Introduction

Purpose of Chapter

The overall goal of the *2035 LRTP* is to promote an efficient and effective transportation system for all users in the RFATS Study Area. This chapter considers the social and environmental impacts of the transportation decisions. It confirms that the Plan covers the 20-year forecast period required by Federal law. It also provides the discussion of potential environmental mitigation activities that must, by Federal law, be included in this Plan.

Socio-Economic Information

Metrolina Model

RFATS has collected socio-economic information for York County since 1965 to support its long range planning efforts. In previous LRTPs, the information was collected for the transportation model developed by the South Carolina Department of Transportation (SCDOT). More recently, however, RFATS joined the other Metropolitan Planning Organizations (MPOs) in the Charlotte area to develop a regional transportation model. This is the Metrolina Regional Travel Demand Model ('Metrolina model'). The South Carolina area of the model includes the RFATS Study Area, the remainder of York County, and the panhandle area of Lancaster County, a new addition to the RFATS Study Area.

Like similar models across the nation, it is divided into Traffic Analysis Zones (TAZs) which represent the basic areas for forecasting. Socio-economic data is compiled, and forecasts are made, for each Traffic Analysis Zone. With the expansion of the study area into Lancaster County, the RFATS study area now has 271 TAZs.

Data and Sources

For the 2035 LRTP, RFATS staff updated the planning data for use in the Metrolina model. The information collected included housing, employment and school enrollment data for the years 2000, 2005, 2006, and 2007. Data was also projected into the future for the years 2015, 2025, and 2035 ('horizon years').

A number of subcategories of the three data types were collected (**Table 3.1**). The subcategories are important elements in determining travel. For example, trip–making characteristics vary by household size, income, and type of employment. This information allows for travel to be broken down by detailed trip purposes, which gives more accurate estimates of the area's travel patterns. **Table 3.2** summarizes the methods used to collect the information.

Table 3.1 -Subcategories of Socio-Economic Data

Housing	Employment	School Enrollment
• Households • Population • Population in Households • Population in Group Quarters • Mean Household Income	• Total Employment • Employment - Manufacturing, Industrial, Warehouse, Transportation, Communications, Utilities • Employment - Retail • Employment - Highway Retail • Low-Traffic Service Employment • High-Traffic Service Employment • Employment - Office & Government • Employment - Bank • Employment - Education	• Students - Grades K-8 • Students - High School • Students - College

Table 3.2 - Metrolina Regional Model Socio-Economic and Land Use Data Sources

Year	Comment	Housing Data	Employment Data	School Enrollment
2000	Initial Base-Year for Metrolina Regional Model	Housing Units estimated from US Census data • Permits locally reported by Census Tract manually distributed to Census Block Groups • Permits within the City of Rock Hill were geocoded directly by address • Census Block Group data geographically assigned to *smaller* Metrolina Model TAZs. • Data distributed to specific TAZ zones based on land use assumptions.	Data acquired from SC Employment Security Commission	Data gathered from individual K-8, High School, and College/Universities
2005	Established as New Base-Year for purposes of modeling and Horizon Year S/E Projections. Data collected between February 2006 –March 2007 and submitted in July 2007.	Household and Population estimate based on County-wide construction permit data • Permits from 2000-2002 manually distributed to block groups, incorporating some assumptions • Permits from 2003-2005 geocoded by address	• purchased from InfoUSA • Sorted into Metrolina employment categories* (OFFGOV, HISVC, MIWTCU) by NAICS code • Geocoded to TAZs by address	• Individual school enrollment estimates based on population growth estimate combined with past enrollment trend • Geocoded to TAZs by address
2006	Data collected between March 2007 - July 2007	• Household and Population data estimated by adding 2006 Building Permit data, compiled by Catawba Regional Council of Governments, with previously (2005) established housing base. Population Data calculated by applying county-wide *average household size* factor of 2.62.	Purchased from InfoUSA	School enrollment data collected by individually surveying all public York County schools, universities, and private schools
2007	Data collected between March 2008-July 2008	Household and Population data estimated by adding 2007 Building Permit data, compiled by Catawba Regional Council of Governments, with previously (2006) established housing base. Population Data calculated by applying county-wide *average household size* factor of 2.62.	purchased from InfoUSA	School Data collected from 4 York County, SC school boards, universities, and private schools

Year	Comment	Housing Data	Employment Data	School Enrollment
Horizon Years	Projections for years 2015, 2025, and 2035 incorporating "Pipeline Development" information	Projections rely on 2005 base year data	Projections rely on 2005 base year data	Projections rely on 2005 base year data
	• Pipeline Development includes County-wide residential and commercial developments expected to see significant build-out by 2009. • Project information solicited from York County, Fort Mill, Rock Hill, Tega Cay, and York County Chamber of Commerce. Projects geocoded to specific TAZ zones.			

** OFFGOV=Office and Government Employment; HISVC=High-Traffic Service Employment; MIWTCU=Manufacturing, Industrial, Warehouse, Transportation, Communications, Utilities Employment*

TAZ = Traffic Analysis Zone(s)

Socio-Economic Forecast

Table 3.3 summarizes the socio-economic data in the Metrolina model. The number of households is expected to grow from 787,000 in 2005 to 1,322,000 in 2035, a 68% increase. Total employment is estimated to rise from 1,006,000 in 2005 to 1,884,000 in 2035, an increase of 87%. This is charted in **Figure 3.1**.

