation Services Plan (CTSP)

2017: Rutherfordton BikePed Plan

2018: Rutherford County CTP

2018: Charlotte Road/Main Street Corridor Improvement Study

2019: BikeWalk Spindale Plan

2019: Spindale Streetscape Master Plan

ADDITIONAL INVESTMENTS ALONG PROJECT CORRIDOR:

- Spindale streetscape- project: Main St. was upgraded between Nebraska St. to Reveley St.
- EB-5915: Project integrates multimodal Intersection improvements along the Thermal Belt Rail Trail
- Skate park: Project improves connection to this planned project in Spindale
- Educator Workforce housing: Project creates multimodal access for 36-unit development that will include a fitness center, library, and community bike storage
- Industrial Park Expansion: Project includes transit stop near planned project to strengthen connections to employment opportunities
- R-5916 /H150568 and R-5918/H171076: Planned roundabouts at Maple St. and Oakland Rd. (identified in Rutherford County CTP and 2020-2029 STIP)
- R-2233: Project approach compatible with bypass project that will divert traffic on US 221 from downtown Rutherfordton
- EV charging stations: Expands the EV charging station network in Spindale to the entire project corridor

02. Project Location

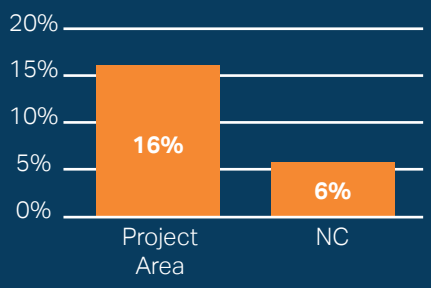
PARTNERS will create a complete street for 2.5 miles of roadway between Maple St. in Rutherfordton and Oakland Rd. in Spindale. The corridor sees a high degree of traffic moving between the two towns and includes the busiest bus stops for the Tri-City Xpress, which is a fare-free, deviated fixed bus route that operates in Rutherfordton, Spindale, and Forest City. The corridor also connects two highly popular greenways, the Purple-Martin Greenway and the Thermal Belt Rail Trail, which saw over 42,000 and 58,000 trips in 2021 respectively (according to counts by Foothills RPO).

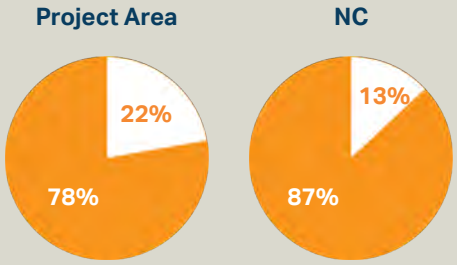
The Project is located in Rutherford County, which is the 22nd, out of 100, most economically distressed county in North Carolina according to the NC Department of Commerce.[3] The portion of the Project in Spindale is located in a historically disadvantaged community (Census Tract 371619606), which includes a census block group with a 58% minority population.

Each block group along the project corridor exceeds the state and county rates for multiple transportation disadvantage indicators. An average of 16 percent of the households in the block groups along the project corridor do not have access to a vehicle compared to 6 percent in North Carolina. In three block groups, 25 percent or more of households do not have access to a vehicle. By predominantly serving motorists, the transportation needs of vulnerable populations that live and work along the corridor are not being met.

This Project will provide safe and reliable bicycle, pedestrian, and transit facilities, thereby expanding regional transportation equity and mobility.

High percentage of households with no access to a vehicle





1.1 out of 5 people in the project area have a disability

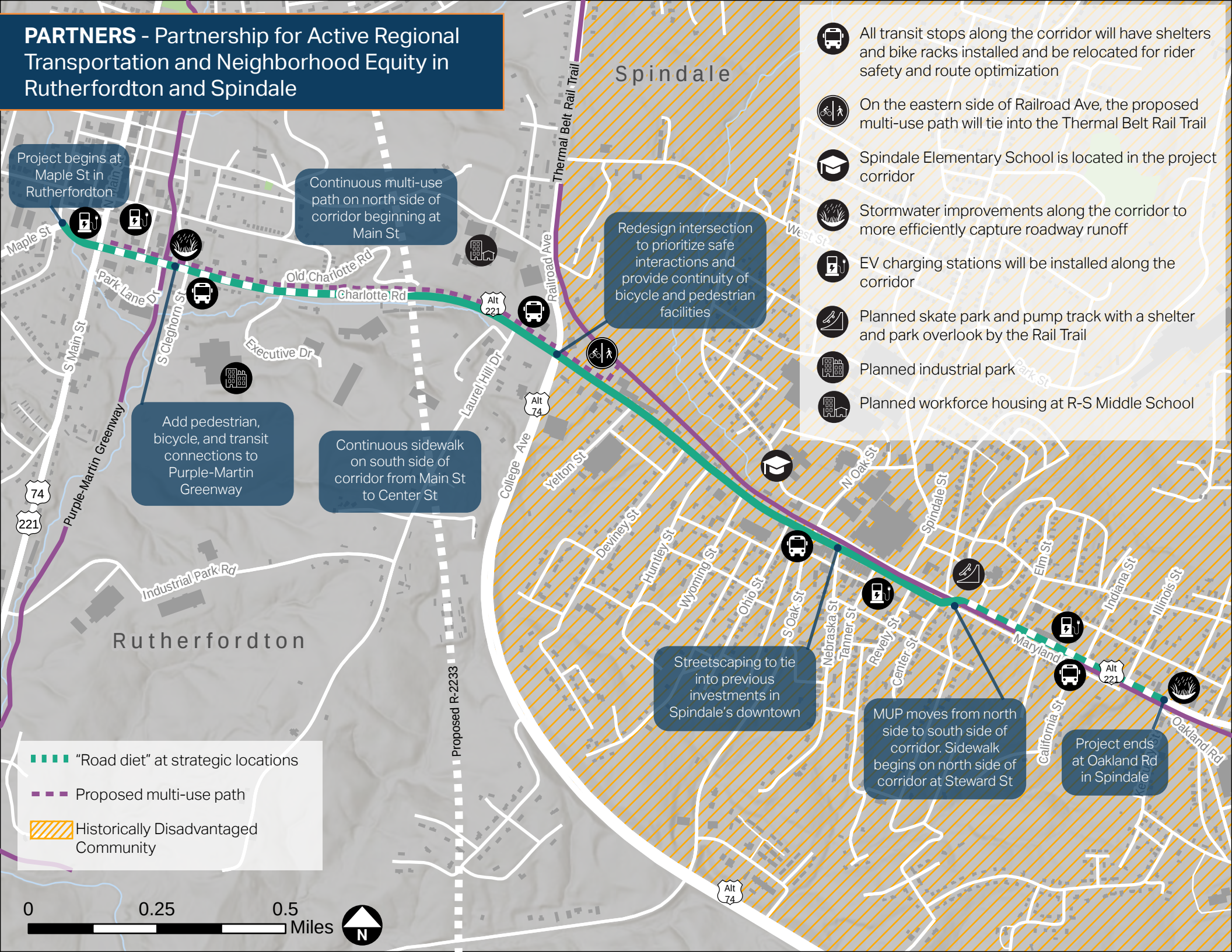
HDC

Census Tract 9606 is a historically disadvantaged community, which includes a census block group with a 58% minority population

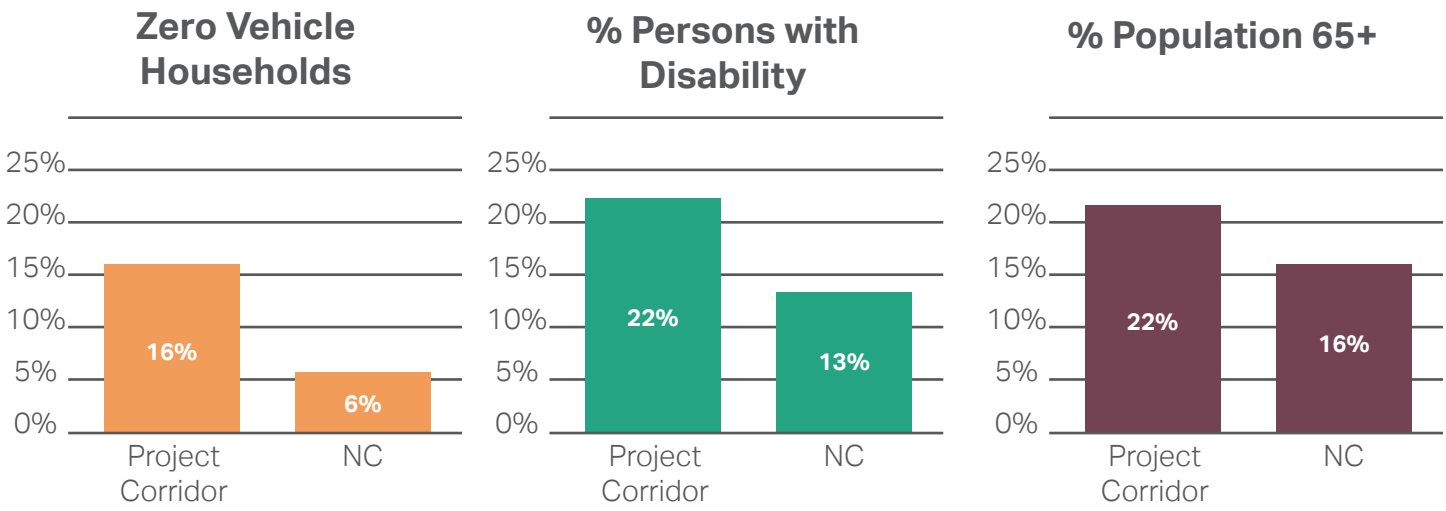
22% of project area population is 65 years or older.

