TRANSPORTATION

The transportation-land use connection is an important concept in both land use and transportation planning. The most significant role that transportation plays in land development is in providing access, with transportation facilities serving as a significant element of the built environment, creating both connections and barriers. For instance, while a high-volume, four-lane highway may connect key areas of a community for vehicular travel, safety concerns may cause it to be a deterrent for pedestrians who need to cross the highway to get to resources on the other side. Traffic congestion on a thoroughfare can also be a barrier, causing motorists to seek alternative routes through residential areas. An understanding of these relationships is critical to solving and even preventing transportation related problems such as congestion, higher energy consumption, reduced air quality, threats to public health and safety, and decreased access to services and employment.

The Transportation Element provides an analysis of transportation systems serving the City and County including existing roads, planned or proposed major road improvements and new road construction, existing and proposed transit projects, and proposed and existing pedestrian and bicycle facilities and projects.

CONTENTS

Debate on the relationship between transportation and land use typically hinges on whether the transportation network should be planned to accommodate anticipated land uses and growth, or should the transportation network evolve organically to accommodate traffic generated by the location of land uses and subsequent growth patterns. Ideally, transportation networks should be planned to anticipate and accommodate future needs. However, funding for costly transportation infrastructure is limited, particularly at the local level, with resources directed to alleviate immediate problems such as congestion and safety issues caused by increased traffic volume. It is important that both transportation and land use plans evolve over time, adjusting to new challenges and opportunities in concert with one another.

The automobile has been the dominant mode of travel in the United States since the Second World War. As such, accommodation of the automobile has been a significant factor in land use development. This has taken many forms, including the evolution of residential areas from walkable neighborhoods to subdivisions focused on optimum vehicular access. In recent years, public concern about issues such as traffic congestion, energy conservation and air quality have resulted in a broadening of transportation planning to focus on the full range of transportation options. While roads comprise the majority of most transportation systems, they are not the only viable component. Effective transportation systems are built upon a broad, multi-modal network of options that include rail, air, shipping, public transit, and pedestrian and bicycle systems. In general, a transportation system can be defined as any means used to move people and/or products.

BUSES PROVIDE TRANSPORTATION FOR A WIDE RANGE OF RIDERS

9.1. ROAD NETWORK

According to the 2013 *South Carolina Statewide Transportation Improvement Program* (STIP), projected demand for travel in the State will continue to grow due to population and economic growth, as well as increases in resident drivers and driving activity. While travel is generally greatest on Interstates, Federal and State highways and many local roads have also experienced the traffic congestion and road wear associated with increased motor vehicle travel. An examination of the local road network will enable Greenwood County to work with regional partners to plan for transportation needs for the coming decade, particularly as they relate to future land use.

9.1.1. LOCAL ROAD FUNDING

The State of South Carolina launched its "C Program" in 1946 for the purpose of paving dirt farm-to-market roads in the State system. Program funds, known as C-Funds, are derived from a 2.66 cent per gallon user tax on gasoline sales that is deposited in the County Transportation Fund and allocated to the counties. As part of the program, each county has a *County Transportation Committee* (CTC) with members appointed by the county legislative delegation. The Committee is responsible for the formation of a county transportation plan, and is empowered with the authority to select and approve projects to be funded utilizing C-Funds. The CTC may choose to administer its own program or may request that the South Carolina Department of Transportation (SCDOT) administer the program. Greenwood is one of 19 counties in the State that administers its own program.

C-Funds may be used for construction, improvements, or maintenance on the State highway system; local paving or improvements to county roads; street and traffic signs; and other road and bridge projects. Resurfacing, sidewalk construction, and drainage improvements may also be accomplished with C-Funds. By law, counties must spend at least 25 percent of their apportionment of C-Funds on construction, improvements, and maintenance related to the state highway system, with the remaining 75 percent available for local transportation system projects. In FY 2015-2016, the C-Fund apportionment for Greenwood County was $1,079,000 (SCDOT, September 2015).

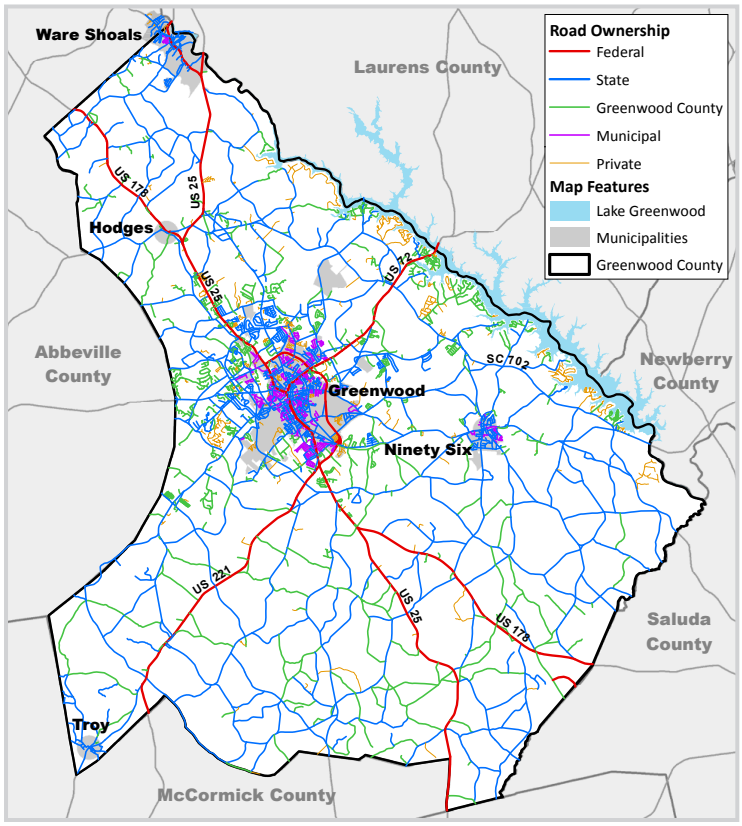
The County's municipalities develop a list of road projects and submit the list to the Greenwood County Transportation Committee for funding consideration. The Committee reviews the requests and allocates funding for both municipal and County road projects.

9.1.2. ROAD NAMING AND ADDRESSING

The assignment of addresses and the naming of roads in Greenwood County are carried out per the requirements of *Chapter 7* of the *Greenwood County Code of Ordinances*, commonly known as the *Addressing Ordinance*. Greenwood County E-911/Address Management administers the requirements for road naming and renaming. Proposed road names in the unincorporated area of the County, the City of Greenwood, and the Towns Ninety Six, Ware Shoals, and Troy must meet the requirements of the *Greenwood County Address Management Guidelines*.

Addresses in these areas are assigned by E-911 Address Management in the County's IT/GIS Department. Addresses must be assigned and approved per the requirements of the Greenwood County Address Management Guidelines before final plat approval can be granted for new developments. Address assignments are coordinated with the County's 911 database to maintain the best possible dispatching of emergency services to the community.

FIGURE 9-1. ROAD OWNERSHIP



SOURCE: GREENWOOD CITY/COUNTY PLANNING DEPARTMENT, MAY 2015

9.1.3. ROAD NETWORK

There are more than 1,262 miles of roads within Greenwood County. The County owns and maintains 327.5 miles of road, of which nearly one-third (103 miles) are unpaved. The State of South Carolina owns and maintains 674 miles of roads in the County and also maintains the 87 miles of federally owned roads in the County. The City of Greenwood owns and maintains 55.8 miles of road, of which almost all are paved. Ashley Lane is the only unpaved road in the City. The Town of Ninety Six owns and maintains 3.76 miles of road and the Town of Ware Shoals owns and maintains 1.4 miles of road. In Ware Shoals a very small section of Balentine Drive that is less than one-tenth of a mile in length is unpaved. An unnamed road in Ninety Six that is less than one-half of a mile in length is also unpaved. Figure 9-1 illustrates the ownership of roads in Greenwood County.

Although the County has no interstate frontage, the County is within 25 miles of both Interstates 26 and 385, with direct access by four-lane highways. Access to I-85 is 45 miles northeast of the County, while I-77 is located 80 miles eastward. Two four-lane, US highways traverse the County. US Highway 25, also known as the "Woodpecker Trail," has long provided the most direct north-south access from Greenville and Augusta. The US Highway 72 corridor provides vital east-west access linking Greenwood County to US Interstate 26 to the east and to the State of Georgia.

9.1.4. ROAD PAVING

There are 155.7 miles of unpaved roads in Greenwood County, representing 8% of the County's total road miles. Greenwood County owns and maintains 102.75 miles of these unpaved roads that comprise nearly one-third of the road miles owned and maintained by the County. Less than one mile of unpaved roads is within municipalities, with a little less than one-half of a mile of unpaved roads in the City of Greenwood

and the Town of Ninety Six and a small unpaved road segment in Ware Shoals. Nearly 28 miles of unpaved roads in the County are private roads and 24 miles are owned by the State.

The County accepts only roads paved to its specifications or roads for which a commercial bond, cash deposit, or letter of credit has been posted to cover the cost of finishing the paving to meet County road system standards. The County does not have specific guidelines or procedures in place to prioritize road paving, primarily because dedicated funding is not currently available. However, a few roads have been paved by the County over the years and were funded by C-Funds or by Council as special projects.

Repaving and other road upgrades are the responsibility of each jurisdiction and are generally funded through C-Fund allocations. Greenwood County plans to repave 18 roads in FY 2015-2016, as well as a road in the Town of Ninety Six. The City of Greenwood plans to repave 12 roads in FY 2015-2016.

Ongoing maintenance of unpaved roads, including scraping and replacement of stone, is an annual cost that is included in the County's annual budget. In 2015, Greenwood County budgeted $45,500 to maintain unpaved roads, which includes maintenance of the roadway and roadside vegetation control.

While maintaining dirt roads can be costly, the return on investment for paving an unpaved can take a number of years. However, the paving of roads provides many benefits to residents as well as City and County governments. Paving helps to seal the road surface from rainfall, preventing erosion and protecting the base and sub-grade materials. It also eliminates dust, makes vehicular travel much smoother, and can accommodate a wide range of vehicles such as tractor-trailers. Vehicles cost more to operate on gravel surfaces than on paved surfaces. The greater rolling resistance and less traction increase fuel consumption and the surface roughness contribute to additional tire wear and influences maintenance and repair expenses. The dust from unpaved roads causes extra engine wear, oil consumption, and maintenance costs. In general, unpaved roads are less safe than paved roads, with dust in dry weather contributing to poor air quality and visibility and wet conditions resulting in slippery, muddy road surfaces.

The life of a road, regardless of the surface, is affected by the number of vehicles and the weight of the vehicles using it. Generally, the more vehicles using a road, the faster it will deteriorate. For unpaved roads, heavy use can result in potholes, pronounced ruts, and washboarding – all especially hard on vehicles and result in more frequent road maintenance including scraping, and resurfacing. While the full cost of paving nearly 103 miles of roads is estimated at more than $77 million, a paving plan scheduled over a period of years could be attainable. Figure 9-2 illustrates the cost per year of paving over time periods ranging from 15 years (2015 to 2025) to 25 years (2015 to 2040). Under a 25-year scenario, all of the County's public roads could by paved by 2040 for an estimated annual cost of $3.09 million.

FIGURE 9-2. ROAD PAVING COST ESTIMATES, 2015 TO 2040

COMPLETION DATE	MILES OF UNPAVED ROAD (2015)	COST PER MILE (2015)	TOTAL COST	COST PER YEAR
2025	103	$750,000	$77,250,000	$7,725,000 (over 10 years)
2030	103	$750,000	$77,250,000	$5,150,000 (over 15 years)
2035	103	$750,000	$77,250,000	$3,862,500 (over 20 years)
2040	103	$750,000	$77,250,000	$3,090,000 (over 25 years)

SOURCE: GREENWOOD CITY/COUNTY ENGINEERING DEPARTMENT, SEPTEMBER 2015

9.2. FUNCTIONAL ROAD CLASSIFICATION

Streets and roads serve two primary functions – to provide mobility and facilitate access to land. Optimally, the transportation network balances these two functions. On higher capacity roads such as interstates, mobility is the primary function, while the primary function of local roads is access to residences. Between these two extremes, the level of mobility and access to land vary depending on the function of the network. The Federal Highway Administration (FHWA) defines functional classification as the process by which streets and highways are grouped into classes according to the character of service they are intended to provide. Because most travel involves movement through a network of roads, it is necessary to determine how travel can be channelized within the road network in a logical and efficient manner. Functional classification defines the nature of the channelization process by defining the part that any particular road should play in serving the flow of trips through a highway network.