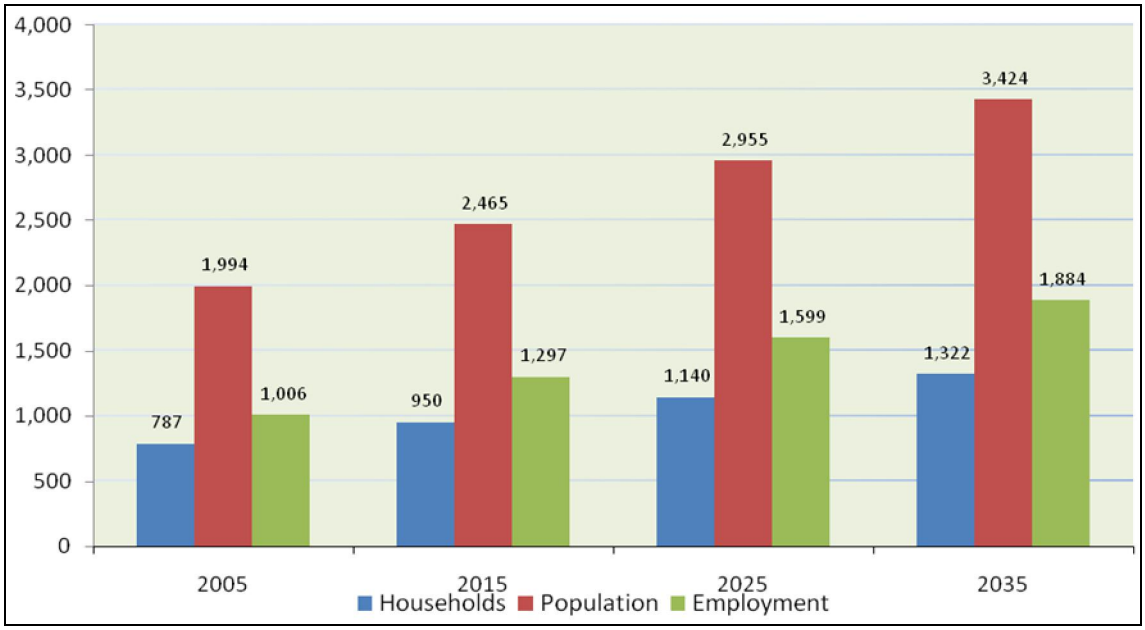
Table 3.3 - Metrolina Model Household, Population and Employment Forecasts

Year	Households (1,000s)	Population (1,000s)	Employment (1,000s)
2005	787	1,994	1,006
2015	950	2,465	1,297
2025	1,140	2,955	1,599
2035	1,322	3,424	1,884

All numbers in this table are 1,000s – for example, '787' represents 787,000.

Source: Metrolina Regional Travel Demand Model, April 2007 version

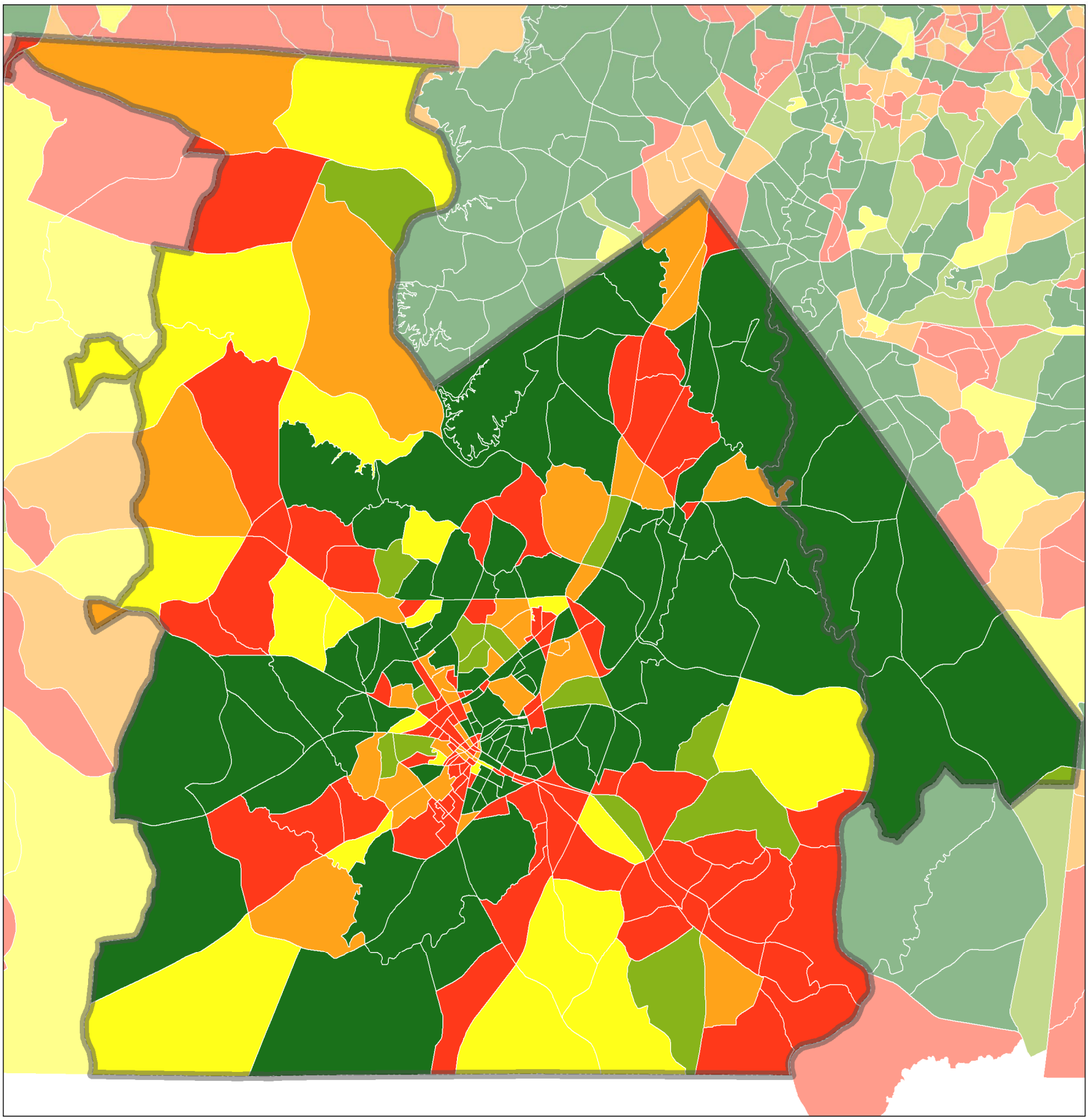
Figure 3.1 - Metrolina Model Household, Population and Employment Forecasts



All numbers in this chart are 1,000s – for example, '787 represents 787,000

Source: Metrolina Regional Travel Demand Model, April 2007 version

Error! Reference source not found. shows show the forecast growth in the number of households from 2013 to 2035 by MRTDM traffic analysis zone. In the same way, Error! Reference source not found. shows the forecast employment growth. The estimates show that numerous areas within the study area will experience over a 100% growth in households and employment in the coming years.