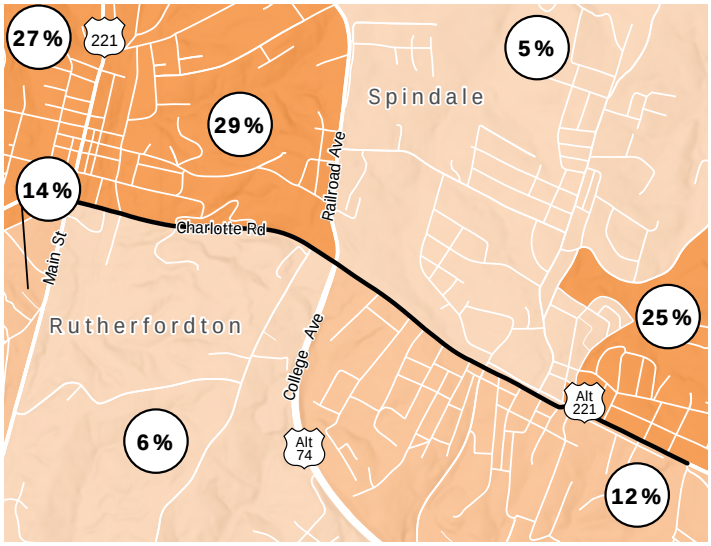
Options for non-vehicular transportation enable continued mobility and independence.

[3] North Carolina Department of Commerce. (2021). *2022 North Carolina Development Tier Designations.*

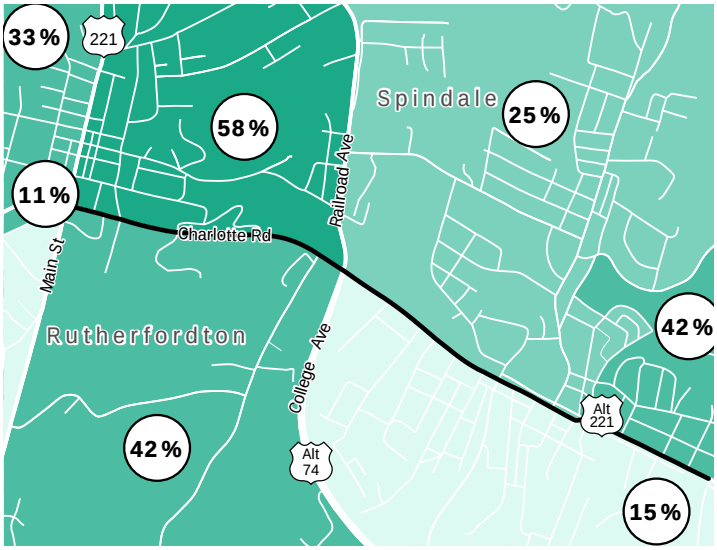

PARTNERS - Partnership for Active Regional Transportation and Neighborhood Equity in Rutherfordton and Spindale
Project begins at Maple St in Rutherfordton
Continuous multi-use path on north side of corridor beginning at Main St
Redesign intersection to prioritize safe interactions and provide continuity of bicycle and pedestrian facilities
Add pedestrian, bicycle, and transit connections to Purple-Martin Greenway
Continuous sidewalk on south side of corridor from Main St to Center St
Streetscaping to tie into previous investments in Spindale's downtown
MUP moves from north side to south side of corridor. Sidewalk begins on north side of corridor at Steward St
Project ends at Oakland Rd in Spindale
All transit stops along the corridor will have shelters and bike racks installed and be relocated for rider safety and route optimization
On the eastern side of Railroad Ave, the proposed multi-use path will tie into the Thermal Belt Rail Trail
Spindale Elementary School is located in the project corridor
Stormwater improvements along the corridor to more efficiently capture roadway runoff
EV charging stations will be installed along the corridor
Planned skate park and pump track with a shelter and park overlook by the Rail Trail
Planned industrial park
Planned workforce housing at R-S Middle School
Spindale
Rutherfordton
Thermal Belt Rail Trail
Railroad Ave
Maple St
Main St
Park Lane Dr
Old Charlotte Rd
Charlotte Rd
S Cleghorn St
S Main St
Executive Dr
Laurel Hill Dr
College Ave
Yellon St
Deviney St
Huntley St
Wyoming St
Ohio St
S Oak St
Nebraska St
Tanner St
Revely St
Center St
N Oak St
Spindale St
Elm St
Indiana St
Illinois St
Maryland
California St
Oakland Rd
West St
Park St
Purple-Martin Greenway
Industrial Park Rd
Proposed R-2233
Alt 221
Alt 74
74
221
"Road diet" at strategic locations
Proposed multi-use path
Historically Disadvantaged Community
0
0.25
0.5
Miles
N

Project Corridor Demographics

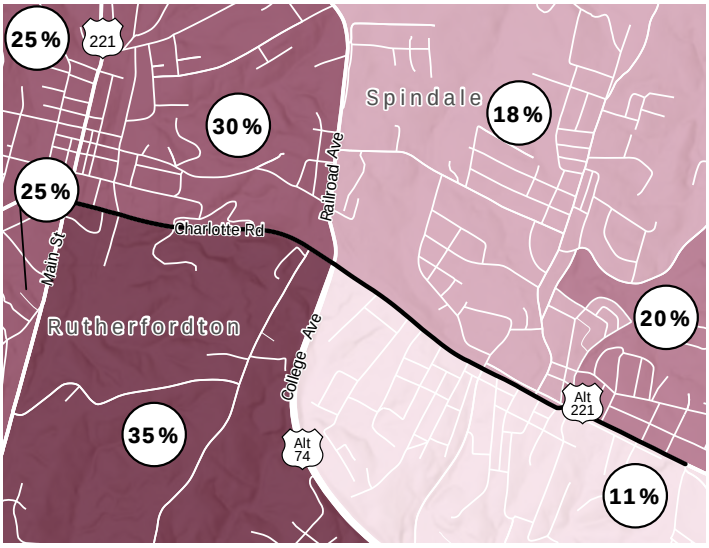




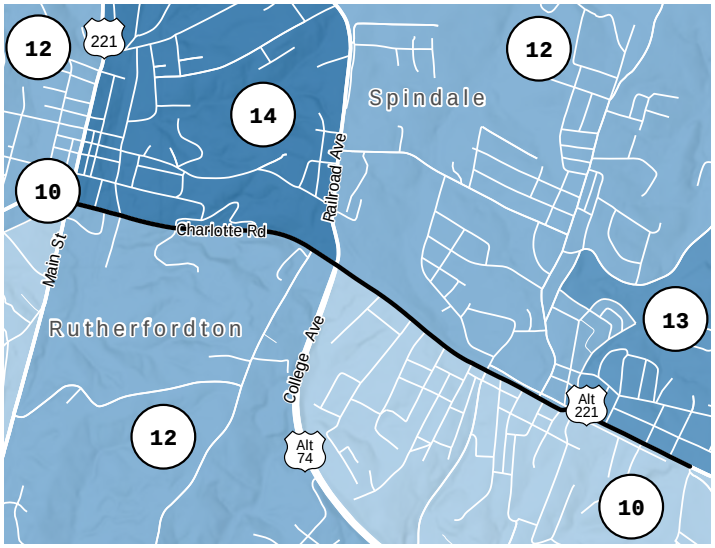
Zero Vehicle Households



Persons with Disability



Population over 65 years



Transportation Disadvantage Index (TDI) Score Relative to State (maximum = 18) Link to TDI Methodology

03. Grant Funds, Sources and Uses of Project Funds

The estimated cost to create an accessible and equitable complete street along the project corridor is $24,410,000 (YOE$). The proposal requests $20,040,000 in RAISE Grant funding to implement improvements that will increase safety, sustainability, mobility, quality of life, and promote economic development in the towns of Spindale and Rutherfordton.

Without RAISE grant funding, the Project will likely not be completed. There is strong state and local support for the Project as shown by the myriad of funding sources that are contributing the matching funds. Due to its comprehensive scope, various entities are contributing to provide a 14% state and local match of $3,370,000 (YOE$). Other Federal funding from FTA and HSIP, will contribute an additional $1,000,000 (YOE$), 4% of the project budget.

The capital costs (YOE$), sources, and uses of funds are summarized in **Table 1**. Right-of-way (ROW), utilities, and construction costs were estimated using NCDOT's SPOT Online Tool, NCDOT's ROW cost estimating tool, and professional engineering judgment. The construction budget takes into consideration rising inflation and supply chain issues that are creating volatility in prices for construction materials and labor. **Table 2** provides a breakdown of the various state and local entities that will be contributing and leveraging other federal funds for the Project.