COLLECTOR ROAD

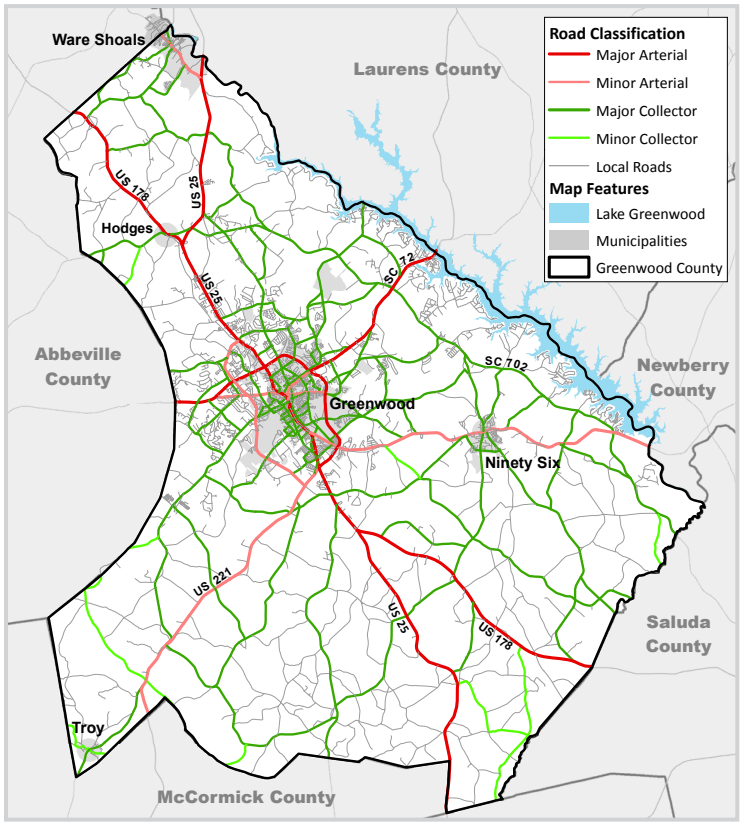
Transportation planners and engineers classify roads based on FHWA and State criteria that include the type of road and traffic volume. The functional classification of a road or road segment may change over time because of factors such as changes in land use, land development, and road widening. Streets and highways are grouped by the following categories:

- **Freeways (Interstates)** are multi-lane divided roadways with full control of vehicular access. Freeways operate under the purest form of uninterrupted flow, with no fixed elements such as traffic signals to interrupt the traffic flow.
- **Arterials** provide the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control.
    - Principal Arterials consist of a connected network of continuous routes that serve corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel. Principal arterials serve a high percentage of the area population and provide an integrated network without stub connections except where unusual geographic or traffic flow conditions dictate otherwise, such as an existing road that has been divided by a manmade lake or interstate highway.
    - Minor Arterials in conjunction with principal arterials, form a network linking cities and larger towns and form an integrated network providing interstate and intercounty service. Minor arterials include all arterials not classified as principal and constitute routes designed for relatively high overall travel speeds, with minimum interference to through movement. In more urban areas, this classification places more emphasis on land access and offers a lower level of traffic mobility.

- **Collectors** provide a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials. Collectors generally serve travel between counties rather than being of statewide importance and constitute those routes on which, regardless of traffic volume, predominant travel distances are shorter than on arterial routes. Consequently, more moderate speeds may be typical, on average. In rural areas collectors provide service to larger towns not directly served by the higher systems and to other traffic generators of importance within the county such as schools, parks, and major industries – linking these places with nearby towns or cities, or with routes of higher classification. Principal collectors serve the more important travel corridors within a county. In urban areas, the collector street system provides both land access and traffic circulation within residential neighborhoods, commercial, and industrial areas and may penetrate residential neighborhoods, distributing trips from arterial roads and collecting traffic from local streets.
- **Local Roads** primarily provide access to adjacent land and road systems of higher classification and travel over relatively short distances as compared to collectors. The local street system comprises all facilities not assigned a higher classification and offers the lowest level of mobility.

The *Functional Classification Plan* for Greenwood County roads was updated by the SCDOT in 2010 and is shown in Figure 9-3. Principal arterial roads include US Highways 25 and 178, SC Highway 72, and the US 25 Bypass. Minor arterial roads include US Highway 221, Ninety Six Highway, the US 225 Bypass, Calhoun Road, Cambridge Avenue, Greenwood Avenue, portions of Main Street, and Reynolds Avenue.

FIGURE 9-3. FUNCTIONAL ROAD CLASSIFICATIONS

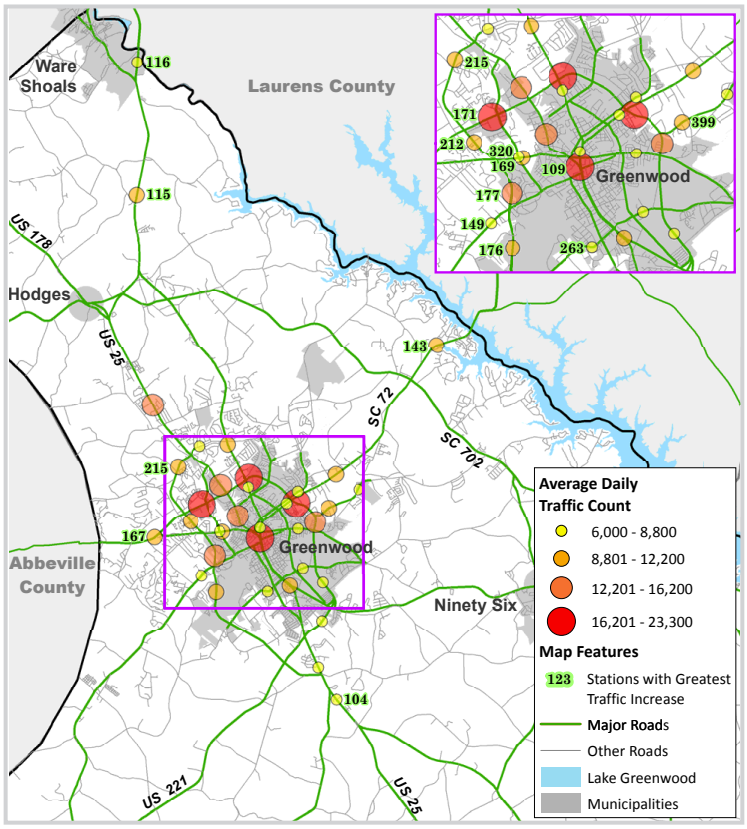


SOURCE: GREENWOOD CITY/COUNTY PLANNING DEPARTMENT, MAY 2015

9.3. TRAFFIC COUNTS

SC Department of Transportation 2010 and 2014 traffic counts for the most traveled road segments in Greenwood County are provided in Figure 9-5 and illustrated in Figure 9-4. The counts represent estimated 24-hour, two-way annual average daily traffic (AADT) and reflect seasonal and daily adjustments. Segments of US Highway 25 are the most traveled routes in the County, with AADT counts that range from 6,700 to 23,300. Traffic counts on segments of SC Highways 72 and 225, S-58 (Calhoun Road), and US Highway 221 are also comparatively high. Traffic on S-168 (Alexander Avenue) increased by nearly 23% from 2010 to 2014. Traffic also increased by more than 10% on segments of US Highway 25, L-108 (Mathis Road), SC Highway 72, and US Highway 221 during the five-year period.

FIGURE 9-4. ROADS WITH HIGHEST TRAFFIC COUNTS, 2014



SOURCES: GREENWOOD CITY/COUNTY PLANNING DEPARTMENT, MAY 2015; SCDOT 2014 TRAFFIC POINTS

FIGURE 9-5. ROAD SEGMENTS WITH GREATEST TRAFFIC INCREASE IN GREENWOOD COUNTY, 2010-2014

STATION NUMBER*	ROUTE	ROUTE LOCATION	2010 AADT	2014 AADT	% CHANGE
263	S-168	US 25 to S-148	7,100	8,700	22.5%
115	US 25	SC 246 to US 25 Business	8,200	9,400	14.6%
116	US 25	US 25 Business to Laurens County Line	6,400	7,200	12.5%
320	L-108	SC 72 Business to S-58	6,600	7,400	12.1%
169	SC 72 Business	S-108 to S-29	9,500	10,500	10.5%
143	US 221	S-157 to Laurens County Line	9,800	10,800	10.2%
177	SC 225	SC 10 to SC 72 Business, S-58	12,200	13,400	9.8%
171	SC 72	S-58 to US 25	16,300	17,800	9.2%
212	S-58	SC 72 Business to SC 72	10,100	11,000	8.9%
399	S-236	US 25 to S-100	9,800	10,300	5.1%
167	SC 72	Abbeville County Line to S-58	11,700	12,200	4.3%
109	US 25 Business	S-249 to SC 72 Business	19,500	20,300	4.1%
176	SC 225	S-148 to SC 10	10,700	10,900	1.9%
215	S-58	SC 72 to US 25	11,700	11,900	1.7%
149	SC 10	S-495 to SC 225	5,900	6,000	1.7%
104	US 25	US 178 to SC 67	6,700	6,800	1.5%

* Station locations shown on Figure 9-5

SOURCE: SCDOT, AVERAGE DAILY TRAFFIC COUNTS FOR NEWBERRY COUNTY, 2010 AND 2014

9.4. ROADWAY SAFETY

Traffic collisions are responsible for billions of dollars in economic losses in South Carolina each year in the form of property damage, medical costs, and lost productivity. Data compiled by the Office of Highway Safety of the SC Department of Public Safety (SCDPS) indicates a traffic crash occurs in the State every 4.9 minutes, with an injury due to a traffic crash occurring every 16.3 minutes. Every 10.9 hours one or more persons die in South Carolina due to injuries sustained in a traffic crash (2012 SC Traffic Collision Fact Book, SCDPS).

There are 59,721 registered vehicles and 50,058 licensed drivers in Greenwood County (SC Department of Motor Vehicles, December 2014). Among South Carolina's 46 counties, Greenwood County ranked 17th in highest number of traffic collisions and in collisions resulting in injury, and 29th in fatalities caused by traffic accidents in 2012 (2012 SC Traffic Collision Fact Book, SCDPS). While less than one percent of crashes resulted in fatalities, injuries were reported in more than one-third (39.6%) of collisions in the County.

Collisions on secondary routes accounted for one-third (32.5%) of all reported collisions statewide (Figure 9-6). This trend is mirrored in Greenwood County, where 34.6% of all crashes occurred on secondary routes. Only 10 persons were killed as a result of traffic collisions in the County in 2012 – five on US primary roads, three on SC primary roads, and two on secondary roads.