Forecast Change in Households (2013 to 2035)

Percent of Household Growth

- Less than 0%
- Between 0% and 25%
- Between 25% and 50%
- Between 50% and 100%
- More than 100%
- RFATS Boundary

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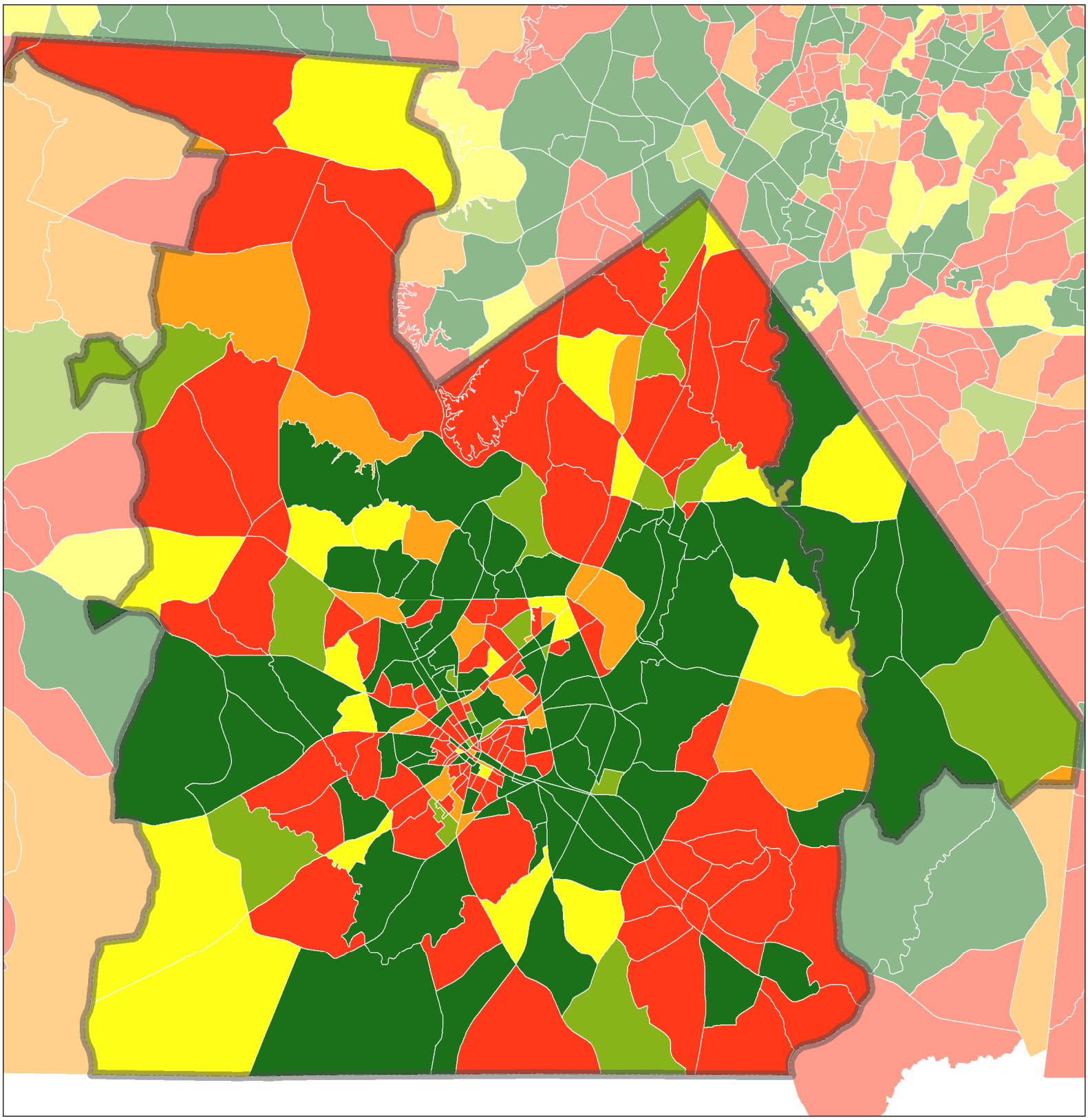

Forecast Change in Employment (2013 to 2035)

Percent of Employment Growth

- Less than 0%
- Between 0% and 25%
- Between 25% and 50%
- Between 50% and 100%
- More than 100%
- RFATS Boundary

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Public Outreach and Traditionally Underserved Populations

Public Outreach

As described in the Public Involvement Element RFATS conducted an extensive public outreach program during the development of the 2035 Long Range Transportation Plan. The outreach program resulted in valuable input from a number of participants concerning social and environmental issues including traditionally underserved populations.