Table 1: Sources and Uses of Funds for the PARTNERS Project (YOE$)

Summary	Design	ROW	Utilities	Construction*	Total	% of Total
RAISE Grant	$1,140,000	$1,050,000	$2,110,000	$15,740,000	$20,040,000	82%
Other Federal	$-	$-	$-	$1,000,000	$1,000,000	4%
State Match	$-	$-	$-	$2,360,000	$2,360,000	10%
Local Match	$-	$-	$-	$1,010,000	$1,010,000	4%
Total	**$1,140,000**	**$1,050,000**	**$2,110,000**	**$20,110,000**	**$24,410,000**	**100%**

*Construction costs include EV chargers, transit stop improvements, signal synchronization, and stormwater improvements

Table 2: Project Cost by Funding Source (YOE$)

Summary	Total
RAISE Grant	$20,040,000
Other Federal	$1,000,000
State Match	$2,360,000
Local Match	$1,010,000
Total	**$24,410,000**

Table 3: Project Cost by Funding Source (YOE$)

Other Federal	
Highway Safety Improvement Program (HSIP)	$900,000
FTA Section 5311 Capital	$100,000
State Match	
NCDOT Safety	$100,000
NCDOT High Impact Low Cost	$1,000,000
NCDOT Highway Maintenance Improvement Program (HMIP)	$750,000
NCDOT Transit	$500,000
NCDOT Combined Capital Grant	$10,000
Local Match	
Town of Rutherfordton	$250,000
Town of Spindale	$250,000
Rutherford County Transit (RCT)	$10,000
Dogwood Health Trust	$500,000

04. Merit Criteria

RAISE Merit Criteria	How the Project Satisfies RAISE Merit Criteria
Safety	• New roundabout at dangerous intersection reduces crash rates and severity • Road diet and complete street design creates safer roadway interactions by separating active modes from vehicular traffic and closing existing network gaps • Constructs targeted improvements for bicyclists and pedestrians such as crosswalks, pedestrian signals, and curb extensions at all intersections • Signal pre-emption for emergency vehicles decreases response times
Environmental Sustainability	• Decreases GHG emissions through modal diversion and reduced idling • Reduces vehicle miles traveled (VMT) by encouraging modal shift from automobiles to active modes of transportation • Improves stormwater management with best management practices (BMPs) that reduce runoff and erosion and improve water quality • Installs four EV chargers to ensure the equitable distribution of environmental benefits
Quality of Life	• Promotes public health by encouraging greater physical activity in a safe environment • Reduces transportation cost burdens by constructing new facilities that connect regional recreational assets and employment centers near public transportation • Removes barriers to jobs and economic opportunities • Addresses equity concerns and barriers to opportunity such as automobile dependence by providing safe bicycle and pedestrian facilities and optimizing/ upgrading a fare-free transit system • Enhances the charm of two rural downtowns and builds on previous investments
Mobility & Community Connectivity	• Creates stronger multimodal connections to employment, housing, and recreation for people without vehicles in Rutherfordton and Spindale • Increases transportation choices for travel between Rutherfordton and Spindale • Closes existing gaps in the bicycle and pedestrian network, most notably at the Railroad Ave. intersection • Incorporates universal design principals and meets Americans with Disabilities Act (ADA) standards
Economic Competitiveness	• Improves travel time reliability through signal synchronization and the construction of a roundabout at Railroad Ave. • Supports rural main street revitalization and strengthens the connection between two rural communities • Increases access to jobs and affordable housing by increasing transportation options along the corridor and better serving transportation disadvantaged populations • Connects two existing greenways and leverages streetscape enhancements to promote recreational tourism
State of Good Repair	• Modernizes core infrastructure assets to meet needs of all roadway users • Addresses system vulnerabilities for disadvantaged communities • Leverages resurfacing funds to modernize and maintain roadway in state of good repair
Partnership and Collaboration	• Demonstrates a strong a partnership among Rutherfordton, Spindale, and NCDOT, as well as regional partners like Rutherford County and Foothills RPO • Meaningfully engages stakeholders and the public in project development
Innovation	• Installs four new EV chargers • Installs signal synchronization and sign preemption for emergency vehicles • Constructs the first roundabout in rural Rutherford County

Safety

Challenge: Safety for pedestrians, bicyclists, and transit riders

Gaps in the existing bicycle and pedestrian network create barriers for non-motorized travelers to safely travel the corridor. At the intersection of Charlotte Ave. and Railroad Ave., the sidewalk switches from the north to the south side of the street with no crosswalks or pedestrian signals. At the adjacent McDonalds transit stop, there are no facilities or accommodations for riders to cross these busy roads or access the Thermal Belt Rail Trail. Buffers between pedestrian facilities and roadways are substandard or non-existent, and most intersections and driveways along the corridor lack crosswalks and/or pedestrian signals at intersections.

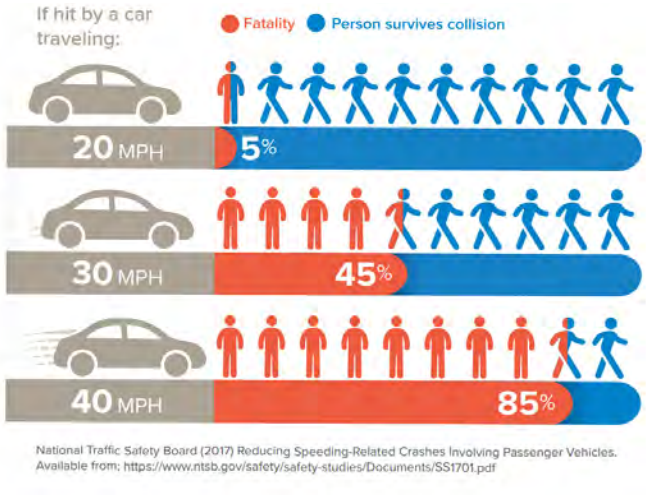
The need to improve safety for pedestrians and bicyclists is urgent. In 2020 there were 13 pedestrian crashes and 3 bicycle crashes in Rutherford County, while across the state there were 2,461 pedestrian crashes and 723 bicycle crashes.[4] According to an NCDOT safety analysis for the Project (provided in Supplemental Materials), pedestrians were struck twice in crashes along the corridor between 2016 and 2021. This includes a collision in which a pedestrian in a wheelchair was struck by a motor vehicle at Laurel Hill Dr. while attempting to cross Charlotte Rd.

Solution: Prioritize safe accommodations for active transportation modes

PARTNERS will close existing gaps in the bicycle and pedestrian network by creating continuous facilities that are compliant with the Americans with Disabilities Act (ADA) and fully separated and buffered from vehicle traffic along both the north and south sides of the project corridor. The Project will also ensure transit stops are well connected to these facilities, including the installation of a mid-block crosswalk at the Main Street Baptist Church in Spindale to provide safe access to the transit stop. Crosswalks, pedestrian signals, and curb extensions will be added at intersections to calm traffic and alert drivers to the movements of other modes. In the historically disadvantaged community of Spindale, these improvements will particularly benefit families with children who attend Spindale Elementary School, which is located adjacent to the Thermal Belt Rail Trail. The Project will create a safer environment in which their children can bike or walk to school.

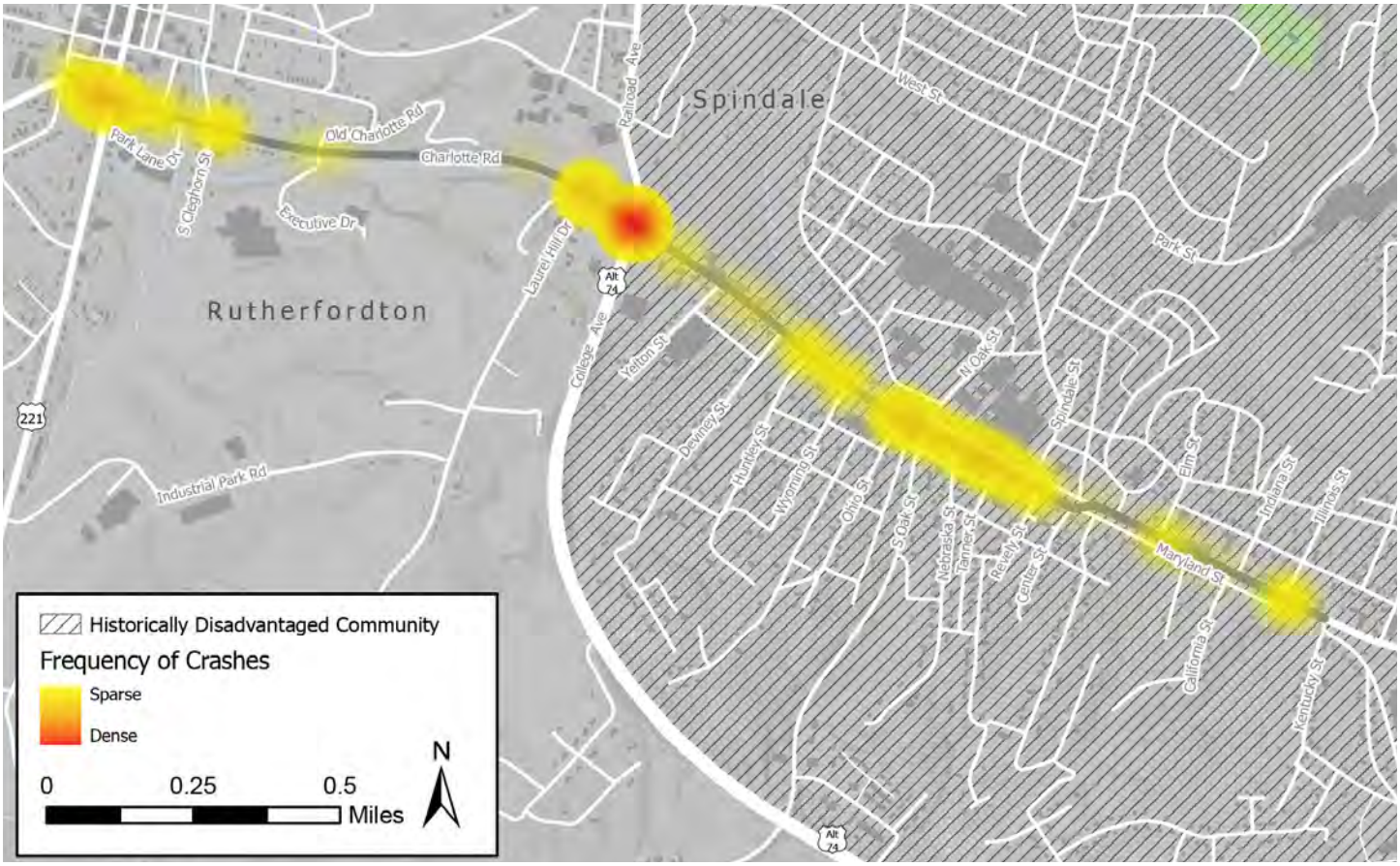
Challenge: Crash history and prioritization of automobiles