FIGURE 9-6. COLLISIONS BY ROUTE TYPE, GREENWOOD COUNTY AND SOUTH CAROLINA, 2012

	COLLISION TYPE						PERSONS	
	FATAL		INJURY		TOTAL COLLISIONS			
ROAD TYPE	#	%	#	%	#	%	KILLED	INJURED
GREENWOOD COUNTY								
US Primary	5	50.0%	162	28.8%	417	29.4%	5	261
SC Primary	3	30.0%	164	29.2%	412	29.1%	3	288
Secondary	2	20.0%	206	36.7%	490	34.6%	2	359
County	0	0.0%	30	5.3%	99	7.0%	0	39
TOTALS	**10**	**100.0%**	**562**	**100.0%**	**1,418**	**100.0%**	**10**	**947**
SOUTH CAROLINA								
Interstate	87	10.8%	2,401	7.4%	10,612	9.8%	97	3,583
US Primary	182	22.6%	8,877	27.5%	28,654	26.5%	201	14,345
SC Primary	191	23.7%	7,546	23.3%	24,326	22.5%	201	11,932
Secondary	303	37.6%	11,157	34.5%	35,138	32.5%	320	16,961
County	43	5.3%	2,344	7.3%	9,531	8.8%	44	3,243
TOTALS	**806**	**100.0%**	**32,325**	**100.0%**	**108,261**	**100.0%**	**863**	**50,064**

SOURCE: SC DEPARTMENT OF PUBLIC SAFETY, OFFICE OF HIGHWAY SAFETY, SOUTH CAROLINA TRAFFIC COLLISION FACT BOOK, 2012

Safety is a serious concern for bicyclists on roadways. South Carolina ranks 5th nationwide in cyclist fatalities per million population (National Highway Transportation Safety Administration, May 2015). There were 15 traffic fatalities in South Carolina related to cyclists in 2013, comprising 2% of all traffic fatalities statewide. While prevention of accidents while cycling is often up to individual safety practices, local governments can incorporate a number of measures that will help to keep cyclists safe. While the development of bicycle paths and trails that are separate from roadways provides the best option to keep cyclists safe, the provision

of protected bicycle lanes on roadways can also help to protect cyclists from unsafe interactions with motor vehicles. Initiatives such as road diets, which help to balance street space among all modes of travel including vehicles, pedestrians, cyclists and transit, can improve mobility and access and reduce crashes and injuries (U.S. Department of Transportation, Safer People, Safer Streets, September 2014). Road diets typically convert existing road four-lane road segments to three-lane segments (two through lanes and a turn lane), allowing the remaining space to be allocated to other uses such as bike lanes and sidewalks.

9.5. COMMUTING PATTERNS

A higher percentage of residents work in Greenwood County as compared to the percentage of workers employed in their county of residence both statewide and nationally. Nearly 81% of Greenwood County resident workers aged 16 and older are employed in Greenwood County, while only 19.2% of County workers travel outside of the County or State to work (Figure 9-7). By comparison, 23.6% of workers statewide and 23.7% of workers nationwide travel outside of their county of residence to work. More than half (50.1%) of workers living in the City of Greenwood work within the City and 79.1% of City residents work in Greenwood County.

FIGURE 9-7. JOURNEY TO WORK, 2013 GREENWOOD COUNTY, SOUTH CAROLINA AND THE UNITED STATES

WORKERS 16 AND OLDER	CITY OF GREENWOOD	GREENWOOD COUNTY	SOUTH CAROLINA	UNITED STATES
PLACE OF WORK				
Worked in County of Residence	79.1%	80.8%	71.2%	72.5%
Worked Outside County of Residence	20.4%	18.0%	23.6%	23.7%
Worked Outside State of Residence	0.5%	1.2%	5.2%	3.8%
MEANS OF TRANSPORT TO WORK				
Car, Truck or Van – Drove Alone	83.5%	87.1%	82.7%	76.3%
Car, Truck or Van – Carpooled	9.8%	7.8%	9.5%	9.8%
Public Transportation	0.3%	0.4%	0.6%	5.0%
Walked	3.7%	2.0%	2.1%	2.8%
Bicycle	0.0%	0.0%	0.3%	0.6%
Other Means - Taxi, Motorcycle, etc.	0.6%	0.3%	1.3%	1.2%
Worked at Home	2.0%	2.4%	3.6%	4.3%
TRAVEL TIME TO WORK				
14 minutes or less	54.3%	40.6%	28.4%	27.8%
15 - 29 minutes	23.3%	37.4%	40.1%	36.4%
30 to 59 minutes	14.0%	14.8%	26.2%	27.6%
60 or more minutes	8.5%	7.2%	5.3%	8.1%
MEAN TRAVEL TIME TO WORK (MINUTES)	**20.8**	**21.2**	**23.5**	**25.5**

SOURCE: US CENSUS BUREAU, 2009-2013 AMERICAN COMMUNITY SURVEY

A large percentage of County residents have relatively short commutes of less than 15 minutes at 40.6%, when compared with the percentages statewide and nationally at 28.4% and 27.8%, respectively. Mean travel time to work for County workers is only 21.2 minutes – lower than for workers statewide at 23.5 minutes and throughout the nation at 25.5 minutes. While mean travel time was even shorter for City of Greenwood residents at only 20.8 minutes, 8.5% travel an hour or more to work each day. This segment of City workers with longer commutes is larger than the percentage countywide at 7.2% and nationwide at

8.1%, and substantially higher than the percentage statewide at 5.3%.

Personal vehicles are the primary travel mode for most Greenwood County residents. Less than 1% of County workers travel to work on public transportation, only 2% walk to work, and none of the residents surveyed indicated that they biked to work. More than 87% of workers living in Greenwood County drive solo to work, while 18% participate in carpools. Only 2.4% of County residents in the workforce work at home, which is low compared to the statewide percentage of 3.6% and the national rate of 4.3%. Very limited local access to public transportation contributes to the low overall usage by County workers (Figure 9-7).

More than 7,000 workers from surrounding areas travel to Greenwood County employers. Approximately one-fourth of all jobs in the County are held by non-residents. Abbeville County leads with the most residents who travel to Greenwood County employers, followed by Laurens, McCormick, Saluda, Greenville, and Anderson Counties.

Nearly 5,240 workers from Greenwood County commute to jobs outside the County, with most traveling to nearby Laurens, Abbeville, Greenville, and Newberry Counties. Figure 9-8 lists the ten counties with the most residents traveling to employment in Greenwood County, as well as those counties with the largest numbers of Greenwood County commuters.

FIGURE 9-8. WORKERS COMMUTING INTO AND OUT OF GREENWOOD COUNTY, TOP 10 COUNTIES, 2013

COMMUTERS INTO COUNTY		COMMUTERS OUT OF COUNTY	
COUNTY OF RESIDENCE	NUMBER	COUNTY OF RESIDENCE	NUMBER
Greenwood County, SC	**22,045**	**Greenwood County, SC**	**22,045**
Abbeville County, SC	2,354	Laurens County, SC	951
Laurens County, SC	1,665	Abbeville County, SC	911
McCormick County, SC	693	Greenville County, SC	907
Saluda County, SC	464	Newberry County, SC	619
Greenville County, SC	442	Anderson County, SC	296
Anderson County, SC	423	Saluda County, SC	284
Newberry County, SC	232	McCormick County, SC	276
Edgefield County, SC	200	Spartanburg County, SC	185
Columbia County, GA	99	Aiken County, SC	106
Total all Commuters	**29,065**	**Total all Commuters**	**27,284**

SOURCE: US CENSUS BUREAU, 2009-2013 AMERICAN COMMUNITY SURVEY

Estimates provided by the US Census Bureau reveal that the population of Greenwood County increases by 2.6% during the daytime due to workers commuting into the County from neighboring areas. Statewide, county populations collectively decrease by 0.8% during the daytime. These trends are in sharp contrast to the City of Greenwood, where the population increases by 29.5% due to an influx of workers from neighboring communities (Figure 9-9).

The employment-residence (E-R) ratio is a measure of the total number of workers working in an area relative to the total number of workers living in a place. An E-R ratio of greater than 1.00 occurs when there are more persons (workers) working in an area than living there. The employment-residence ratio for Greenwood County is 1.07, indicating that the County is considered to be a net importer of labor from other counties (Figure 9-9). The City of Greenwood's overall E-R ratio of 1.84 indicates that there are 84% more persons in the workforce working in the area than living in the area. Given that both the City and County are net importers of labor and that the primary mode of transportation to work is single-passenger automobiles,

transportation planning for the area must accommodate the associated traffic during weekdays, particularly at peak traffic times.

FIGURE 9-9. DAYTIME POPULATION AND EMPLOYMENT RESIDENCE RATIOS, CITY OF GREENWOOD, GREENWOOD COUNTY AND SOUTH CAROLINA, 2013

EMPLOYMENT-RESIDENCE RATIO FACTOR	CITY OF GREENWOOD	GREENWOOD COUNTY	SOUTH CAROLINA
Total Resident Population	23,334	69,727	4,679,602
Total workers working in area	15,077	29,065	1,958,115
Total workers living in area	8,193	27,284	1,994,198
Estimated daytime population	30,218	71,508	4,643,519
Daytime population change due to commuting	6,884	1,781	-36,083
% Daytime population change due to commuting	29.5%	2.6%	-0.8%
Workers who lived and worked in same area	4,103	22,045	1,420,267
% Workers who lived and worked in same area	50.1%	80.8%	71.2%
Employment Residence (E-R) Ratio	**1.84**	**1.07**	**0.98**

SOURCE: US CENSUS BUREAU, 2009-2013 AMERICAN COMMUNITY SURVEY

9.6. TRANSPORTATION PLANNING

9.6.1. STATEWIDE TRANSPORTATION PLANNING

In June 2007, the *Department of Transportation Reform Bill (Act 114)* was signed into State law. Act 114 is intended to encourage sound infrastructure investment decisions made within the context of the statewide planning process. Specifically, Act 114 requires SCDOT to establish a priority list of projects to be undertaken through the *Statewide Transportation Improvement Program* (STIP) and in consultation with metropolitan planning organizations using the following criteria:

1. Financial viability including a life cycle analysis of estimated maintenance and repair costs over the expected life of the project;
2. Public safety;
3. Potential for economic development;
4. Traffic volume and congestion;
5. Truck traffic;
6. Pavement quality index;
7. Environmental impact;
8. Alternative transportation solutions; and
9. Consistency with local land use plans.

ROAD CONSTRUCTION PROJECT

Planning for sound infrastructure is also a primary goal of the *South Carolina Priority Investment Act of 2007.* The Priority Investment Act amends *Section 6-29-1130* of the *South Carolina Code of Laws* and requires that local government comprehensive plans include a Transportation Element. Previously, transportation issues were addressed in the Community Facilities Element. The Act requires that the Transportation Element be developed in coordination with the Land Use element to ensure transportation efficiency for existing and planned development. The Act also requires comprehensive plans to include a Priority Investment Element, which must include an analysis of likely Federal, State and local funds available for public infrastructure and facilities, including transportation systems. The Priority Investment Element must also recommend projects for expenditure of these funds over the next ten years, with recommendations coordinated with adjacent and relevant jurisdictions and agencies.

In recent years, the State of South Carolina and SCDOT have demonstrated their commitment to meeting the on-going challenge of providing better and safer accommodations for people who choose walking or biking instead of using motor vehicles to reach their destinations or for recreation. In February 2003, the SCDOT Commission approved a resolution affirming that bicycling and walking accommodations should be a routine part of the Department's planning, design, construction and operating activities, and will be included in the everyday operations of its transportation system.

9.6.2. GREENWOOD COUNTY THOROUGHFARE PLAN

The SC Department of Transportation, in cooperation with the Federal Highway Administration and Greenwood County, developed a transportation plan and travel demand model for Greenwood County in 2000. The *Greenwood County Thoroughfare Plan* is a 20-year roadway plan that incorporated an analysis of capacity deficiencies and survey of local priorities to identify and prioritize potential transportation system improvements, with a primary focus on highway needs (Figure 9-10). The Plan also identified potential funding sources for identified projects. Of the projects proposed in the Thoroughfare Plan, only the Emerald Road Phase I project has been completed to date.