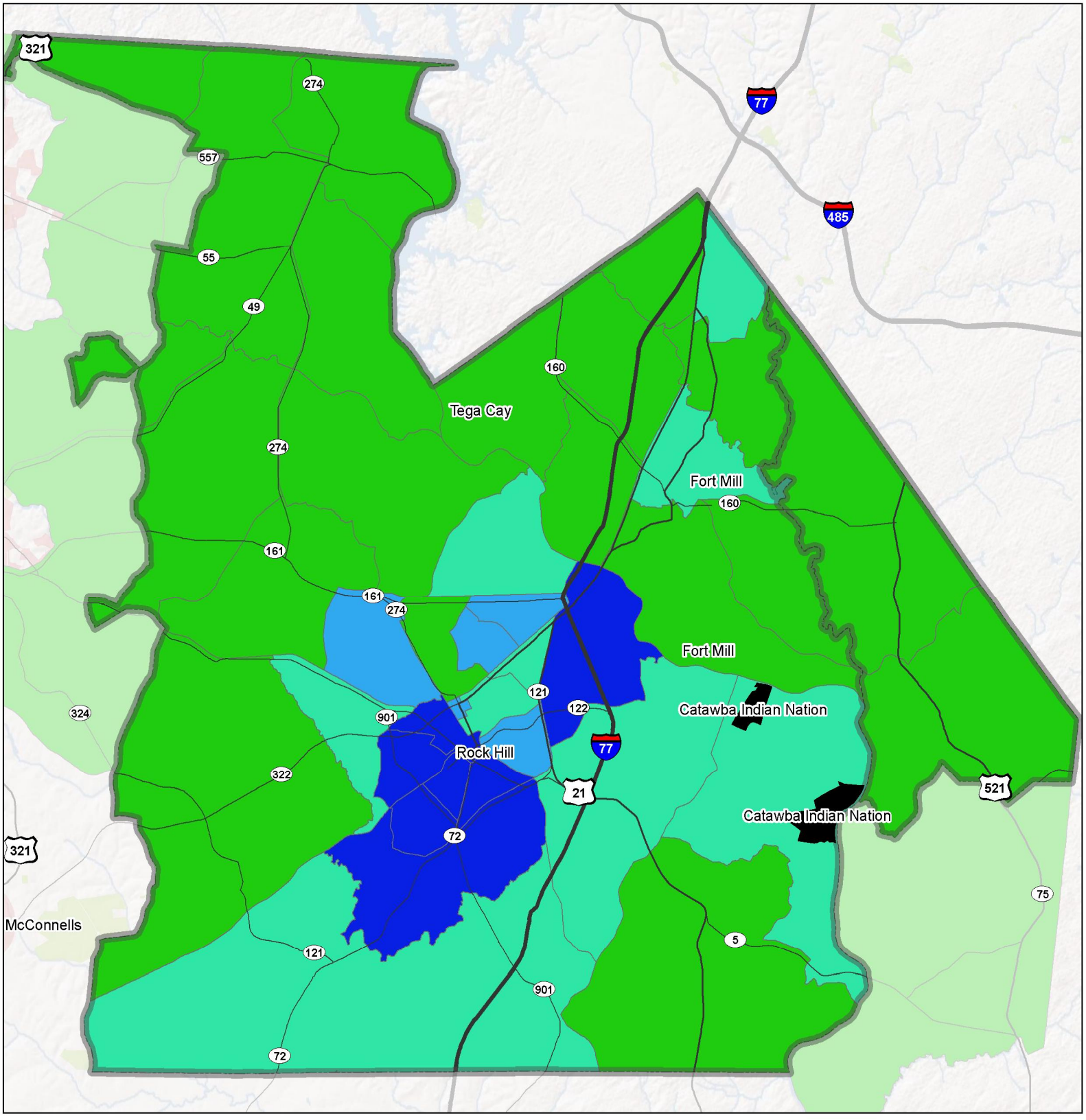
Traditionally Underserved Populations

Environmental Justice (EJ) legislation originated in Title VI of the 1964 Civil Rights Act. This Act, and subsequent legislation, aims to ensure that services and benefits are fairly distributed to all people, regardless of race, national origin, or income, and that all people have access to meaningful participation. This is accomplished in transportation programs by:

- Avoiding, minimizing, or mitigating disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensuring the full and fair participation in the transportation decision-making process by all potentially affected communities.
- Preventing the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The current plan has met these federal requirements by identifying traditionally underserved communities, targeting those communities in the public participation process, and considering these communities in the development of the fiscally-constrained project list. A similar process has been applied to this update of the 2035 LRTP

Figure 3.4 shows the distribution of minority populations in the RFATS Study Area. **Figure 3.5** shows the percentage of families living below the poverty level. Areas to the southwest of the City of Rock Hill have the highest concentrations of minorities as well as families below the poverty level.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Catawba Indian Nation
324
Rock Hill
77
322
21
521
Catawba Indian Nation
72
321
75
McConnells
5
121
901
72
Percent Minority Population
Below 20%
20% to 30%
30% to 45%
Above 45%
RFATS Boundary
Catawba Indian Reservation
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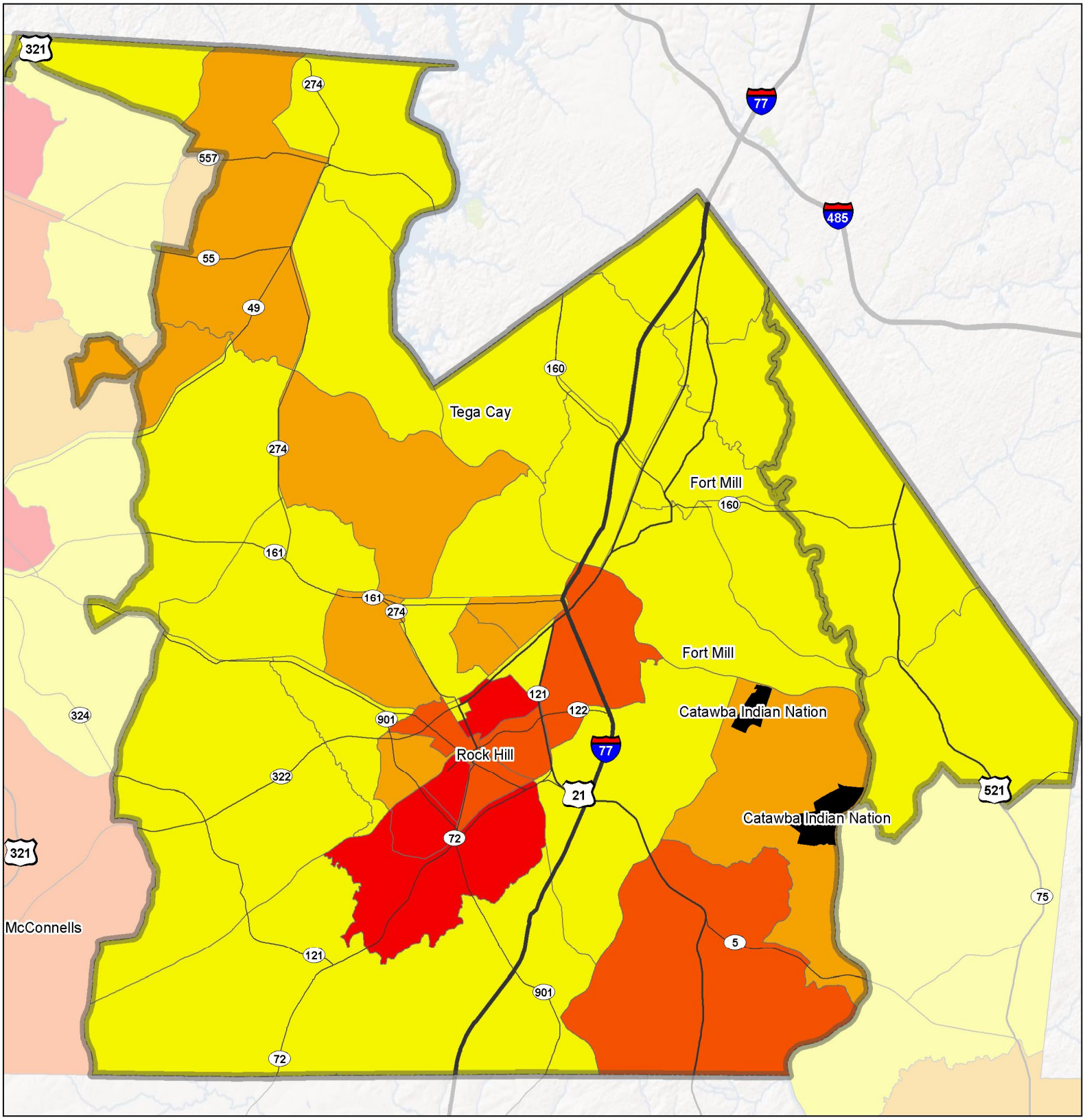
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Catawba Indian Nation
77
Rock Hill
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21
521
Catawba Indian Nation
72
321
75
McConnells
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121
901
72
Percent of Families Below Poverty Level
Below 10%
15% to 20%
RFATS Boundary
10% to 15%
Above 20%
Catawba Indian Reservation
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Air Quality Non-Attainment Status