There were 173 crashes within the project corridor between 2016 and 2021. Eighty-seven of these crashes occurred at the Railroad Ave./ Charlotte Rd. intersection. While the Railroad Ave intersection is the most dangerous along the corridor, Laurel Hill Dr. and Main St. in Rutherfordton also have high crash rates at their intersections with Charlotte Rd. Portions of the corridor are characterized by three-, four-, and five-lane cross sections that are dangerous for bicyclists and pedestrians. Roadways with multiple lanes create faster speeds and more opportunities for crashes to occur, affecting all road users. According to the *Dangerous by Design Report* published by the National Complete Streets Coalition, a vehicle traveling 40 mph, speeds seen on portions of the project corridor, has an 85% probability of causing a fatality in pedestrian involved accident.



Source: Dangerous by Design 2021

[4] NCDOT Crash Data and Maps



Crash Heat Map

Solution: Slow vehicular traffic and provide separate bicycle and pedestrian facilities

PARTNERS will reduce the likelihood and severity of crashes by slowing vehicular traffic and ensuring that non-motorized travelers are separated from vehicle traffic as described above. The Project will introduce a road diet in strategic sections of the corridor to reduce the number of travel lanes and thereby lessen the impetus for speeding. Road diets are a proven crash reduction strategy, with typical crash reduction rates of between 19% and 47%.[5] NCDOT's safety analysis for the project identified the following crash reduction factors for the Project: (see table 4).

Based on quantitative safety analysis, NCDOT and the towns have selected a roundabout at the Railroad Ave. intersection to greatly improve safety by slowing vehicle speeds and reducing the number of conflict points compared to that of a typical intersection. This would be an innovative safety project as it would be the first roundabout in Rutherford County.

Over the 20-year period analyzed, the Project is expected to result in a reduction of 95 crashes over 20 years, nearly 5 crashes annually. This equates to a benefit of $11.9 million in collision cost savings from the improvements.

Table 4: NCDOT Safety Anaylsis

PARTNERS Component	Crash Reduction Factor
Install sidewalk	74% Pedestrian Crashes
Add Pedestrian Heads	25% Pedestrian Injury Crashes
Add Raised Median	22% Injury Crashes, +9% PDO Crashes
Add Raised Median (Two-Lane)	39% Injury Crashes
Signal to Two-lane Roundabout	71% Injury Crashes

PDO: Property Damage Only

[5] Road Diets (Roadway Reconfiguration) - Safety | Federal Highway Administration. (2016).

Challenge: Inefficiencies in emergency response

As the primary connection between the towns of Rutherfordton and Spindale, the project corridor is one of the primary routes used for emergency response in the region, including to the Rutherford Regional Medical Center in Rutherfordton. The corridor experiences very high levels of EMS vehicle traffic, with an average of 20-30 trips per day, according to Rutherford County Emergency Services. The ability for emergency services to respond quickly is essential to protecting public health and safety. Rutherford County's Emergency Services Department has experienced that unsynchronized signals and crashes at the Railroad Ave./Charlotte Rd. intersection affect efficiency and increase response times.

Solution: Signal preemption for emergency vehicles

PARTNERS will synchronize all traffic signals on the project corridor and introduce emergency vehicle preemption. These measures will improve the efficiency with which emergency responders are able travel between the two towns and access the Rutherford Regional Medical Center. Emergency vehicles will be equipped with on-board units and integrated into a connectivity system that facilitates communication between the emergency vehicles and signals along the project corridor. This technology will reduce potential conflict points for emergency vehicles as they will be given a green light while conflicting traffic will have a red light. Including this technological innovation will reduce emergency response time by 30 seconds and save nearly $832,000 per year in emergency response (fire losses avoided and lives saved).

Environmental Sustainability

Challenge: GHG emissions from transportation

Transportation creates the largest share of GHGs in North Carolina, accounting for 35.9% of emissions in the state between 2005 and 2018.[6] These emissions worsen local air quality and are the driving force behind global climate change. The project corridor is currently dominated by motor vehicle travel, and there are limited safe alternatives for bicyclists and pedestrians to access employment, services, and amenities, including recreational opportunities in the corridor.

PARTNERS supports North Carolina's statewide climate action plan, including NC Executive Order 246 and the 2020 North Carolina Climate Risk Assessment and Resilience Plan, which aim to reduce GHG emissions to 50% below 2005 levels and increase EV registrations in the state to 1.25 million by 2030.

[6] Greenhouse Gas Inventory | NC DEQ. (2018).

Solution 1: Increase the use of transit and active transportation

PARTNERS offers safe and convenient alternatives to driving and will encourage travelers to replace motor vehicle trips with transit, walking, or biking trips. The Project will make it safer and easier for Spindale and Rutherfordton residents to access employment, health care, and other services and amenities without driving by:

- Optimizing transit routes and adding transit stops amenities
- Constructing a MUP that connects the Purple-Martin Greenway and Thermal Belt Rail Trail
- Creating safer street crossings, including at the proposed Railroad Ave. roundabout where there is currently no safe way for bicyclists and pedestrians to cross a large and busy intersection.

Additional emissions savings will be realized by reducing vehicle idling through the construction of a roundabout at Railroad Ave. and implementing signal coordination to move vehicular traffic more efficiently. Over the 20-year period analyzed, the Project will avoid 11,400 VMT and result in 849 fewer metric tons of CO2 being released into the atmosphere.

Solution 2: Install EV chargers

Rural areas have extremely low EV adoption compared to their metropolitan counterparts, and the lack of EV charging infrastructure in rural areas is a significant barrier to adoption.[7] There are only two public charging locations in Rutherford County – one in downtown Spindale and one at the Lake Lure visitor center.

PARTNERS will install four EV level 2 charging stations along the corridor – two in downtown Rutherfordton and two in downtown Spindale. This will have a profound impact on EV adoption in the region by making EV charging more accessible to both commuters and tourists while reducing GHG emissions. This infrastructure will complement the existing level 2 charger in Spindale and will provide a more robust EV infrastructure network in the region.

Rutherford County Transit (RCT) Vehicle

PARTNERS will add four new EV chargers along the corridor

[7] Environmental and Energy Study Institute. (2021). Beyond Cities: Breaking Through Barriers to Rural Electric Vehicle Adoption

Challenge: Cleghorn Creek impairment

Cleghorn Creek is a tributary of the Broad River and runs parallel to the Purple-Martin Greenway through Rutherfordton. This stream has been federally listed as an impaired stream since 2008 and is designated as a water supply for drinking, culinary, or food-processing purposes. Currently, stormwater flows across Charlotte Rd./Main St. and discharges directly to Cleghorn Creek and the surrounding network of tributaries that form the headwaters of the Broad River. Currently, there are limited green infrastructure measures in place that restore or mimic the natural hydrological cycle to protect the water quality of this impaired stream.