FIGURE 9-10. GREENWOOD COUNTY THOROUGHFARE PLAN - PROPOSED HIGHWAY PROJECTS, 2000

PROJECT NAME	PROJECT DESCRIPTION
Cokesbury/New Market Link	Construct new facility from Cokesbury Rd. to New Market St.
Emerald Rd. – Phase I	Widen to five lanes from US Hwy 25 to Empire Cir. (completed in 2007)
Emerald Rd. – Phase II	Widen to five lanes from Empire Rd. to SC Hwy 246
Mathis/Spring Connector	Construct a new facility from Maxwell Ave. to Marion St.
Northside Dr.	Widen to five lanes from US Hwy 25 to Bucklevel Rd.
SC Hwy 246 – Phase I	Widen to five lanes from Bucklevel Rd. to Emerald Rd.
SC Hwy 246 – Phase II	Widen to five lanes from US Hwy 25 to Bucklevel Rd.
SC Hwy 34	Widen to five lanes from the Town of Ninety Six to Orange St.
Seaboard/Cokesbury Connector	Widen Cokesbury St. to five lanes and add connector to Seaboard Ave.; new facility from Seaboard Ave. to Edgefield St.
Durst Connector	Widen to five lanes from US Hwy 25 to Cambridge Ave. and add new connector to Maxwell Ave.
US Hwy 25/178 Bypass	Widen to five lanes from Cambridge Avenue to US Hwy 25

SOURCE: GREENWOOD COUNTY THOROUGHFARE PLAN, 2000

9.6.3. REGIONAL TRANSPORTATION PLANNING

The Upper Savannah Council of Governments (USCOG) is responsible for transportation planning in Greenwood County, as well as Abbeville, Edgefield, Laurens, McCormick and Saluda counties. The USCOG's Board of Directors serves as the transportation policy advisory committee for the region. As the designated transportation agency for the region, USCOG coordinates with SCDOT on transportation issues, including the development of the Region's *Long Range Transportation Plan* (LRTP) and the *Rural Planning Work Program* (RPWP). These transportation planning efforts are now carried out under the guidance of the Federal *Moving Ahead for Progress for the 21st Century*, or MAP-21, which was signed into law in July 2012. MAP-21 is designed to provide a streamlined, performance-based, and multi-modal program to address the challenges facing the nation's transportation system, including improving safety, maintaining infrastructure condition, reducing traffic congestion, improving transportation system efficiency and freight movement, protecting the environment, and reducing delays in project delivery. Like its predecessors, MAP-21 calls for participatory, comprehensive long-range transportation planning and development of financially feasible local intermodal plans. The legislation incorporates seven national goals, listed in Figure 9-11.

FIGURE 9-11. MAP-21 NATIONAL GOALS

#	GOALS
1	**Safety** – To achieve reduction in fatalities and serious injuries on all public roads.
2	**Infrastructure Condition** – To maintain highway infrastructure assets in a state of good repair.
3	**Congestion Reduction** – To achieve reduction in congestion on the National Highway System.
4	**System Reliability** – To improve the efficiency of the surface transportation system.
5	**Freight Movement and Economic Vitality** – To improve freight networks, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
6	**Environmental Sustainability** – To enhance the performance of the transportation system while protecting and enhancing the environment.
7	**Reduced Project Delivery Delays** – To reduce project costs, promote jobs and economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

SOURCE: MAP-21 NATIONAL GOALS, US DEPT. OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, SEPT. 2015

9.6.3.1. LONG RANGE TRANSPORTATION PLAN

As the designated planning body for transportation in the region, the USCOG is responsible for the development of a multi-modal *Long Range Transportation Plan* (LRTP). As a component of the *South Carolina Statewide Transportation Improvement Program*, the LRTP serves as a guide for the investment of local, state and federal resources. The LRTP addresses a number of recommended improvements to transportation facilities including bridges, intersections, safety measures, maintenance and resurfacing, signalization, and highways. The current recommended improvements program was developed in 2006, with an update slated to begin in 2015.

The 2006 LRTP identified seventeen bridges in Greenwood County that are in need of attention, based on information provided by the SCDOT's Bridge Management System (Figure 9-12). Identified improvements include replacement, widening and raising, maintenance repairs, and rehabilitation.

SCDOT evaluates and prioritizes intersection and safety projects statewide. Such projects include widening

and paving road shoulders, realigning intersections and curves, traffic calming, lowering speed limits, adding median barriers, and other safety measures. The following five intersection and safety projects in Greenwood County were identified and ranked within the Upper Savannah region by SCDOT and were included in the LRTP:

1. Intersection of SC Highway 254 with S-97 (Deadfall and Cokesbury) - COMPLETED
2. Intersection of SC Highway 225 with S-148 (SC Highway 225 S and West Alexander)
3. SC Highway 72 Business with S-108 (West Cambridge and Mathis)
7. S-39 and S-285 (Airport Road and Old Laurens Highway)
11. SC Highway 72 Bypass at US Highway 25 N/Montague Avenue

FIGURE 9-12. BRIDGES IN NEED OF REPAIR OR REPLACEMENT

ROAD	BRIDGE LOCATION	LOCATION
US Hwy 178	CSX Railroad (abandoned)	8.2 miles NW of Greenwood
US Hwy 221	Hard Labor Creek	7.4 miles SW of Greenwood
US Hwy 221	CSX Railroad (abandoned)	3.2 miles SE of Greenwood
SC Hwy 34	Wilson Creek	11.9 miles E of Greenwood
S-24-27	Henley Creek	2.5 miles SE of Ninety Six
S-24-44	Branch to Cuffeytown Creek	7.3 miles SW of Ninety Six
S-24-93	Branch of Turkey Creek	2.7 miles SW of Ware Shoals
S-24-95	Camp Creek	5.0 miles E of Hodges
S-24-102	Ninety Six Creek	4.0 miles E of Ninety Six
S-24-166	Roper Creek	3.5 miles SW of Ninety Six
S-24-180	Mulberry Creek	5.0 miles SW of Ware Shoals
S-24-188	Big Curl Tail	3.3 miles SW of Greenwood
S-24-225	Branch to Henley Creek	2.4 miles SW of Ninety Six
S-24-228	Big Rock Creek	1.2 miles NW of Ninety Six
S-24-268	Rocky Creek	2.6 miles N of Greenwood
S-24-285	Rocky Creek	3.2 miles NE of Greenwood
S-24-27	Henley Creek	2.4 miles S of Ninety Six
S-24-93	Turkey Creek	2.7 miles S of Ware Shoals
S-24-225	Henley Creek	2.1 miles S of Ninety Six
S-24-62	Cuffeytown Creek	13.0 miles S of Greenwood

SOURCE: SCDOT ENGINEERING DISTRICT 2, 2016

In addition to these projects, the SCDOT Engineering District 2 staff developed an updated list of intersection improvements/safety projects that should be considered for inclusion in the update of the LRTP.

- US Highway 25 at Colgate-Palmolive/SPF Proteins
- US Highway 25 Bypass at S-101 (Sweetwater Road)
- S-187 (Marshall Road) at S-244 (Phoenix Street)
- US Highway 221 and SC Highway 10 intersection between the Bradley community and the Town of Troy

FIGURE 9-13. PROPOSED FUTURE HIGHWAY PROJECTS

PROJECT NAME	PROJECT DESCRIPTION
SC Hwy 246	Widen from US Hwy 221 to SC Hwy 246
SC Hwy 34	Widen from the City of Greenwood to the Town of Ninety Six
Mathis/Spring Connector	Construct connecting road from Maxwell Avenue to Marion Street
South Main/Genetic Center Connector	Construct connecting road from South Main Street to the Genetic Center
US Hwy 25/178 Bypass	Widen from Cambridge Avenue to US Hwy 25

SOURCE: SCDOT ENGINEERING DISTRICT 2, APRIL 2016

The LRTP also includes four projects in Greenwood County in its recommended improvements program, based on anticipated increased travel demand: Northside Drive, Emerald Road Phase II, SC Highway 246, and the Eastern Bypass. In addition to these projections, SCDOT Engineering District 2 staff developed an updated list of road improvements that should be considered for inclusion in the upcoming update of the LRTP (Figure 9-13).

9.6.3.2. TRANSPORTATION IMPROVEMENT PROGRAM

The Upper Savannah Region *Transportation Improvement Program* (TIP) is the agreed-upon multi-year list of specific projects for which federal funds are anticipated. The TIP represents the translation of recommendations of the USCOG Long Range Transportation Plan into a short-term program of tangible transportation improvements. Required by federal and state law, the TIP represents the transportation improvement priorities of the Upper Savannah region. The TIP outlines the planning objectives, priority status, and funding sources for all projects scheduled for construction over a five-year period. The projects proposed by the TIP for each COG or Metropolitan Planning Organization (MPO) are evaluated and incorporated into the Statewide TIP by the SCDOT Commission.

FIGURE 9-14. GREENWOOD COUNTY STIP PROJECTS, 2014-2019

PROJECT DESCRIPTION	BUDGETED FUNDS AND STATUS
BRIDGE REPLACEMENT	
S-24-101 at Wilson Creek	$4,500,000 in FY 2015 for Construction
SC 34 at Wilson Creek	$230,000 in FY 2014 for Engineering design/Environmental Analysis $195,000 in FY 2015 for ROW Acquisition $5,479,000 in FY 2016 for Construction
PAVEMENT PRESERVATION	
US Hwy 221 - 1.87 miles north of S-156 to 0.2 miles south of SC Hwy 225	$226,000 in FY 2014 $226,000 in FY 2015
US Hwy 221 - 0.84 miles south of US Hwy 25 to Bryant Dr.	
PAVEMENT RESURFACING	
US 178 - Kinard Rd. to Saluda County line	$1,780,000 in FY 2014 $1,780,000 in FY 2015
S-58 - SC Hwy 254 (Cokesbury Rd.) to 0.83 miles east of SC Hwy 254	
S-58 - 0.37 miles west of Hyacinth Rd. to S-97 (Deadfall Rd.)	
S-97 – S-285 (Airport Rd.) to S-58 (Northside Dr.)	
S-271 - 1.21 miles east of Old Laurens Rd. to S-517 (Airport Rd.)	
US Hwy 25 - 0.07 miles north of S-104 to 0.53 miles south of US Hwy 178	
SC Hwy 10 - S-108 (Mathis Rd.) to S-245 (Kitson Rd.)	
SECTION/CORRIDOR IMPROVEMENTS	
S-101 Siloam Church Rd.	Included in budgeted funds for all similar improvements statewide
INTERSECTION IMPROVEMENTS	
SC Hwy 225 at S-148 (Alexander Ave.)	$272,000 in FY 2014 for ROW Acquisition $1,000,000 in FY 2015 for Construction
OTHER PROJECTS	
Piedmont Agency on Aging - Mass Transit	$51,000 in FY 2014 for Capital Improvements
Burton Center – Mass Transit	$44,000 in FY 2014 for Capital Improvements

SOURCE: SOUTH CAROLINA STIP, SC DEPT. OF TRANSPORTATION, SEPTEMBER, 2015

The *South Carolina Statewide Transportation Improvement Program* (STIP) is the State's six-year transportation improvement program for all projects or program areas receiving federal funding, including bridge replacements, congestion mitigation and air quality, interstate maintenance and upgrades, roadway resurfacing, safety, primary and secondary road system upgrades, transportation alternatives, and federal lands projects. The document is updated every three years and is revised on a continual basis to reflect the latest program and project information. The STIP must be approved by the SCDOT Commission, the Federal Highway Administration (FHWA) and the Federal Transportation Administration (FTA). The South Carolina

Transportation Infrastructure Bank, Local Option Sales Tax (LOST) projects, and C-fund projects are exempt from this approval process.

The STIP was most recently amended in March 2015 and outlines a six-year program of federally funded transportation capital projects. Figure 9-14 lists the 2014-2019 STIP projects located in Greenwood County. SC DOT Engineering District 2 staff also recommends that an improvement project for Northside Drive from Newcastle Road to Deadfall Road including left turn improvements and radii improvement and the addition of right turn lanes at the SC Highway 254 intersection be added to the STIP in the future.