In 2004, the US Environmental Protection Agency ruled that the Charlotte Metropolitan Statistical Area (MSA), which includes the RFATS Study Area, does not meet federal air quality standards – specifically, the standard for ozone levels. As a result the area has been designated a 'non-attainment area.'

This has implications for the RFATS transportation planning process and the LRTP, because non-attainment status triggers some additional requirements. RFATS must demonstrate that its plans, programs and projects will ultimately lead to consistency with targeted ozone standards. This is known as 'transportation conformity'. Attainment of the air quality standard is demonstrated in a document separate from the LRTP.

Environmental Screening and Mitigation

Role in the Transportation Plan

Transportation projects may have impacts – positive or negative – on the environment. The environmental screening process is intended to identify the potential environmental impacts of a project. This process seeks to balance competing interests by improving mobility while preserving important environmental features. The screening process also helps to identify important environmental factors early in the project development process, thus maximizing opportunities to avoid or mitigate impacts and reducing the potential for delays and expense later on.

Highway projects generally have the greatest potential to create significant environmental impacts due to land clearing and grading, modification of natural drainage, increased stormwater runoff, and traffic. In addition, major roads can become barriers within communities, affecting the way residents live and interact. Highway projects also have great potential for secondary and cumulative impacts. Sidewalks and bicycle facilities generally have a much lower impact, because of their small cross-sections and greater flexibility to avoid problem areas.

Transit improvements that only involve bus route and service expansions, with no new construction, will have minimal impacts on the environment. However, fixed-guideway systems such as the proposed bus rapid transit service and the planned vintage trolley will potentially have more impacts; these will be evaluated in the same way as roadway projects. Generally, transit projects have a positive impact on the overall system by offering enhanced mode choice, increased accessibility and an option other than the single occupant vehicle.

Mitigation measures aim to avoid or minimize a project's impact on the environment. These measures can include:

- Avoiding the impact altogether, by not implementing a project or a specific element of a project,
- Minimizing impacts, by limiting the degree or size of a project element,
- Rectifying the impact, by repairing, rehabilitating or restoring an environment that has been affected,
- Reducing or eliminating the impact over time, by preservation and maintenance operations during the life of the project, and
- Compensating for the impact by replacing or providing substitute natural resources or environments.

A project will often use a combination of these mitigation measures. The measures may take place in the same location as the project, or (by compensating) in a different location.

Environmental Screening for the 2035 LRTP

As described in the Highway Element, the Project Ranking Criteria for potential projects include an environmental screening criterion. This considers potential impacts to environmental, social, and cultural resources, and therefore helps to bring environmental issues into the selection process. This includes identifying major environmental impacts that diminish a project's feasibility.

However, that screening is not intended as a replacement for a more thorough evaluation within each project as it progresses. For most projects, more detailed environmental assessments will be needed as the project is developed.

Cooperative Coordination with Resource Agencies

RFATS staff consulted with Federal, State and local agencies as well as a broad cross section of environmental resource agencies: specifically, the South Carolina Department of Health & Environmental Control (DHEC); SC Department of Natural Resources (DNR); SC Department of Fish & Wildlife Services; SC Department of Archives and History; Nation Ford Land Trust; The Trust for Public Land; and the Environmental Protection Agency (EPA), in the development and review of transportation plans, needs and potential projects.

Items noted during this process included an environmental summary of natural resources and advisory guidance regarding identified endangered species within the study area. Other comments from land management agencies included an emphasis on the role of trails and bikeways to the regional transportation system. In addition, stakeholders were consulted regarding the identification and emissions analysis of all regionally significant projects.

Major Environmental and Cultural Features

The planning area includes a variety of environmental and cultural features that will be considered during the evaluation of individual projects. The following discussion is summarized from the 2025 York County Comprehensive Plan.