Solution: Implement stormwater best management practices (BMPs) as part of a Complete Street

PARTNERS will incorporate stormwater BMPs found in NCDOT's *Stormwater Best Management Practices Toolbox* to provide a more efficient capture of roadway runoff and restore natural hydrological functions to the extent practicable. Bio-retention areas or bioswales will be introduced at key locations, including where Charlotte Rd. crosses the Purple-Martin Greenway as well as at Oakland Rd., to capture and treat stormwater before it is discharged to Cleghorn Creek and other nearby streams. Vegetated buffers and other complete streets elements will be leveraged to reduce runoff, prevent erosion, and improve infiltration; roadway slopes will be minimized to slow down stormwater flows. Additionally, up to 6,000 linear feet tree canopy will be added along the proposed MUP from Main St. to the Thermal Belt Rail Trail tie in. This improvement will help regulate ambient air temperature as well as provide air quality improvements. Together, these improvements will reduce stormwater runoff, improve water quality of an impaired stream, and control erosion.

Project design will address areas of concern along the corridor:

1. Maple St intersection
2. Discharge point at Executive Dr to Cleghorn Creek
3. Old Charlotte Rd intersection
4. E. Main St directly in front of McDonalds
5. Drainage infrastructure at Steward St and Main St
6. Drainage infrastructure near Oakland Rd

Project will incorporate stormwater BMPs at strategic locations:

1. Bio-retention area or bioswale near Cleghorn Creek and Purple-Martin Greenway
2. Tree canopy along new MUP
3. Bio-retention area or bioswale at Oakland Rd intersection

Quality of Life

Challenge: Barriers to transportation, jobs, and business opportunities

Currently, the project corridor promotes automobile dependence and poses barriers to transportation and economic opportunities for non-motorized travelers, disproportionately impacting households with no or limited access to a vehicle. These barriers include the lack of pedestrian and bicycle accommodations, the lack of continuous facilities along both the north and south sides of the corridor, and the critical gap in connectivity at the dangerous Railroad Ave. intersection. There are also inefficiencies in the transit route due to unsafe conditions for stops in sub-optimal locations. These conditions present substantial barriers to residents' ability to access healthcare, education, and employment.

Solution: Create a well-connected multimodal corridor

This multi-modal project will reshape the built environment in Rutherfordton and Spindale, expanding travel choices with safe, accessible pedestrian, bicycle, and transit facilities. The Project will strengthen the connections between neighborhoods, businesses and essential services in Rutherfordton and Spindale, making it easier and safer for residents to commute to jobs and access services without an automobile. These improvements put the 16 percent of area households lacking access to a vehicle on more equal footing with those with access to an automobile, thereby removing transportation inequality.

[8] Welcome to The H+T Affordability Index. (2022).
[9] U.S. Census Bureau. (2022). 2015-2019 American Community Survey 5-year estimates.

Challenge: Transportation and Housing Cost Burdens

Combined housing and transportation (H+T) expenses for a household are recommended not to exceed 45% by the Center for Neighborhood Technology. However, both Spindale and Rutherfordton exceed this recommendation, with Spindale at 58% and Rutherfordton at 66%.[8] The high percentage of households without access to a vehicle (16%) and individuals with a disability (22%) in the Project area exacerbates the cost burden of transportation and housing, highlighting the importance of addressing this challenge.[9]

Solution: Create a framework for commercial and residential development

PARTNERS will leverage public investment in transportation infrastructure to anchor and attract private investment along a rural main street while preserving the unique and historic characteristics of Spindale and Rutherfordton. The towns have identified vacant parcels and infill sites on the corridor that are prime for redevelopment. Parcels in Rutherfordton are zoned for mixed use while in Spindale both

Infill Development Parcels

commercial and residential infill opportunities have been identified. Additionally, there are plans for workforce housing and an expansion of the Duke Energy Rutherfordton industrial park, which will create affordable housing and employment opportunities along the corridor.

The Project will create a strong framework to connect these and other commercial and mixed-income residential developments with existing neighborhoods and businesses along a multimodal corridor that improves transit service and coordinates private and public investments. The Project will reduce H+T cost burdens by connecting infill development along the corridor with safe multi-modal facilities for residents to use fare-free, fixed-route transit service, walk, and bike when accessing jobs, services, and amenities.

Improves Mobility and Community Connectivity

Challenge: Limited accessibility for non-motorized travelers

Both Rutherfordton and Spindale are classified as "Car Dependent" by Walk Score, with both scoring 50 or less for both walkability and bikeability. Along the project corridor, there are many destinations that are difficult and dangerous to access without a vehicle. Along the project corridor, there are significant gaps in the bicycle and pedestrian network between the two towns, creating unsafe conditions, particularly at the Railroad Ave. intersection.

Solution: Encourage a thriving community where people can live, work, and play

PARTNERS corrects these accessibility challenges with a holistic "complete streets" approach that creates transportation choice. By constructing new and improved walking and biking facilities, closing gaps in the existing network of facilities, improving the safety of non-motorized travelers at intersections, and investing in transit improvements, the Project will create new and expanded opportunities for residents to access the places where they live, work, and play without access to a vehicle. Notably elementary, middle, and high school students will be able to access their schools using the enhanced MUP network. By creating greater freedom of movement, the Project will create stronger connections between adjacent land uses and improve residential access to local and regional amenities and economic drivers.

Challenge: Vulnerable populations lack safe, connected, and affordable access to transportation

The transportation disadvantaged populations along the corridor rely on transit, biking, or walking because of physical or socioeconomic constraints, particularly access to a vehicle, as described in Project Location. A survey conducted in support of RCT's *Community Transportation Services Plan* found that 43% of respondents chose RCT for their trip because they had "No access to personal vehicle," which highlights the importance of transit connectivity.

Solution: Improve transit facilities and service

PARTNERS increases equity by intentionally bridging connectivity gaps between transit and existing bicycle and pedestrian infrastructure and bolstering transit amenities and efficiency of service. The Project will relocate transit stops to create a more efficient bus route and to increase transit visibility and proximity to popular destinations. Amenities such as bike racks, shelters, and bus pull outs will improve safety and rider comfort. Bike racks will further the integration of transit with active transportation modes. Given the high percentages of households without access to a vehicle and residents with disabilities, these improvements are critical for offering equitable, affordable, and accessible transportation options. According to the RCT Director, the system optimization could increase ridership by 10-20% and would greatly improve the visibility of the system.[10]

According to the BCA, **PARTNERS** will lead to a $71,200 in time savings for transit users and provide $54,900 in transit amenities benefits.[11]

Challenge: Built environment creates accessibility challenges

Between 11% and 58% of residents in block groups along the corridor have a disability, while upwards of 25% of the population in some block groups are 65 years old or older. The current connectivity gaps, safety hazards, and deteriorating hardscape conditions (refer to State of Good Repair section) limit access and mobility for all users, particularly those with physical or behavioral factors that require thoughtful accommodations.

Solution: Create transportation facilities designed for all users

PARTNERS will create a well-connected transportation network that facilitates travel for all users by reallocating road space to other travel modes. New and improved facilities for pedestrians, bicyclists, and transit riders will proactively incorporate Universal Design principals, with particular attention to the needs of persons with disabilities and older adults. By meeting the needs of all roadway users, the Project improves the ability of the entire population to navigate their town safely and enjoyably.

Economic Competitiveness and Opportunity

Challenge: Poor travel time reliability through corridor

Travel times along the project corridor are unreliable due to uncoordinated signal timings and congestion at intersections, notably the Railroad Ave. intersection.

> "The Rutherford County Chamber of Commerce is in full support of the **PARTNERS** project and is excited for the growth and benefit it will bring to the towns of Rutherfordton and Spindale!"
>
> - Buffy Fountain, President, Rutherford County Chamber of Commerce

Solution: Improve travel time reliability

The roundabout and signal synchronization components of the Project will improve travel time reliability for emergency and transit vehicles that frequent the corridor and for corridor residents, workers, and visitors. The Project will reduce travel time by 1 second per vehicle in Spindale by coordinating traffic signals, and an additional 7-9 seconds per vehicle by constructing a roundabout at the Railroad Ave. intersection. The Tri-City Express will realize additional efficiencies by relocating 4 stops to locations that improve route efficiency, reduce travel times, and create fuel savings for transit vehicles. Over a 20-year benefit period these efficiencies are estimated to result in $5.6 million in travel time savings benefits. These travel time improvements are enhanced by the creation of a new link between the Purple-Martin Greenway and Thermal Belt Rail Trail that will provide a safe and reliable alternative to driving.