9.6.3.3. RURAL PLANNING WORK PROGRAM

The *Rural Planning Work Program* (RPWP) for transportation planning in the Upper Savannah region is updated annually to coincide with the start of the fiscal year. The current plan went into effect on July 1, 2015. The RPWP incorporates all direct transportation planning and supporting comprehensive planning activities for the Upper Savannah Region into one document. The Program is intended to provide a mechanism for the coordination of planning efforts by local, state and regional agencies. The RPWP identifies the transportation planning activities to be undertaken in the USCOG region in support of the goals, objectives and actions established in the Long Range Transportation Plan. The Work Program includes estimates of project costs, potential funding sources, and a work program for each fiscal year. However, some task elements may span multiple fiscal years and work programs until they are completed. Work elements within the RPWP are organized within six major categories:

- **Coordination Efforts to Develop Performance Management Strategies** – provide transportation and transit related planning assistance to all local governments in the Upper Savannah region and to strengthen the regional partnership with SC DOT (10% of total RPWP budget).
- **Transportation Improvement Priorities** – based on the findings of the regional traffic model, work with SCDOT staff to define and prioritize transportation improvement needs in the Upper Savannah region based on safety and security needs (20% of total RPWP budget).
- **Consultation with Local Elected Officials** – gather local input on needs and priorities on the transportation system in the Upper Savannah region in order to create a safe and efficient multi-modal travel network (20% of total RPWP budget).
- **Map-21 Implementation** – evaluate current planning processes related to the passage of MAP-21 (Moving Ahead for Progress in the 21st Century Act) and planning considerations such as livability, sustainability, climate change, and goods movement (20% of total RPWP budget).
- **Public Involvement** – create a public involvement plan that will guide the public involvement process in planning for transportation projects in the Upper Savannah region (10% of total RPWP budget).
- **Long Range Plan Update** - in conjunction with SCDOT, develop a timeline and schedule to begin the process of updating the regional Long Range Plan according to the latest guidelines from the state and federal governments (20% of total RPWP budget).

The total budget for the 2015-2016 RWTP is $210,800, of which $170,000 is expected to be provided by the SCDOT and $40,800 by local match funding.

9.7. TRANSPORTATION FUNDING OPPORTUNITIES

Securing funding for needed transportation improvements is a top priority for South Carolina communities. Amid tightening budgets at the local level as funding from state and federal sources dwindles, communities must seek alternative funding resources for much needed transportation projects including road maintenance, paving, bridge repair, transit, sidewalks, greenbelts, connecting trails, and mitigating traffic issues.

9.7.1. SCDOT TRANSPORTATION ALTERNATIVES PROGRAM

Greenwood County and its municipalities are eligible for transportation enhancement funding under the *Transportation Alternatives Program* (TAP), formerly known as the Transportation Enhancement Project Program, administered by SCDOT. TAP projects are federally-funded, community-based projects that provide opportunities for local governments to pursue non-traditional transportation related activities such as pedestrian and bicycle facilities and pedestrian streetscaping projects that might not otherwise be possible.

TAP is a federal grant program that provides funding on a reimbursement basis as part of the Federal-aid Highway Program funded through the MAP-21 program. Costs may only become eligible for reimbursement after a project has been approved by the State Department of Transportation or a Metropolitan Planning Organization and the FHWA division office. Eligible costs include preliminary and final engineering work such as project development, environmental work, cost estimates, construction plans, utility relocations, construction engineering, construction costs, and right-of-way acquisition. Costs are eligible for reimbursement only after prior FHWA division office project approval. Transportation Alternatives funds generally account for 80% of the total project cost, with local governments required to provide a 20% match. However, SCDOT encourages matching funds in excess of the minimum 20% required under federal guidelines. While a cash match is encouraged, SCDOT may allow the use of in-kind matching resources such as the donation of services, labor, materials, and equipment.

Eligible activities under the Transportation Alternatives Program include:

- **Pedestrian Facilities and Bicycle Facilities**, including non-motorized paths; that connect and develop regional or statewide non-motorized transportation networks; benefit state tourism or economic development initiatives; if locally significant, have strong transportation connection and involve planning efforts or serve as connectors to regional networks; address documented safety deficiencies; and are part of a broader non-TAP funded non-motorized system.

- **Streetscaping Improvements** that are located in established traditional downtowns or historic districts and use a creative design approach to accomplish multiple goals, including pedestrian safety.

- **Safe Routes to School Program** activities that meet the requirements set under the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU).

Available program funding from SCDOT is provided in three population-based divisions. Urbanized areas with a population of more than 200,000, also known as a Transportation Management Area (TMA), are eligible to compete for a share of $2.94 million designated for urbanized areas of the State. Areas of the State other

than urban areas with a population greater than 5,000 have a designated funding pool of $1.798 million. The SCDOT has designated $2.549 million for areas with a population less than 5,000. Greenwood County and the City of Greenwood, with populations of 69,727 and 23,334, respectively, are currently eligible in the second category, while the County's towns are eligible under the third category.

Projects proposed by governmental bodies located in areas outside of Transportation Management Areas (TMAs) such as Greenwood County and its municipalities are considered under the statewide program, with distribution of funds determined by the SCDOT Commission. Such projects are limited to a maximum of $400,000.

9.7.2. PENNY SALES TAX

Section 4-37-30 of the South Carolina Code of Laws empowers counties to levy, by ordinance, a special sales and use tax as a source of revenue for highways, roads, streets, bridges, mass transit systems, greenbelts, and other transportation-related facilities including, but not limited to, drainage relating to highways, roads, streets, bridges, and other transportation-related projects. The tax must not exceed one percent, which equates to an additional penny on every dollar spent, and the tax must be approved by the public through a referendum. A number of South Carolina counties including Aiken, Berkeley, Charleston, Dorchester, Florence, Horry, Newberry, Orangeburg, Richland, Sumter, and York counties have implemented a penny sales tax to address capital projects and transportation needs. The key advantage to such a tax is that out-of-county residents and tourists who shop in the receiving county also contribute to the tax funds through their purchases, helping to offset the costs of roads and other facilities.

Under the legislation, counties that implement a one cent sales tax must share the proceeds with their municipalities using a formula based on population, must specify a period of time to collect a set amount of money for the identified projects (not to exceed 25 years or the length of payment for the specified projects), must appoint a commission to consider proposals for funding capital projects, and must formulate the referendum question for public vote. The commission must include three representatives appointed by the County Council and three members appointed by the county's municipalities, using population to determine the formula for municipal appointments. In addition to funding transportation facilities, revenue from the one cent tax may also be used for civic, educational, and cultural facilities; water and sewer projects; flood control and storm water projects; and dredging, dewatering, and constructing spoil sites.

9.7.3. EXACTIONS

An exaction is a form of land use regulation that requires a developer to donate something for the public good in exchange for the right to develop property. Exactions aid in protecting the community from the costs of providing additional infrastructure associated with growth by sharing the cost with the new residents. Exactions provide a way for jurisdictions to pass a portion of the cost of public facilities on to a developer at the time the development begins, rather than later through the collection of tax revenues or service charges from new residents. Exactions are formal cost-sharing agreements between the developer and the local government to fund the additional community infrastructure needed to serve the new development.

There are several types of exactions that may be used by local governments for transportation facilities. A ***dedication*** requires that a developer donate land and/or facilities for public use. For example, a developer

may be required to dedicate land for use as a trail or greenway for the residents of the development and connection to existing or future facilities outside of the development. A ***fee-in-lieu*** requires the developer to pay a fee instead of providing a public facility on-site. For example, the developer can choose to pay a fee rather than dedicate land for an on-site greenway or trail. This type of exaction provides greater flexibility to local governments to place facilities where they are most needed and appropriate. ***Impact fees*** are scheduled charges applied to new development to generate revenue for the construction or expansion of capital facilities located off-site of the new development, but that benefit the contributing development.

The 1999 *South Carolina Development Impact Fee Act (SC Code § 6-1-910, et seq.)* allows counties and municipalities to impose by ordinance a requirement for payment of development impact fees by a land developer as a condition of development approval. The Act defines a development impact fee as "a payment of money imposed as a condition of development to pay for a proportionate share of the cost of system improvements needed to serve the people utilizing the improvements." System improvements are capital improvements to public facilities which are designed to provide service to a service area. Public facilities include water, wastewater, solid waste and stormwater services, roads, public safety, street lighting, capital equipment, and parks and recreation. Impact fee amounts must be based on actual improvement costs or reasonable estimates of the costs, as supported by sound engineering studies and generally accepted accounting principles. The process for adopting an impact fee ordinance begins with a resolution by Council that directs the planning commission to conduct the necessary studies and recommend an impact fee ordinance developed in accordance with the *Impact Fee Act*. The Act requires detailed calculations to determine impact fees, maximum impact fees, and the developer's proportionate share.

Several court cases have provided guidance establishing exactions that are reasonable and defendable. First, there must be an "essential nexus," or reasonable connection, between the infrastructure need and the new development (Nollan v. California Coastal Commission, 1987). This extends to the establishment of a reasonable connection between the expenditure of the fee collected and the benefits received by the development. Second, there must be a "rough proportionality" in both the nature and extent of the exaction and the impact of the proposed development (Dolan v. Tigard, 2005).

CONGESTED ROADWAY

9.8. PUBLIC TRANSPORTATION

Affordable and reliable transportation is a necessity for all residents. However, the lower incomes and limited mobility common among special needs populations can magnify the importance of affordable and reliable transit options to maintain employment, receive support services, and access health care and other needed programs.

As noted in SCDOT's *2014 South Carolina Public Transportation and Coordination Plan*, Greenwood County is one of seven of the 46 South Carolina counties that lack public transit service. Neighboring Abbeville, Laurens and Saluda Counties, all within the Upper Savannah COG region, also do not have public transit service.

Public transit is provided in a number of ways in South Carolina communities. ***Fixed-route transit service*** utilizes passenger vehicles operating on fixed routes and schedules. ***Route deviation services*** operate as conventional fixed-route bus services, however the buses may deviate from the route alignment to serve destinations within a prescribed distance of the route. Passengers use the service by calling to request a pickup, or by telling the bus operator if they need to be taken off-route. A ***demand response service*** is a transit mode that includes passenger cars, vans, or small buses that operate in response to calls from passengers or their agents to the transit operator, who dispatches a vehicle to pick up the passengers and transport them to their destinations. The vehicles generally do not operate over a fixed route or on a fixed schedule and may be dispatched to pick up several passengers at different pick-up points before taking them to their respective destinations. ***Complementary paratransit services*** are required by the Americans for Disabilities Act for individuals with disabilities who are unable to use fixed-route transportation systems. These services must be origin-to-destination (demand response) or on-call demand response (DR) to an accessible fixed route. ***Commuter bus systems*** primarily connect outlying areas with a central city through bus service that operates with at least five miles of continuous closed-door service. Such services usually operate using motor coaches and feature peak scheduling, multi-trip tickets, and multiple stops in outlying areas with limited stops in the central city.

While there is currently no fixed-route bus system serving Greenwood County, there are two alternative transportation options available to qualified residents. The ***Piedmont Agency on Aging*** (PAOA) offers an array of services for seniors aged 60 or older, including meals on wheels, congregate meals, and educational and recreational programs. PAOA operates a fleet of 20 vehicles that enables the transport of approximately 300 persons per day to in-town and out-of-town locations including congregate nutrition sites, medical appointments, grocery stores, banks, and the post office. The ***Burton Center*** is a non-profit, governmental agency that provides services for more than 1,000 people with disabilities and special needs and their families in Abbeville, Edgefield, Greenwood, Lexington, McCormick, and Saluda Counties. The Greenwood location of the Burton Center is located on SC Highway 72/US Highway 221 and offers programs to assist individuals in exercising their own choices resulting in growth and independence such as adult day care, residential, supervised living, and community training home programs. Transportation for Burton Center participants is provided by 65 vans and buses that travel more than 4,400 miles per day. Each person is picked up every day, transported to the Center, and returned home in the afternoon.