Environmental features of the region include:

- Rolling terrain within the Carolinas Piedmont physiographic region.
- Agricultural landscapes with includes some attractive viewsheds.
- Catawba River and Lake Wylie and supporting tributaries,
- Floodplains, wetlands and distinct natural habitats.

The RFATS Study Area has a long history rich in cultural diversity with many of its historic and cultural resources enduring today. The major cultural features include: parks, several historic districts (including downtown Fort Mill and downtown Rock Hill), and numerous individual historic buildings.

The presence of the Catawba Indian Nation is an important cultural factor. Today the Catawba Cultural Center, located on the Catawba Indian Reservation, presents tours and programs.

The Bethel community, in the north-west part of the RFATS Study Area, is one of the oldest communities in York County, having developed around Bethel Presbyterian Church which was organized in 1764. Development around Lake Wylie is rapidly changing the rural character of the community. Although this community currently has no listings on the National Register of Historic Places, a 1992 inventory conducted by the South Carolina Department of Transportation identified a number of individual sites which are considered eligible for National Register nomination. Also in the area is Hill's Iron Works, on Highway 264 at Allison Creek, where weapons were produced during the Revolutionary War. The ore for the iron works was mined at nearby Nanny's Mountain, which is significant for that reason. This mountain was recently purchased by York County for public recreation. Other cultural sites in the area include several individual sites that the 1992

inventory considered worthy of further investigation and consideration for local protection. There are also several abandoned cemeteries in the area.

Rock Hill has many cultural resources. These include the Museum of York County, Winthrop University, York Technical College, Clinton Junior College, and a wide range of others such as the Rock Hill Telephone Company Museum, Cherry Park, and the relatively recent Center for the Arts. Within the City of Rock Hill or nearby, there are currently five historic districts, one historic complex and thirteen individual sites on the National Register. The 1992 survey recommended that additional sites and historic districts be added to the Register, and also listed other sites as being worthy of additional investigation. This area also includes a number of abandoned cemeteries.

The cultural resources in and around the town of Fort Mill and the City of Tega Cay reflect the recent rapid growth in these areas. In addition to neighborhood parks, Confederate Park serves as a town square for Fort Mill and includes monuments to both the Catawba Indians and soldiers who died in the Civil War. The Anne Springs Close Greenway, a protected natural area north of Fort Mill, includes several historically-significant buildings on its property. In Fort Mill itself, the National Register listings include the Downtown Historic District, the Unity Presbyterian Church Historic District, and a number of individual listings. The 1992 survey recommended adding one additional listing and identified a number of other structures as worthy of further consideration.

Near Fort Mill, the prehistoric and historic site of Spratt's Bottom is located on the Catawba Valley floodplain. Nauvasee, the main village of the Catawbas, was located less than a mile to the south of Fort Mill. There are also several abandoned cemeteries in this area.

Impacts of Major Projects

Environmental Screening for the US 21 Bypass Widening

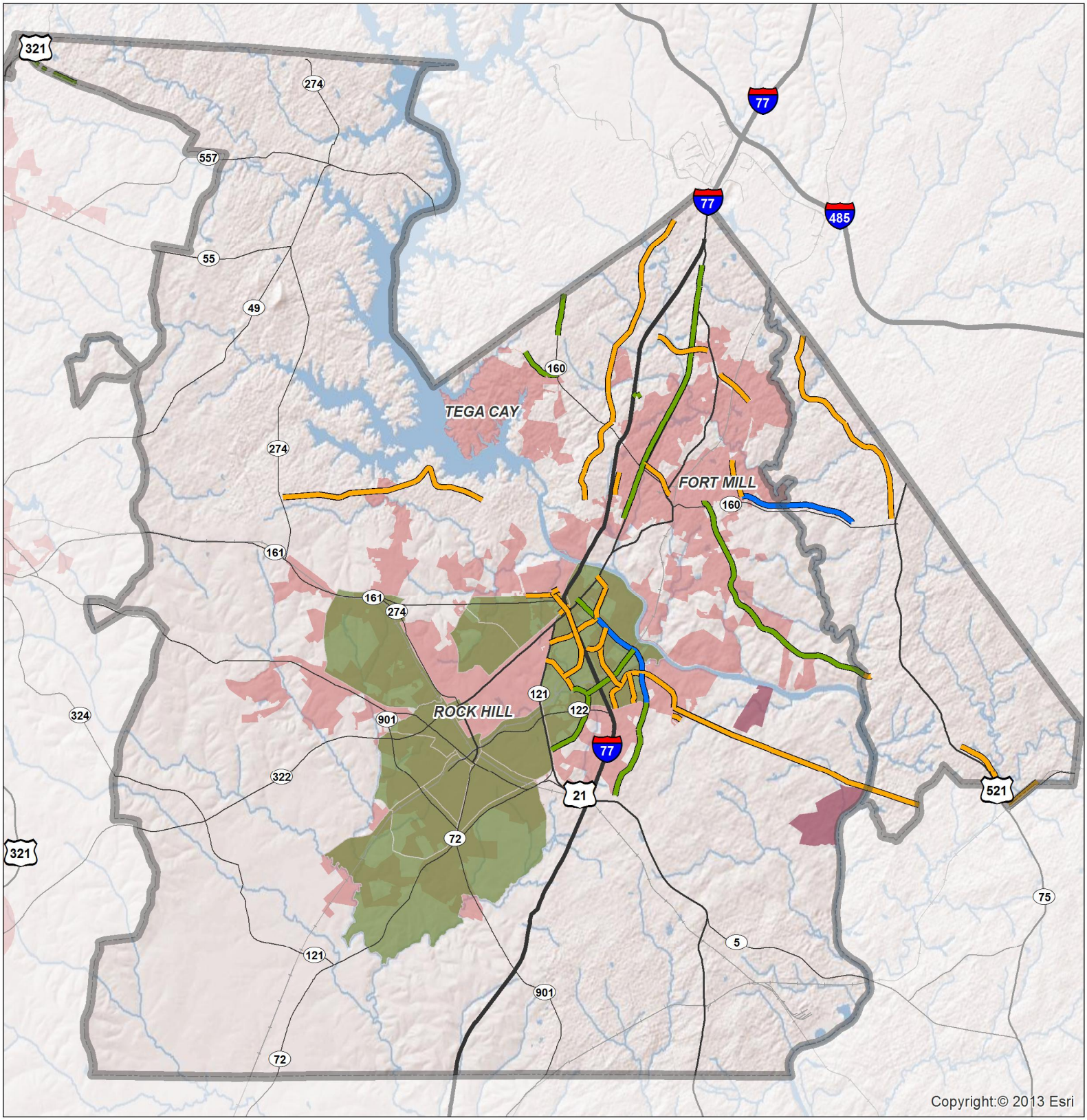
An APPR has also been completed for the US 21 Bypass project. The project involves widening an existing 2.1 mile segment of the US 21 Bypass from the Fort Mill Northern Bypass to SC 51 in northeastern York County. This segment would be widened from two lanes to four or five lanes.