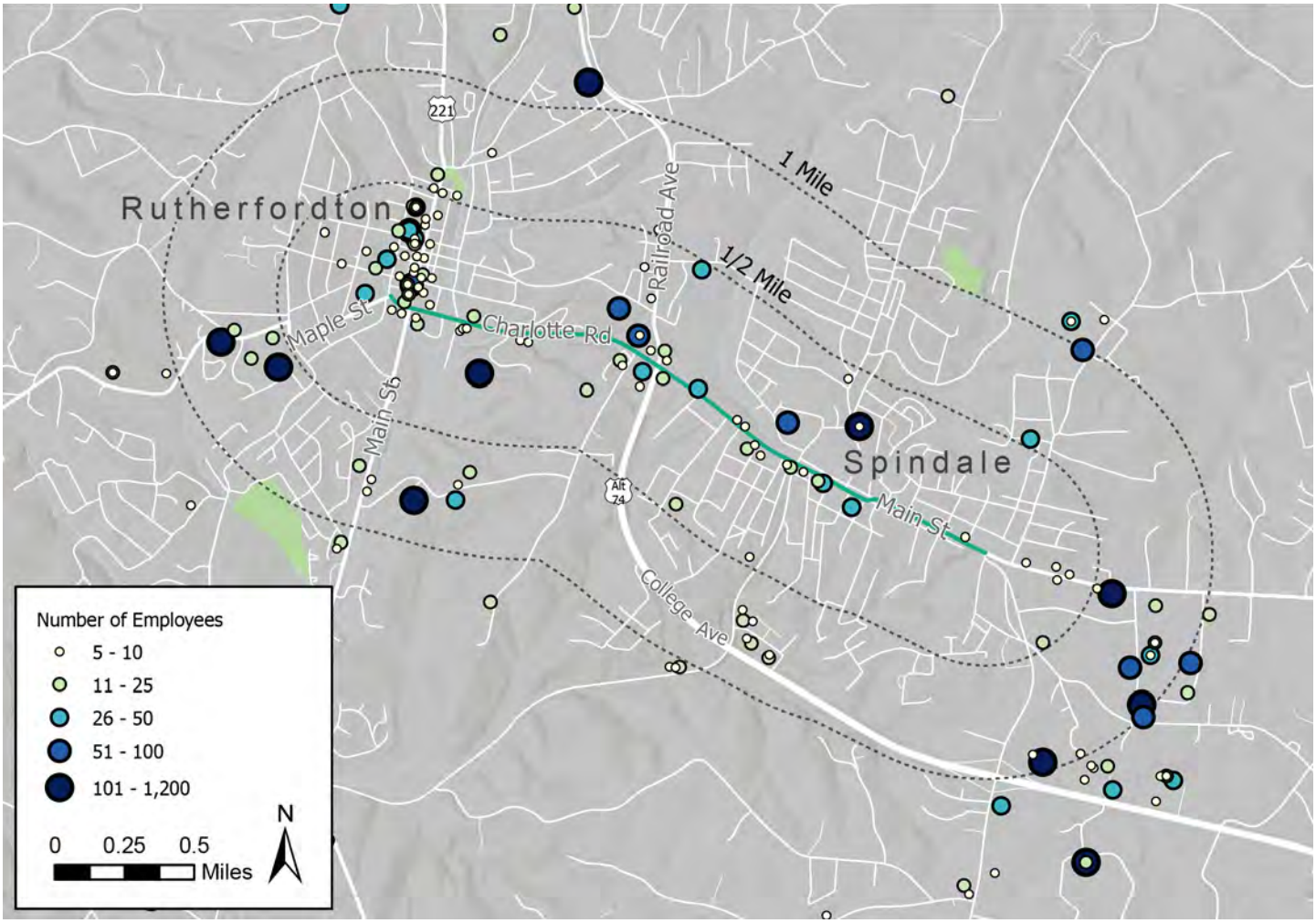
[10] Karyl Fuller, RPO Director, Foothills Regional Planning Organization, email communication, March 9, 2022.
[11] See BCA Technical Memo

Challenge: Access to job opportunities

According to the NC Department of Commerce, the project corridor is located within the 22nd most economically distressed county out of the 100 counties in North Carolina. Data from the Foothills Regional Commission shows that there are approximately 8,200 employees at businesses within 1 mile of the corridor, 1,760 of which are located directly on Charlotte Rd./ Main St. and another 4,320 within ½ mile of the corridor. Among the largest employers along the corridor are various manufacturing industries, healthcare, education, and government offices. These businesses provide essential services to the community as well as employment opportunities but are currently difficult and unsafe to access without an automobile. This has a disproportionate impact on transportation disadvantaged populations who rely on walking, biking, and transit to meet their transportation needs.

Solution: Multi-modal connections to employment opportunities

The project will provide tangible, multi-modal connections between residents and jobs. One transit stop will be relocated closer to a planned expansion of the Duke Energy industrial park in Rutherfordton, while another will be relocated closer to the planned workforce housing development for educators. New shelters will protect employees from the elements during their commute, and new sidewalks and MUPs will be constructed to better serve these locations. Moreover, the Project contains several elements to improve mobility and connectivity for non-motorized travelers across the corridor to improve safety and mobility for residents who cannot drive to work and increase transportation choice for all residents by making it easier and safer to use transit, walk, or bike to work.



Business Density Map

Challenge: Revitalizing historic towns

Established in 1779, Rutherford County has a rich history, and was the first county established in western North Carolina after the Declaration of Independence. Following decades of prosperity, business and economic activity in the corridor declined in the 1970s and 1980s as new shopping centers pulled customers and businesses away from Rutherfordton and Spindale's CBDs and textile mills closed.

Solution: Catalyze development to strengthen local economies

Rutherfordton and Spindale are actively working with local stakeholders to find innovative ways to draw economic activity back to their town centers while retaining a strong sense of place and history. **PARTNERS** represents the next chapter of this journey to revitalize this rural Main Street and leverage public infrastructure to spur private investment. The Project's enhancements will support rural main street revitalization, thereby increasing the economic productivity of the two towns and improving the economic strength of the region. The Project builds on the momentum of the recent Spindale Main Street Revitalization to expand benefits to the rest of the corridor. By making the corridor more pedestrian friendly and attractive to live, work, and play, **PARTNERS** will spur private investment to improve properties along the corridor, particularly on vacant and underutilized parcels targeted for infill development (see Quality of Life).

A study by Smart Growth America found that Complete Streets projects created positive economic outcomes. Participating communities reported that employment levels rose, new businesses increased, and property values rose, suggesting that Complete Streets projects made the street more desirable for businesses. Moreover, 80% of the communities in the study reported their Complete Streets projects were at least partly responsible for increased investment from the private sector.[12]

Challenge: Missed tourism opportunities

Bicycle tourism is growing rapidly in western NC; a 2015 study found that bicycle tourism had a $14 million estimated annual economic impact in seven of the state's westernmost counties.[13] While assets such as the Thermal Belt Rail Trail draw tourists to the area, the towns are missing opportunities to connect existing trails and greenways to the variety of other tourism destinations found in Rutherfordton and Spindale. While Rutherfordton and Spindale's CBDs are less than 2 miles apart, unsafe and disconnected bicycle and pedestrian facilities do not fully realize tourism opportunities along the corridor.

Solution: Enhance infrastructure to encourage tourism activity

The Project will enhance tourism by connecting 19 miles of greenways with tourist destinations found along the project corridor. The Project's bicycle and pedestrian improvements will create a safer and more connected active transportation link between Rutherfordton's and Spindale's existing greenways and recreational assets and the historic sites, murals, restaurants, and lodging that are also popular tourist destinations. This will have added benefits for the local economy, including increased property values, job creation, and increases in visitor spending.[14]

> "The Spindale/Rutherfordton transportation corridor project is a game changer for our community that will ensure success for everyone."
>
> - Don Cason, Executive Director, Rutherford County Tourism Development Authority

[12] Safer Streets, Stronger Economies - Smart Growth America. (2015). Smart Growth America.
[13] Bicycle tourism: a growing factor in Western North Carolina. (2015). Mountain Xpress.
[14] Bike Walk NC Economic Analysis

State of Good Repair

Challenge: Inequitable facilities are deteriorating

The current design and operation of the project corridor prioritizes motorists, which is evident in the current condition of the limited pedestrian facilities along the corridor. Sidewalks throughout the corridor need repair and modernization – a recent study found that 70% of Rutherfordton's sidewalks experience some form of distress including cracks, broken pavement, and insufficient widths.[15] The pavement condition creates cumbersome and unsafe travel conditions for non-motorized travelers, particularly persons with disabilities and the older adult population.

Solution: Modernize the roadway to equitably serve all modes

Rutherfordton and Spindale, with the full support of NCDOT, are committed to bringing the infrastructure in this corridor into a state of good repair for all modes of travel, including bicyclists, pedestrians, and transit riders, to meet the needs of all users rather than just motorists. The corridor will be brought into a state of good repair by installing crosswalks and pedestrian signals at intersections, reconstructing sidewalks to be ADA-compliant, installing bus shelters to protect transit riders from the elements, installing bike racks on buses and at shelter locations to promote bicycle use and providing a separated MUP for bicyclists and pedestrians. These improvements will address current and projected vulnerabilities as development and investment along the corridor increase density and activity. These improvements will better serve the residents with limited transportation options that currently rely on these inadequate facilities while encouraging a modal shift for motorists to transit and active transportation modes. Until the corridor safely and efficiently serves all modes of transportation, it will not be considered in a state of good repair.

Challenge: Long-term maintenance implications

As with all infrastructure assets, the improvements created by the Project will require routine maintenance to provide the maximum benefits to all users over the long term. This will include keeping the sidewalks and the MUP free of debris and ensuring bus shelters are kept in good condition in addition to the more traditional roadway maintenance needs. Currently, roadway conditions in portions of the corridor have deteriorated, and pavement and drainage infrastructure need maintenance and repair.

Solution: Maintain modernized assets in a state of good repair

By modernizing and upgrading the corridor, assets will be more easily maintained in a state of good repair. The Project includes mill and fill along the corridor that will bring the deteriorating pavement conditions into a state of good repair and prolong the lifecycle of the infrastructure, reducing the long-term costs of roadway maintenance.