In 2012, SCDOT completed a *Statewide Intercity and Regional Bus Network Plan,* which assessed intercity bus needs and proposed a financially sustainable network of intercity and regional bus services for

South Carolina. The north central region of the State that includes the communities of Chester, Greenwood and Lancaster was identified as the primary area of the state without intercity bus coverage. The study recommended that feeder/connector projects (those connecting to rural areas) be given a high priority and identified projects that connect Greenwood to Anderson and Greenville and Greenwood to Columbia be given priority consideration by SCDOT. However, the Plan notes that while transit access is a regular topic of conversation at regular meetings of public administrators and economic developers in the Upper Savannah region, public transit access has not been given a high priority due to cost and limited potential ridership.

In 2009, the Burton Center initiated the development of a *Transit Feasibility Study for Abbeville, Greenwood, and Saluda Counties* to identify the potential for public transportation within the three-county area. The Study was completed in 2010 and includes a quantitative analysis of community characteristics combined with input received through community outreach. A public information meeting was held in December 2009 in Greenwood and included a presentation about feasibility findings and proposed transit options, as well as an open discussion of issues and concerns. The Study identified a need for public transportation services among underserved populations within the community, including the elderly, youth, disabled persons, low income persons, and minorities. Further, the Study recommended the formation of a regional transportation management association, the hiring of a mobility manager, and initiation of on-call services for the three counties. The proposed on-call transit service in the City of Greenwood would include two routes with flexible service areas to serve the SC Highway 72 Bypass corridor and Uptown Greenwood that would operate Monday through Friday from 7:00 a.m. to 7:00 p.m. On-call service for the rural portions of the County is proposed for one day a week with transportation to major destinations such as the Self Medical Center, the Workforce Center, retail establishments on the SC Highway 72 Bypass, manufacturers in northwest Greenwood, and Piedmont Technical College for residents living outside of the City of Greenwood. The Study provides an estimated annual operating cost for each vehicle employed in the service of $229,500, based on an estimated cost per revenue hour of $75.

A transit option that has gained momentum in neighboring communities in recent years is the incorporation of a fixed-route trolley service. Trolleys and streetcars were once common throughout the country in cities of all sizes. In the years before travel by automobile became the norm, they provided low or no cost transportation along fixed routes to key destinations for work, shopping, school, recreation, and cultural events. While most of these classic trolley systems were discontinued long ago, the concept is making a comeback as people look for alternatives to traveling on increasing congested roadways. Trolleys also provide a much needed travel option for people who do not have access to a car or are unable to drive. In addition, a trolley system can provide easy access to areas that do not have adequate parking, to cultural and recreational destinations, and to restaurants and businesses in downtowns.

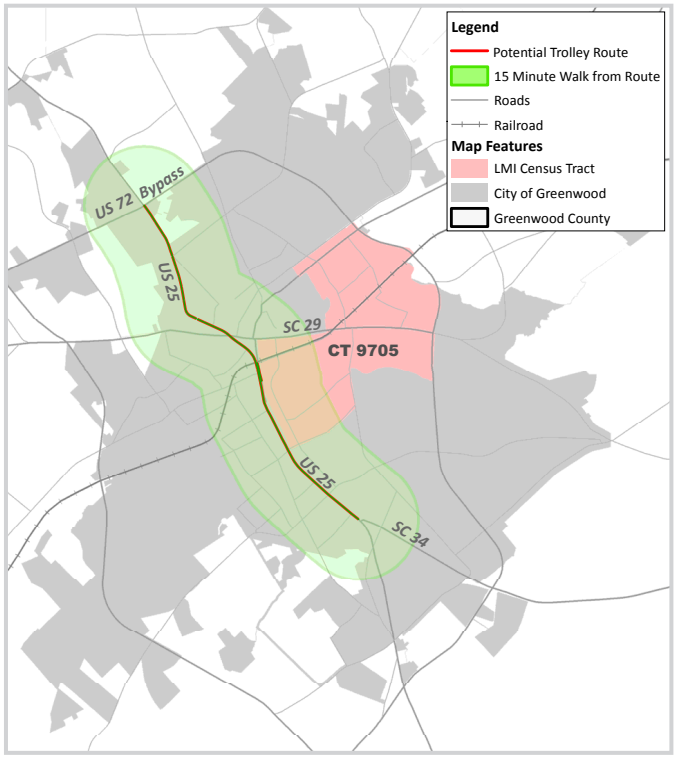
In 2006, the Greenville Drive Baseball team began shuttling fans to and from parking areas to the stadium using two motorized trolleys. The popular free trolley service was and expanded through a public-private partnership with the City to provide service when no baseball game was scheduled, incorporating flexibility for riders to get on and off as needed. In August of 2014, through a partnership with the City of Greenville and the Greenville Drive, the City's Greenlink transit system assumed management and administration of the trolley system. New trolleys were purchased and a fixed-route system was established to operate on a continuous loop of 20 stops linking the City's historic districts to the North Main Street area. The Downtown trolleys are free and operate year-round on Thursdays, Fridays, Saturdays and Sundays. The trolleys seat 35 passengers, are wheelchair accessible, and are equipped with bicycle racks. A Lunchlink route is also

available for Downtown workers and visitors on Fridays during lunchtime that is designed to get them to and from local Downtown restaurants.

With the purchase of six battery electric buses from Proterra, a Greenville-based company dedicated to designing and manufacturing advanced technology heavy-duty vehicles power by clean domestic fuels, the City of Seneca became owner of the world's first all-electric municipal bus fleet in 2014 ("Seneca celebrates start of "world's first all electric bus fleet," Ron Barnett, Greenville Online). Proterra is located in close proximity to Clemson University's International Center for Automotive Research (CU-ICAR), which enables the company to access the Center's research and development resources. While the cost for each vehicle can reach up to $900,000, the additional cost will be recouped within 12 years due to reduced fuel expenses. The 100 percent electric buses can run for 35 miles between charges and average an equivalent to 19 miles per gallon, compared to four miles per gallon for standard diesel buses. In addition, the Seneca buses have reduced carbon dioxide emissions by 500,000 points since they were placed into service in September 2014. The Seneca fleet is operated by Clemson Area Transit (CAT). The City received a $5.9 million grant from the US Federal Transit Administration and a $540,000 grant from the SC Department of Transportation for the project, in combination with a $510,000 match provided by the City.

With the implementation of the *City Center Master Plan* well underway, the City of Greenwood and Greenwood County have the opportunity to explore transit options that will enhance and further the goals of the Plan. Development of a trolley route along US Highway 25 Business between the SC Highway 72 Bypass and SC Highway 34 along the linear spine of the City would connect residents and visitors to major destinations and points of interest. Potential stops include: the Greenwood Mall; Lander University and the Jeff May Recreation, Wellness and Sports Complex; Uptown Greenwood; the Greenwood County Library; Self Regional Healthcare, the Medical District, and the SC Departments of Health and Social Services; as well as retail, restaurants, and professional services. The potential route could also provide service to residents in an adjoining area designated by the US Department of Housing and Urban Development as having a high concentration (more than two-thirds) of low and moderate income (LMI) households. Trolley service could also provide residents in this area with affordable and ready access to stores that sell fresh, healthy food at affordable prices, a need identified by the area designation as a food desert the by the US Department of Agriculture. The location of the potential trolley route and LMI area are shown in Figure 9-15.

FIGURE 9-15. POTENTIAL TROLLEY ROUTE



SOURCE: GREENWOOD CITY/COUNTY PLANNING DEPARTMENT, SEPTEMBER 2015

9.9. BICYCLE AND PEDESTRIAN

Well-designed systems of walkways and trails can provide residents with safe, inexpensive transportation alternatives to access jobs, education and services. Alternative modes of travel can also help to improve air quality and reduce energy use. According to the 2009-2013 American Community Survey, 550 Greenwood County residents, or 2.4% of commuters, reported walking to work, though none reported riding a bicycle to work. Among commuters in the County's municipalities, 3.7% (303 persons) in Greenwood, 3.3% (2 persons) in Hodges, 2.3% (17 persons) in Ninety Six, and 8.3% (58 persons) in Ware Shoals walked to work. More than half of County residents who walk to work live in the City of Greenwood. No persons in the County's municipalities reported riding a bicycle to work.

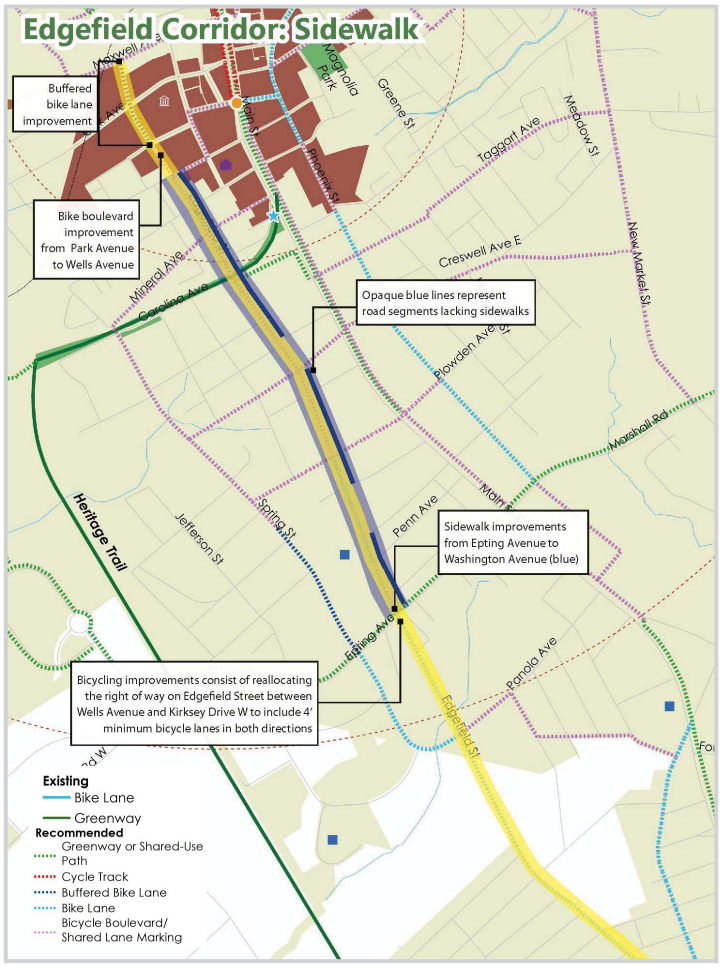
Information provided by SC DHEC lists reduced (or no) transportation cost; health benefits including reduced risk of cancer, diabetes, stroke, and heart attack; and weight loss and control as benefits of cycling or walking to destinations (Benefits of Alternative Transportation, SCDHEC, 2010). The US Centers for Disease Control and Prevention (CDC) notes that "walking and cycling have been replaced by automobile travel for all but the shortest distances" as one reason for the sedentary lifestyle of Americans (Journal of the American Medical Association, October 1999). The US Surgeon General reports that "being physically active is one of the most important steps that people of all ages and abilities can take to improve their health" (Step it Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities, US Surgeon General, 2015). Adults can obtain significant health benefits by getting at least 150 minutes of moderate intensity physical activity such as walking or biking each week (2008 Physical Activity Guidelines for Americans, US Dept. of Health and Human Services, 2008).

9.9.1. GREENWOOD PEDESTRIAN AND BICYCLE MASTER PLAN

In April 2015, the City of Greenwood, Greenwood County, and Eat Smart Move More Greenwood County initiated the development of a *Pedestrian and Bicycle Master Plan*. The 2015 Plan updates an earlier *Greenwood Pedestrian and Bicycle Facilities Plan* conducted in the 1990s. The Plan combined past planning efforts including the Greenwood City Center Master Plan with new research and analysis. The objective of the Plan was to "propose a long-term on-and off-street bikeway, walkway, and trail network." Development of the Plan included input from a Stakeholder Advisory Committee that included representatives "crucial to walkway, bikeway and trail implementation in Greenwood," including SCDHEC, SCDOT, Lander University staff, neighborhood representatives, representatives from nonprofits and advocacy groups, and City and County staff. The Plan was completed in July 2015 and includes an analysis of existing conditions that includes data collection and development of a base map, a listing of opportunities and constraints, community identified needs gathered through input from stakeholders and through a public open house and the distribution and compilation of citizen comment forms, recommendations for proposed improvements, and implementation strategies. Input provided through the citizen comment forms and at the public forum revealed that the top reason that Greenwood residents do not walk or bike is that the roads are not considered safe for these activities. Residents also expressed an interest in accessing local destinations such as grocery stores, parks, and Uptown locations by bike or on foot.