Table 3.4 summarizes the anticipated impacts, according to the Environmental Screening reported in the APPR. SCDOT found no minority communities or areas below the poverty level in the project area. No historic sites were found in the project area, although one church was identified. Two stream crossings were identified; one of these creates possible fish-species of concern. Several isolated wetlands are located close to the roadway.

Schweinitz's Sunflower (an endangered species at the Federal and State levels) has been observed along the corridor. Several public water supply wells, a composting facility, a hazardous waste generator, two compliance enforcement sites, and several underground storage tanks are found along the project route. The land uses in the project area are mixed. Impacts on residences were considered likely, and impacts on businesses were considered possible. Impacts on power lines were considered to be certain.

Other Projects

Figure 3.6 through **Figure 3.8** shows the remaining projects in the 2035 LRTP, along with their potential cultural impacts within the study area.



2035 LRTP Projects - Potential Socio-Economic Impacts

Project Funding Status

- RFATS LRTP
- Pennies for Progress
- Other Transportation Needs

- Census Tracts with >30% Minority Population
- Interstate
- US Highway
- State Highway
- Railroad

- RFATS Boundary
- Municipal Boundary
- Catawba Indian Reservation

0 3 6 Miles

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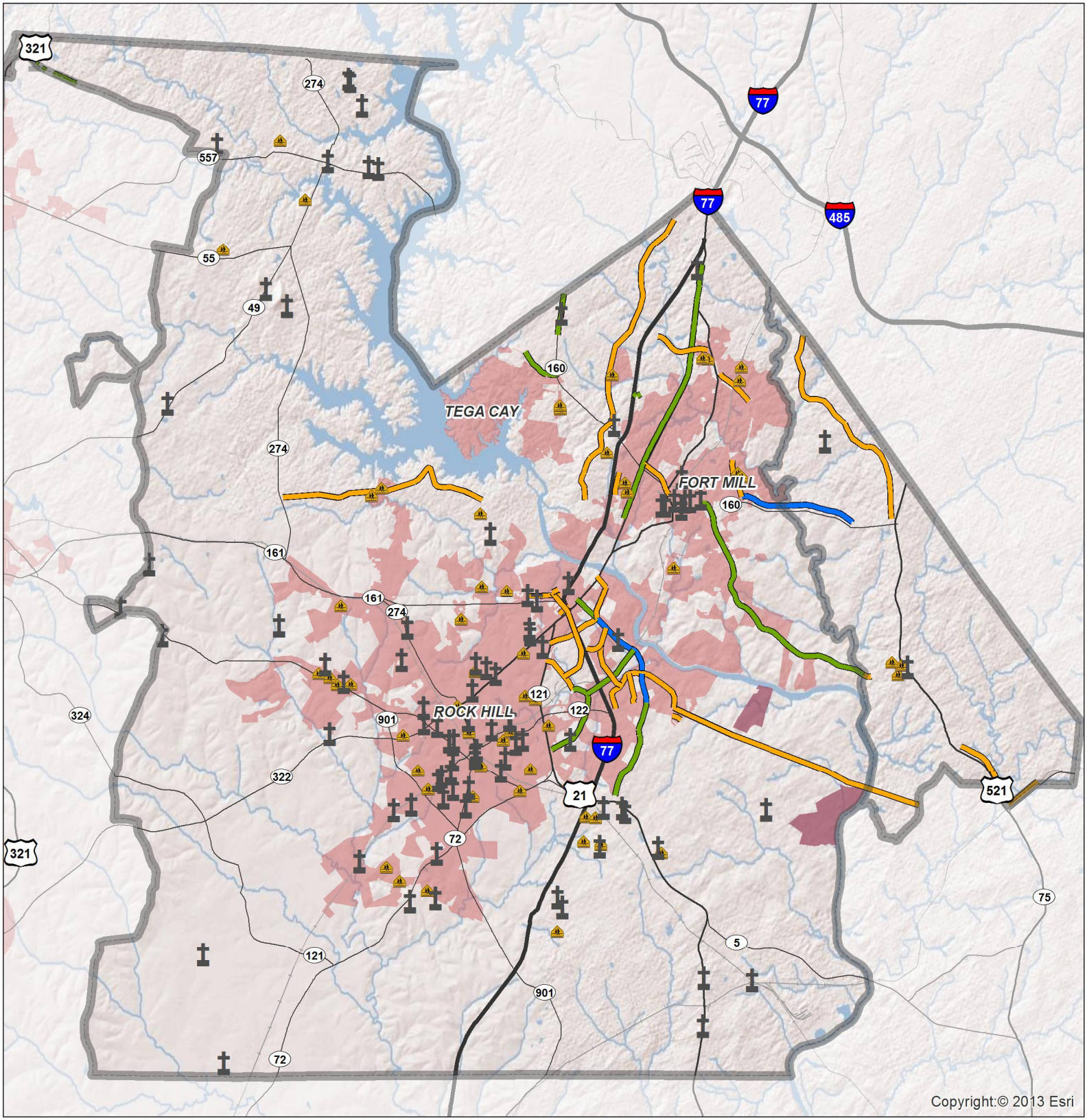


2035 LRTP Projects - Potential Cultural Impacts

Project Funding Status
- RFATS LRTP
- Pennies for Progress
- Other Transportation Needs