Challenge: Inadequate stormwater management system

The existing roadway drainage system, consisting mostly of curb and gutter, shows signs of degradation, reduced capacity due to resurfacing in the gutters and some portions are estimated to be 50 years old. These conditions are especially dangerous for pedestrians and bicyclists who are vulnerable to hazards caused by standing water.[16] The towns of Spindale and Rutherfordton have identified several locations where stormwater management is a serious concern.

[15] Town of Rutherfordton. (2013). Sidewalk Condition Survey.

Solution: Install stormwater BMPs

During design, existing drainage infrastructure will be evaluated to identify needed improvements and repairs to the system. As part of the overall streetscape design, stormwater BMPs will be implemented to maximize vegetated conveyance, prevent erosion, and promote stormwater infiltration. The Project will bring the roadway drainage system into a state of good repair, thereby modernizing and restoring a core infrastructure asset in alignment with environmental sustainability principals.

Existing drainage infrastructure in need of improvement

Partnership and Collaboration

The Project is the result of a collaborative partnership among the Town of Rutherfordton, the Town of Spindale, and NCDOT to coordinate with commercial and mixed-use development near public transportation and along a rural main street to improve mobility and access for the region's most vulnerable communities. This partnership extends to the funding of the Project, with substantial contributions from the towns as well as multiple NCDOT units.

The Foothills Regional Commission and Rutherford County's Planning and Development, Transit, and EMS departments were involved in the development of this grant application. The surrounding community was also involved in the development of the Project via their participation in and support of the corridor plan upon which the Project is based. The *Charlotte Road/Main Street Corridor Improvement Study* included a series of design charettes that informed decisions and priorities, which are reflected in the **PARTNERS** Project. This grant application is also guided by the *Spindale Streetscape Master Plan*, which involved extensive public and stakeholder engagement.

While a portion of the streetscape plan has already been implemented, there is a remaining section on Main St. in Spindale that **PARTNERS** will complete. Community input and equity considerations for disadvantaged communities were carefully considered when developing the scope of the Project, and the towns are committed to integrating equity considerations into further planning, development, and implementation.

Partner Contributions

- NCDOT funding and expertise in delivering past RAISE projects
- Rutherfordton's local match and past planning efforts to establish a multi-modal vision
- Spindale's local match and experience in successfully implementing a complete street in a portion of downtown
- Active participation from multiple Rutherford County departments and the Foothills Regional Commission
- Commitment by Rutherfordton and Spindale to maintain sidewalks and MUP

Corridor Plan Public Involvement

A three-day workshop was held with additional nightly sessions to:

- Provide various opportunities and times of day for public involvement
- Gain specific information through walking tours with the public
- Receive feedback during the design process
- Receive feedback on final designs
- Gain a local understanding of the opportunities and constraints along the corridor

[16] Maintenance of Drainage Features for Safety. Federal Highway Administration. (2012).

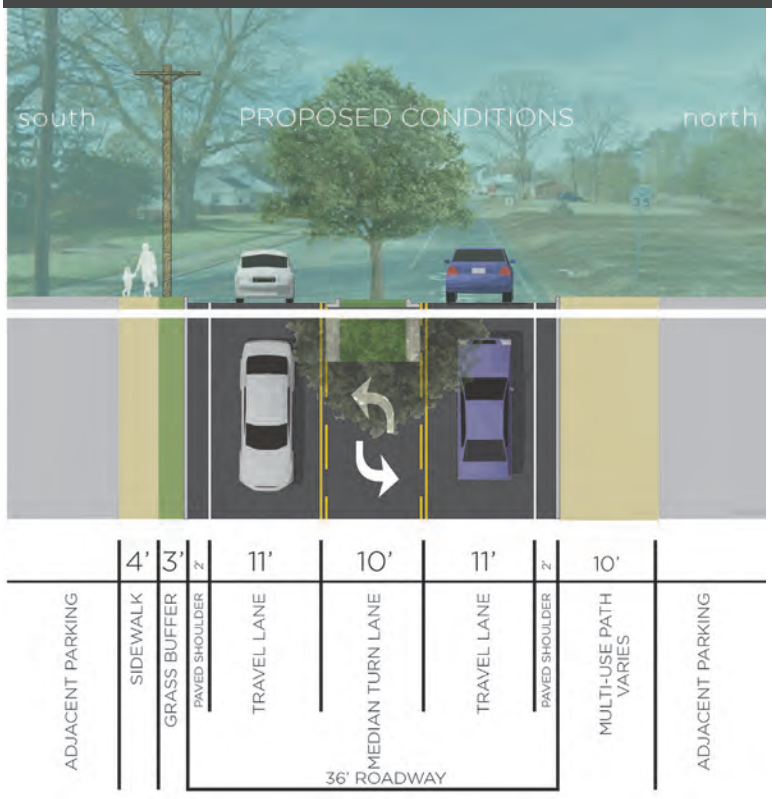
EXHIBIT 33

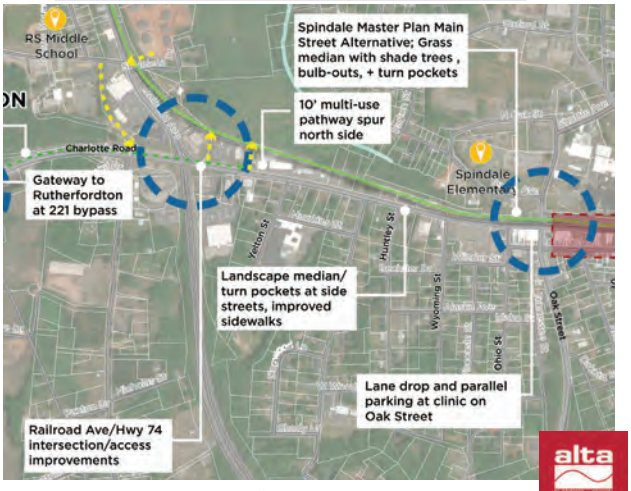
WEST SPINDALE STREETSCAPE MASTER PLAN

The west section of the Spindale Streetscape Master Plan calls for a significant investment in the Town's intersections. Infill redevelopment, ideally in the form of a brewery and restaurant, is proposed in the former Farmers Federation building located at the Town's west entry of the Thermal Belt Rail Trail. The plan calls for a stage and improved lawn area in front of the Spindale House and, to the east, improved vehicular access management and a landscape median.

The Spindale Streetscape Plan was developed in 2019 and part of the Plan was implemented in 2021

MAIN ST: RAILROAD ST. TO OHIO ST.





Charlotte Street/Main Street Corridor Improvements Study

The Charlotte Road Corridor Study developed typical cross sections and concepts based on extensive public and stakeholder input

Innovation

Challenge: Innovation is oriented towards urban areas

Rural areas have a much lower adoption rate of EVs than urban areas, in part because rural areas lack EV charging infrastructure. This is one of the largest barriers to EV adoption and promotes "range anxiety" for rural residents who would otherwise transition to an EV.[17] The lack of EV charging infrastructure similarly affects the travel behavior of tourists, who may own EVs but do not drive these vehicles in areas with low availability of public chargers. Similarly, rural areas across the US have not widely adopted roundabouts, in part due to perceptions that roundabouts are too expensive, require too much ROW acquisition, and are difficult to traverse, despite their documented traffic and safety benefits.[18] Indeed, there are no roundabouts operating in rural Rutherford County.

Solution: Bring innovative solutions to rural town centers

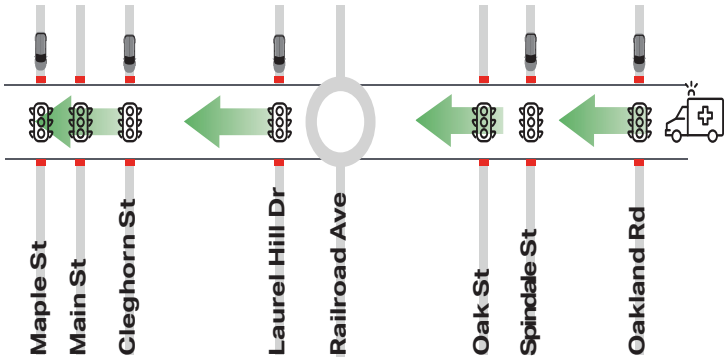
This project will install four new EV level 2 chargers – two in Rutherfordton and two in a historically disadvantaged community in Spindale. This will significantly increase the availability of public EV charging infrastructure and provide Rutherfordton and Spindale residents and visitors an opportunity to make the transition to a cleaner, more sustainable mode of transportation. As two of the charging stations are in a historically disadvantaged community, the Project will also work to ensure that the benefits of environmentally conscious technologies are equitably distributed. In addition to spurring rural EV adoption, the Project will construct the first roundabout in Rutherford County, bringing this safety innovation to the connection between two rural towns.

Challenge: Signals not optimized for emergency response leads to longer response times

The project corridor is the most heavily traveled roadway for emergency vehicles in Rutherford County as it is the primary connection between Rutherfordton and Spindale and a direct route to the Rutherford Regional Medical Center. Currently the traffic signal system does not prioritize emergency vehicles, leading to higher response times and inefficiencies in emergency response.