9.9.2. SIDEWALKS

FIGURE 9-16. PROPOSED EDGEFIELD CORRIDOR SIDEWALK PROJECT



SOURCE: GREENWOOD PEDESTRIAN AND BICYCLE MASTER PLAN, JULY 2015

Because sidewalks are generally found in more urbanized settings, most of the sidewalks in Greenwood County are within the downtown areas of the municipalities and near schools. While sidewalks are not required in new subdivisions in Greenwood County, there is an option to develop at a higher density if sidewalks are included in a project. Outside of the uptown and downtown areas, most of the sidewalks in the County and municipalities do not connect with other residential, commercial and recreation areas or employment centers. While there is no current inventory of sidewalks in Greenwood, a comprehensive inventory, to include mapping, is needed to plan for future sidewalks that provide vital connections to shopping, employment, recreation, and essential services.

"Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic" (2015 Greenwood Pedestrian and Bicycle Master Plan). The Master Plan noted that while the City of Greenwood has a substantial network of existing sidewalks in the City center and in traditional neighborhoods, "gaps in pedestrian infrastructure and a lack of pedestrian intersection improvements limit overall connectivity and pedestrian safety and comfort." Sidewalk connectivity is provided in the core of the City and within older neighborhoods, however the connectivity "breaks down" outside of those areas. The Plan also noted that sidewalk maintenance and ADA compliance is an issue for many of the area's existing sidewalks, which can pose barriers for persons with mobility issues.

Key Master Plan recommendations for sidewalk design included:

- Continuous sidewalks are needed along all major roadways to facilitate pedestrian connectivity to key destinations.
- Sidewalks should be provided on both sides of major roadways and on at least one side of collectors and minor arterials or residential streets with at least three dwelling units per acre.

- Sidewalks should be accessible to all users, should be of adequate width to enable two people to walk side-by-side, and should allow pedestrians to have a sense of security and predictability. Good lighting is an important aspect of visibility, safety, and accessibility.
- Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.
- Cost estimates for sidewalks with curb construction are $350 per linear foot, with no right-of-way purchased, but including installation of storm sewers.

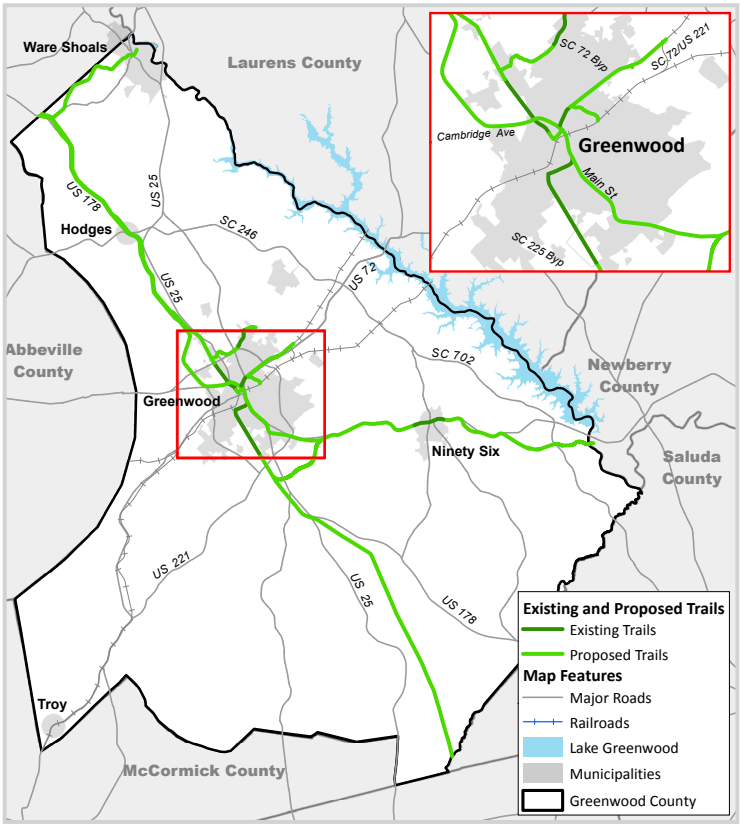
The Master Plan recommends completion of 42 sidewalk improvements, connections, or infill additions totaling 13.94 miles, of which 9.48 miles are in the City of Greenwood. Among the top four priority sidewalk or bicycle facility projects recommended by the Plan is the Edgefield Corridor, which includes 0.82 miles of sidewalk to infill the northbound side of Edgefield where there is currently no sidewalk (Figure 9-16). The project also includes a 1.8 mile bike route and will provide access to the Heritage Trail, to the hospital and nearby social services, and to a proposed greenway to Ninety Six. The estimated cost of the sidewalk portion of the project is $1.5 million.

9.9.3. TRAILS AND GREENWAYS

Trails are important recreational resources that can also provide alternatives to travel by car. While some trails provide access to parks or natural resources such as water bodies or scenic views, others provide linkages between residential areas and destinations such as work, shopping, entertainment, recreation, or other residential areas. Greenwood County currently has nearly 14 miles of trails that range in length from 1/8 of a mile for the Grace Street Greenway to the 2.5 mile Heritage Trail in Greenwood. A listing of the existing trails in Greenwood County is found in Figure 8-28 in the Community Facilities Element and the location of existing trails is provided in Figure 9-17.

The *Greenwood Pedestrian and Bicycle Master Plan* highlights the many existing trail segments in Greenwood as opportunities for future trail extensions and connections. In addition, the numerous utility corridors

FIGURE 9-17. EXISTING AND PROPOSED TRAILS, 2015



SOURCE: GREENWOOD CITY/COUNTY PLANNING DEPARTMENT, APRIL 2015

and stream beds in the area offer opportunities to develop new trails or connect segments of existing trails. The Plan calls for the addition of 24.1 miles of greenways or shared-use paths in Greenwood. Shared-use paths are facilities separated from roadways for use by bicyclists and pedestrians, which are either immediately adjacent to a roadway or in a greenway and follow other features such as railroads, utility lines, or streams. Figure 9-17 illustrates the location of new trails proposed in the Master Plan.

WEST CAMBRIDGE TRAIL

As noted in the Community Facilities Element, the conversion of unused rail corridors to trails is a movement that has gained momentum in recent years. The 2.5 mile Heritage Trail in Greenwood County was once part of a functioning railway and now accommodates walkers, joggers, and cyclists on a route that travels south from central Greenwood. The former Norfolk Southern rail line that extends from the heart of the City of Greenwood east along SC Highway 34, through the Town of Ninety Six, and on to Newberry County presents another opportunity to develop a trail that could connect the City and Ninety Six to the Lake Greenwood area and beyond, possibly through Newberry County all the way to the Palmetto Trail.

The ***Greater Greenwood Parks and Trails Foundation*** is a non-profit organization that has worked to preserve green spaces and create parks and trails in Greenwood County since 1999. The Foundation identifies potential parks and trails and then works to acquire rights to the properties. They raise money through private donations and grants, organize volunteers, and construct and maintain parks and trails. To date, the Foundation has constructed four trails, including the Heritage Trail, Grace Street Greenway, Rock Creek Trail, and West Cambridge Trail.

The 2015 ***Lake Greenwood Master Plan*** is the culmination of a three-county planning initiative intended to guide future growth and development of the 100+ square mile Lake region. The Plan provides goals, objectives and strategies for the use, development and protection of the Lake area that will assist elected and appointed officials, staff, developers, and local, regional and state agencies in decision-making on a wide variety of issues over the next 20 years. Included in the Plan recommendations is the development of a multi-use trail system that would connect existing and future park areas around the Lake and link to regional trail systems. Dependent on many variables such as land availability and future park locations, the trail is generally depicted in the Plan as circling Lake Greenwood and connecting to the City of Greenwood and the Towns of Ninety Six, Cross Hill and Waterloo. The trail also includes a potential connection linking the City of Greenwood with the Town of Ninety Six and extending into Newberry County using an abandoned rail line. As envisioned, this trail could eventually connect to the Palmetto Trail and Swamp Rabbit Trail networks.

9.9.4. BICYCLE FACILITIES

As noted in the *Greenwood Pedestrian and Bicycle Master Plan*, while the area lacks on-road bicycle facilities, there are numerous opportunities to "facilitate a safe, accessible, and convenient bicycle network." Some of the roadways have wider roads that could be utilized for bicycle facilities, neighborhood streets with lower traffic volumes that run parallel to major roads offer suitable alternative routes for cycling, and the relatively flat terrain in the City of Greenwood and abundant tree cover provide comfortable riding conditions. However, there are a number of constraints to safe travel by bicycle including the lack of street connectivity outside of the downtown core and older neighborhoods, the disconnect among existing trails, lack of on-street separated bike facilities, difficult surface conditions on some roadways and trails, limited bicycle parking, and high speeds, high traffic volumes, and dangerous intersections on major roads that make cycling impractical and uncomfortable. Participants in the Master Plan's Public Open House expressed a desire for dedicated bike lanes on Main Street and Main Street South from Oak Avenue to US Highway 25 and on Cambridge Avenue West from SC Highway 72 to the existing trail network between Kitson and Charles Streets. A "prevailing vision" from residents was the need to connect the City of Greenwood to the Towns of Hodges and Ninety Six with a paved trail. Three existing trails in Greenwood County accommodate bicycle use – the 2.5 mile Heritage Trail, the three-mile Town of Ninety Six Trail, and the 3-mile West Cambridge Trail. The Master Plan recommends the development of 46 additional miles of facilities that would accommodate bicycle travel, as well as 24 miles of shared-use paths or greenways that would accommodate both pedestrian and bicycle travel (Figure 9-17). Costs for bicycle facilities range from $45,000 per mile for bike boulevards (enhanced bike routes on local street networks) to $130,000 per mile for buffered bike lanes along roads and up to $600,000 for shared use paths or greenways.

PROPOSED CAMBRIDGE AVENUE IMPROVEMENTS

Three of the four top priority projects listed in the Master Plan include bicycle facilities. The Lander University to Uptown corridor would run from Durst Avenue West to North Main Street in Greenwood and includes a 1.1 mile bicycle route. The Uptown Area corridor would extend from Edgefield Street to Duncan Avenue and includes a 1.2 mile trail connection and .55 mile dedicated cycle track. The proposed Center Street corridor would run from Beaudrot Road to Calhoun Road and includes a one-mile, two-way dedicated cycle track.

9.9.5. COMPLETE STREETS

In 2003, the SC Department of Transportation Commission passed a *Complete Streets Resolution*. The resolution noted that bicycle and pedestrian projects are eligible for funding through nearly all of the major federal aid funding programs, and that South Carolina jurisdictions are required to make bicycle and pedestrian improvement an integral part of their transportation programs where state and federal funding is utilized. Further, the resolution stated the strong commitment by SCDOT to improving conditions for walking and cycling, and that planning for walking and cycling should be a routine part of SCDOT's planning, design, construction, and operating activities.

The City of Greenwood and the Town of Ninety Six adopted ***Complete Streets*** policies in 2012. The Complete Streets concept is based on the principal that roadways should be consistently designed with the needs and safety of users in mind. In addition to motor vehicles, roadways should also accommodate pedestrians, bicyclists, wheelchairs, and transit vehicles. The City of Greenwood resolution cites the following benefits of the Complete Streets concept:

- Public health experts encourage walking and bicycling to mitigate the epidemic of obesity in South Carolina.
- Creating walkable streets and lowering automobile speeds on roads improves economic conditions for residents and business owners.
- Integrating sidewalks, bike facilities, transit amenities, and safe crossings into the initial design of street projects avoids the expense of retrofitting streets in the future.