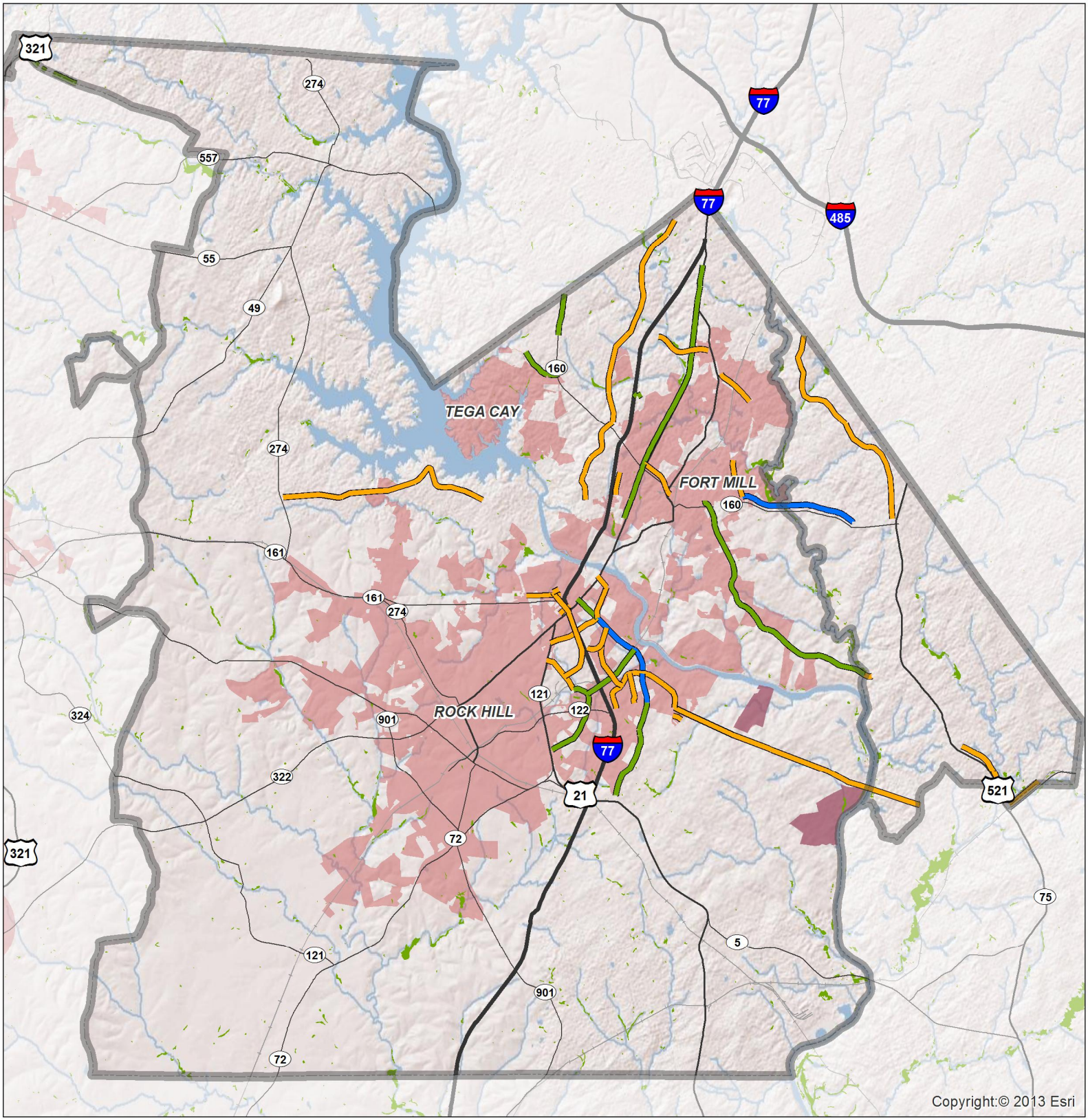
- School
- Church

- Interstate
- US Highway
- State Highway
- Railroad

- RFATS Boundary
- Municipal Boundary
- Catawba Indian Reservation

N W E S

0 3 6 Miles



2035 LRTP Projects - Potential Natural and Environmental Impacts

Project Funding Status

- RFATS LRTP
- Pennies for Progress
- Other Transportation Needs

- Wetland
- Interstate
- US Highway
- State Highway
- Railroad

- RFATS Boundary
- Municipal Boundary
- Catawba Indian Reservation

N W E S

0 3 6 Miles

Table 3.4 - Potential Environmental Impacts of US-21 Bypass

Impact Potential / US 21 Bypass Widening	
Natural Resources	
Wetlands	**Possible**
Two Streams	**Possible**
Threatened & Endangered Species	**Possible**
Cultural	
One Church	**Possible**
Archaeological Survey Lines	**Possible**
Historical Sites	**None**
Environmental	
Several public water supply wells	**Possible**
Composting facility	**Possible**
Hazardous waste generator	**Possible**
Several public water supply wells	**Possible**
Two compliance enforcement sites	**Possible**
Underground storage tanks	**Possible**
Socioeconomic	
Minority population	**None**
Low-income population	**None**
Infrastructure	
Powerline	**Likely**
Other	
Residential	**Possible**
Businesses	**Likely**
Fire Department	**Likely**

Key:
Possible (yellow): Located near or along the project corridor; impacts dependent on design and and alignment shifts.

Likely (orange): Located within close proximity of project corridor and impacts are more likely to occur.

Source: Advanced Project Planning Report for Potential Improvements to U.S. Route 21 Bypass from the Fort Mill Northern Bypass to SC 51 in York County (SCDOT and RFATS, undated)

Conclusion

- The Metrolina Regional Travel Demand Model, which covers the RFATS Study Area, has been updated with 2005 data as a baseline and with forecasts for 2035 and expanded to include the panhandle of Lancaster County.
- RFATS maintains the Federally required 20-year period between base and horizon years.
- Traditionally underserved populations as well as social and environmental factors have also been considered through the transportation planning process for this Plan.