Solution: Implement signal preemption for emergency vehicles

By installing a connectivity system that facilitates communication between traffic signals and emergency vehicles, the traffic signals will be able to sense approaching emergency vehicles and prioritize their movement through the corridor in the signal phasing. The Project will also utilize signal synchronization to increase the efficiency of the corridor while also making it safer, particularly at intersections. Upgrading existing signals will lay the foundation for potential future investments in transit signal priority. In addition, the project patners will explore implementing intelligent warning systems at key intersections to further improve pedestrian safety. These systems could enable pedestrian detection systems to provide drivers with in-vehicle alerts that a pedestrian is entering the crossing.



Signal Preemption Benefits for Emergency Response

[17] Environmental and Energy Study Institute, Beyond Cities: Breaking Through Barriers to Rural Electric Vehicle Adoption (2021).
[18] ITE Journal, Rural Roundabouts save lives (2021).

05. Project Readiness

The **PARTNERS** Project is a culmination of a multi-year planning effort with community involvement and support demonstrating its project readiness. NCDOT will serve as the RAISE 2022 Discretionary Grant Applicant and Recipient responsible for administering the grant if selected for award, funding partner, owner of Project ROW, and will provide oversight of project delivery. As the project sponsor, NCDOT will apply its experience in successfully delivering this RAISE project.

Project Schedule

Upon the RAISE grant obligation notice NCDOT, in collaboration with Rutherfordton and Spindale, will immediately initiate further design and engineering of the project. NCDOT will concurrently start NEPA documentation for efficiency and improved coordination. Community engagement along the corridor will take place throughout project development and delivery as NCDOT and project partners are committed to implementing improvements that are responsive to the community's needs and input. Funds will be obligated prior to September 30, 2026, and construction completed well in advance of the September 30, 2031 deadline to expend all funds as outlined in the NOFO. Construction of all the Project components is anticipated to be completed by 2027.

Table 5: Project Schedule

Milestone	2022				2023				2024				2025				2026				2027			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
RAISE Milestones			●																●					
Design & Engineering							■	■	■	■	■	■	■	■										
NEPA Documentation							■	■	■	■														
Right-of-Way Acquisition											■	■	■	■										
Utility Relocation												■	■	■										
Construction															■	■	■	■	■	■	■	■		

Anticipated Award Date (August 12, 2022)

Obligation Deadline (September 30, 2026)

NCDOT has the resources needed to accomplish the project on-time and within budget

- Access to technical in-house staff and on-call consultants
- Experience completing several RAISE grants across the state
- Ability to mobilize resources in a timely manner
- Stable funding
- Political community and internal support
- Partnerships with both towns and community organizations
- Confidence the Project will be a CE

Required Approvals

NCDOT, Rutherfordton, and Spindale have a demonstrated history of successful collaboration delivering transportation projects. Together, partners and supporters of the Project created a focused vision through multiple planning efforts that will drive the completion of the proposed scope of work in a timely manner.

State and Local Approval

Letters of support have been provided on the Project website indicating state and local support for the overall grant application and respective local match contributions. NCDOT, Rutherfordton, Spindale, and Foothills RPO will work collaboratively to amend the TIP and subsequently the STIP upon notification of the award.

NEPA

It is anticipated that this project qualifies as a Categorical Exclusion (CE) because the project will occur primarily within existing NCDOT ROW and limited ROW acquisition is anticipated. To comply with NEPA, NCDOT will process the project using NCDOT's CE Checklist to streamline project delivery. Due to the proximity of historic resources to the project corridor, it is anticipated that consultations pursuant to Section 106 of the National Historic Preservation Act will occur concurrent with the NEPA process to ensure that impacts to historic properties are avoided and minimized.

ROW Acquisition

Limited ROW acquisition is anticipated. Partial acquisition of properties may be required for improvements at the Maple St. and Railroad Ave. intersections, and an easement or partial acquisition will be required to connect the new MUP to the Thermal Belt Rail Trail at Lakeside Mills. NCDOT will complete acquisition in accordance with 49 CFR part 24, 23 CFR part 710, and NCDOT policy. Given that a core component of this project is a road diet, most improvements will be implemented within the existing NCDOT ROW.

Permits

Due to its crossing of Cleghorn Creek, the Project may require compliance with permitting requirements pursuant to Sections 401/404 of the Clean Water Act. NCDOT will coordinate with the United States Army Corps of Engineers and the North Carolina Department of Environmental Quality (NCDEQ) for permitting requirements. The USACE holds the final discretion as to what permit will be required to authorize construction. Prior to construction, NCDOT will obtain a NPDES permit to ensure stormwater is properly treated and controlled during construction.

There are no North Carolina legislative approvals required to complete the project.

Public Engagement

The community provided invaluable input on components of **PARTNERS** through several planning studies that included community outreach in the form of meetings, surveys, and charrettes. These planning studies include the *Rutherfordton Bicycle and Pedestrian Plan, Spindale Masterplan, and Charlotte Road/ Main Street Corridor Improvement Study*. The vision and improvements proposed by the **PARTNERS** Project are consistent and support community feedback received to date. Public engagement will continue to be an integral part of the project. NCDOT will follow its Statewide Public Involvement Plan, a resource for practical public involvement guidance to ensure quality, consistency, and compliance with best practices.

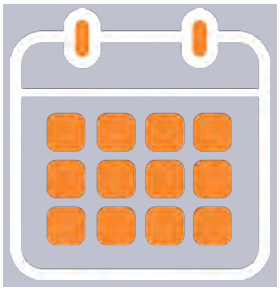
Community Vision & Input

- ✓ Increase multi-modal options for all users
- ✓ Enhance identity for tourism and locals alike
- ✓ Include connections to the Thermal Belt Rail Trail and Purple Martin Trail
- ✓ Make intersections safe and accessible for pedestrians

Assessment of Project Risks and Mitigation Strategies

The Project Team has identified the following potential risks and corresponding mitigation strategies in order to implement the project on schedule and within budget. NCDOT, who will administer the project, will leverage its extensive experience completing RAISE projects to reduce and mitigate risk.

Table 6: Project Risks and Mitigation Strategies

Category	Potential Risk	Mitigation Strategies
Construction Impacts 	• Temporary construction detours may impact access and travel time • RCT Tri-City Express may temporarily be rerouted due to construction • Business access may temporarily be impacted • ADA-accessible facilities may be temporarily unavailable	• Completing construction in a timely manner • Communicating detours and construction schedules to the community through multiple channels in English and Spanish • Coordinating with RCT to identify safe temporary locations for transit service and communicate detours well in advance • Coordinating with businesses to minimize potential impacts to operations
Project Costs 	• Additional utility relocation costs could increase overall project costs • Materials shortages and inflation causing volatility in materials and construction costs	• Additional design and engineering are underway to confirm utility relocation costs • The bypass project (R-2233) provides additional information on potential utility relocations • Substantial contigency was included in the construction cost estimate to account for supply chain difficulties and current inflation rate
Schedule 	• ROW acquisition could potentially delay the project schedule	• Project is designed to minimize ROW acquisition and is primarily being constructed within existing ROW and roadway extents • Coordination with any affected property owners will begin once further engineering is complete • Project schedule includes over one year between completion of ROW acquisition and RAISE funds obligation deadline

06. Benefit Cost Analysis

The **PARTNERS** Project will provide comprehensive benefits for residents of Spindale and Rutherfordton by enhancing the vitality, vibrancy, and economic competitiveness of rural downtowns and public spaces. Over the 20-year benefits period (2027-2047), the benefits and residual savings provide over **$8.3 million** of net benefits. Based on the USDOT's Benefit-Cost Analysis guidance, the project's Benefit-Cost Ratio is calculated to be **1.56**. A full summary of the inputs and outputs for the analysis can be found in the Benefit-Cost Analysis Technical Memorandum.

Table 7: Total Project BCA Results

	2020 Millions Discounted to 2020 at 7% 20 Year Analysis
Costs	
Capital Costs	$14.9
Total Costs	**$14.9**
Safety	
Roadway Safety and Modernization	$11.9
Safety from Modal Diversion	$0.0
Emergency Services	$5.7
Environmental Sustainability	
Emissions Savings from Modal Diversion and Signal Coordination	$0.0
Emissions Savings from Reduced Idling	$0.1
Quality of Life	
Noise & Congestion Avoided	$0.0
Construction Delay	-$2.4
Mobility and Community Connectivity	
Bike and Pedestrian Health & Recreation	$0.68
Time Savings for Transit Users from Modal Diversion	$0.07
Transit Amenities	$0.05
Economic Competitiveness and Opportunity	
Travel Time Savings	$5.6
Auto Operating Costs Avoided	$0.0
Transit Operating Cost Efficiency Savings	$0.7
State of Good Repair	
Residual	$1.7
Corridor O&M Costs Avoided	$0.5
O&M Costs	-$0.8
Results	
Total Benefits	**$23.3**
Benefit-Cost Ratio	**1.56**
Net Benefits	**$8.3**

FY 2022 RAISE Grant Project Application

A partnership between North Carolina Department of Transportation (NCDOT), Town of Rutherfordton, and Town of Spindale