Specific actions included in the City of Greenwood Complete Streets policy include:

1. City staff shall revise established regulations, policies and operating practices, as deemed appropriate and feasible, so that transportation systems are planned, designed, constructed and operated to make bicycling and pedestrian movements an integral part of the City's transportation planning and programming while promoting safe operations for all users.
2. City staff shall plan for, design, construct and operate all City transportation improvement projects, unless a construction contract has been executed prior to the date of the resolution, to provide appropriate accommodation for pedestrians, bicyclists, transit riders, and persons of all abilities, while promoting safe operation for all users, as deemed appropriate and feasible.
3. City staff shall immediately incorporate the "Complete Streets Concepts" into the neighborhood master planning and implementation process.
4. The Public Works, Planning and Engineering Departments shall begin implementing "Complete Streets Concept" process and procedure changes in all other transportation projects as soon as administratively possible after adoption of the resolution.
5. The Public Works, Planning and Engineering Departments, in consultation with the relevant affected parties, shall prepare draft regulations to implement the "Complete Streets Concept."

To further the concept of Complete Streets, ensure eligibility for state and federal transportation funding, and maintain consistency among the County jurisdictions it is important that Greenwood County and the remaining municipalities also adopt and implement Complete Streets policies.

9.9.6. SAFE ROUTES TO SCHOOL

South Carolina is the only state in which the State Department of Education owns, operates and maintains the fleet of school buses that serve all public schools. However, the bus service is not required to provide pick-up and drop-off services for students within a 1.5 mile radius of schools. Students living with 1.5 miles of their school rely on transportation provided by parents or friends or must walk or ride their bicycles to school. If sidewalks, trails, or bike lanes are unavailable or inadequate, the trip to and from school can be a challenge, or even hazardous, for students.

Safe Routes to School (SRTS) is a growing nationwide movement that brings together parents, schools, and community leaders to encourage students, including those with disabilities, to walk and bike to school. SRTS activities and resources focus on improving walking and biking conditions around schools while building healthy habits and safety skills. The SC Department of Transportation created the Safe Routes to School Resource Center in the fall of 2010 to help schools, school districts, and communities throughout South Carolina to build and sustain SRTS programs. SRTS Resource Center partners receive technical assistance and program support at no cost, with individualized plans developed for each partner school based on a safety assessment. The safety assessment is an interactive assessment of the physical environment with regard to school transportation and is a partnership between SC DHEC's Office of Healthy Schools and Division of Injury and Violence Prevention, the SC Safe Routes to School Resource Center, and the SC Department of Transportation. The assessment is conducted on a single day during a 1.5 hour time period and is designed to:

- Assess the current infrastructure for walkers, bikers and car riders.
- Identify potential recommendations for safety improvements.
- Observe school dismissal and discuss the safety of pick-up procedures.

Five Greenwood County schools are partners in the SRTS program: Cambridge Academy (private elementary) and Lakeview Elementary in the City of Greenwood; Ninety Six Elementary in the Town of Ninety Six; and Ware Shoals Elementary and Ware Shoals Junior High in the Town of Ware Shoals.

CHILDREN USING A SAFE ROUTE TO SCHOOL

9.10. LOW SPEED VEHICLES

Low speed vehicles such as golf carts, scooters and mopeds have become increasingly popular alternatives to automobiles and trucks. Such vehicles are less expensive to purchase and much less costly to maintain because they are either powered by electricity or by efficient gas engines that get excellent gas mileage. While they have largely been in use in private developments, these vehicles have emerged as an attractive option for older residents, students on college campuses, and others who need to regularly travel short distances to essential services and other destinations.

MOPED RIDERS

The National Highway Transportation Safety Administration (NHTSA) includes golf carts in the larger category of low speed vehicles and defines a golf cart as a four-wheeled vehicle with a top speed no greater than 25 miles per hour, used solely to carry one or more people and golf equipment to travel on public roads to and from golf courses and to play golf and/or for purposes unrelated to golf (NHTSA, 49 CFR Part 571). In South Carolina, a golf cart permit allows a licensed driver to operate a golf cart during daylight hours on a secondary highway or street within four miles of his/her residence or place of business or on an island not accessible by a bridge designed for use by automobiles. Person's operating a golf cart must be 16 years of age and hold a valid driver's license. A permit is not required if the golf cart will be operated solely on private property. Golf carts may only be operated on roads for which the posted speed limit is 35 miles per hour and may only cross intersections where the posted speed is 35 miles per hour. A jurisdiction may reduce the area in which permitted golf carts may operate from four miles to no less than two miles.

A moped is defined by South Carolina law as a cycle with pedals to permit propulsion by human power or without pedals and with a motor of not more than 50 cubic centimeters, with not more than 1.5 brake horsepower and which cannot go over 35 miles an hour on level ground. If an internal combustion engine is used, the moped must have a power drive system that functions directly or automatically without clutching or shifting by the operator after the drive system is engaged. Though scooters resemble mopeds in many ways, scooters are viewed as motorcycles under South Carolina law because they can maintain higher speeds.

While most mopeds, scooters, or similar vehicles are not required to be registered, a few do require registration based on engine size, speed, weight, and other factors. Operators of mopeds must be at least 14 years of age and have a valid driver's license or motorcycle license or a valid moped operator's license. However, a person whose driver's license has been suspended for six months or less is not required to

obtain a moped operator's license or possess a valid driver's license during the period of suspension. Persons operating scooters must be licensed and insured as motorcycle operators. Scooter riders under age 21 must wear protective headgear.

While low speed vehicles are by definition safer because they travel at slower speeds, when they are integrated into the transportation system along with all the other transportation types that are much bigger and travel at greater speeds, they do pose serious safety concerns. This is exacerbated by the fact that drivers of these low speed vehicles include young teenagers, older persons, and persons who have had their driver's license revoked. Low speed vehicles also generally have lower safety standards than other transportation modes.

In recent years, scooter and moped use has expanded from students and persons with suspended driver's licenses to a wide range of users looking for economical transportation over short distances. In nearby Columbia and Greenville, businesses that rent mopeds and scooters for short trips or longer periods of time cater to the transportation needs of a more urbanized population, as well as tourists.

The increasing use of golf carts on public roads is an issue that requires periodic evaluation in Greenwood County, particularly within the City and towns with regard to safety concerns and efficient and appropriate integration into the transportation system. Plans for road and parking construction and improvements should include consideration of the needs of low speed vehicles and their operators.

GOLF CARTS PROVIDE AN ALTERNATIVE FOR LOCAL TRIPS

9.11. AIRPORTS

General aviation services are provided through the ***Greenwood County Airport*** (GRD), located three miles north of Uptown Greenwood on Airport Road (Figure 9-19). The Airport opened in 1943 as a US Army Air Field, originally called the Coronaca Army Airfield, and was used as a training field for airplane landings and early instrument landing system approaches. The field was deeded to Greenwood County in 1947 and continues to be owned and operated by the County. GRD provides a lighted 5,003-foot by 100 foot asphalt runway, a terminal for use by small passenger planes and administrative personnel, and general aviation and corporate hangers available for lease. An additional airstrip is currently inactive. Any future expansion of the airport to accommodate larger planes relies on the continued regulation of land use and height within the airport zone, as well as consideration of these issues in areas beyond the current zone that would accommodate proposed expansions.

Access to large cargo and commercial facilities is available approximately one hour away at the ***Greenville-Spartanburg International Airport*** (GSP), located midway between the cities of Greenville and Spartanburg. GSP began operation in 1962 and serves more than 1.8 million passengers and handles more than 30,000 tons of cargo annually. Six major airlines offer 49 non-stop average daily departures to 15 major cities and 18 airports across the nation. Air operations are conducted on an 11,001' x 150' runway that can accommodate any aircraft in operation today. The north end of the airport is home to a 120,000 square foot FedEx facility completed in 2001.

The ***Columbia Metropolitan Airport*** (CAE) is located one and one-half hours southeast in Lexington County. CAE serves more than 1.2 million passengers and processes 168,000 tons of air cargo each year through four scheduled passenger airlines and numerous freight carriers. The airport offers more than 30 daily non-stop flights to nine destinations nationwide. Air operations are conducted on an 8,600' x 150' runway and an 8,000' x 150' runway. In 1996, United Parcel Service (UPS) opened an $80 million Southeastern Regional Hub at the airport, offering next-day, second-day, and third-day air service. A 108-acre Foreign-Trade Zone (FTZ 127) is also located at the airport. A foreign-trade zone is a duty-free, quota-free, secure area in a Customs Port of Entry considered to be outside the US Customs territory. Both domestic and foreign goods can be brought to an FTZ for assembly, manufacture, display, storage or processing without formal Customs entry, with duty payments not required until the merchandise leaves the zone for domestic consumption.

Though smaller than both GSP and CAE, the ***Augusta Regional Airport*** (ARA) is only an hour's drive from Greenwood. Established initially as a flight training school to support the US military in 1941, the facility became a commercial airport in 1950. The Airport is situated on 1,400 acres and includes two instrument runways, one 8,001 feet long and 150 feet wide and the other 6,001 feet long and 75 feet wide. Daily service is offered by Delta Connection Carrier Atlantic Southeast Airlines, a Delta Connection Carrier, to Atlanta and by American Airlines to Charlotte. The Airport opened a new passenger terminal in 2007 as part of a comprehensive renovation of the entire airport property. Nearly 552,800 passengers used the airport in 2015, an increase of 3.5% from the previous year.

9.12. RAIL AND SHIPPING

In today's global economy, commercial transportation is critical to a region's potential for business and industrial development. Time sensitive transportation services are increasingly important to gaining a competitive advantage in manufacturing and service-based industries. Transportation options for the mass transport of passengers are also growing in importance, as travelers seek alternatives to travel by individual automobile, whether for short commutes or long trips. Convenient and efficient connectivity to areas nationwide and overseas is attractive to businesses and industries and is therefore an incentive for economic development and also contributes to the quality of life for area residents.

9.12.1. RAILROADS

While Greenwood was once served by four railway lines – Seaboard Air Line Railroad, Southern Railway, the Atlantic Coast Line Railway, and the Piedmont and Northern Electric Railway (The Greenwood History Project, October 2015), today rail service for the Greenwood area is provided solely by CSX. The history of the CSX railroad dates back to the early 19th century with the charter of the Baltimore and Ohio Railroad company in 1827. The merger and consolidation of numerous railroads since that time have made CSX one of the nation's leading transportation suppliers, encompassing approximately 21,000 route miles of track in 23 states, the District of Columbia, and Canada. CSX is South Carolina's largest railroad, operating and maintaining 1,269 route miles, with major rail yards in Charleston and Florence and terminals in Columbia, Greenville, and Spartanburg.

As illustrated in Figure 9-19, CSX rail lines generally bisect Greenwood County from southeast to northwest, traveling through the City of Greenwood and the Town of Troy. The CSX Maxwell Yard located southwest of the SC Highway 10 and SC Highway 225 Bypass intersection, just west of the City of Greenwood, is one of only five CSX freight classification yards in the state. A freight classification yard is used to separate railroad cars onto separate tracks. CSX rail lines transport materials and freight to and from local industries, linking to routes that connect with Athens and Augusta, Georgia to the south and west and Spartanburg and Columbia to the north and east. CSX provides transport services to twelve Greenwood County customers, handling an average of 1,500 car loads of materials totaling approximately $3.6 million annually. While passenger rail service is not available in Greenwood County, Amtrak stations are located within a short commute in Greenville and Columbia.

FIGURE 9-18. CSX RAILROAD CROSSINGS IN GREENWOOD COUNTY

RAILROAD	PUBLIC CROSSINGS	PRIVATE CROSSINGS	TOTAL CROSSINGS
At Grade	35	20	55
Under Grade	8	0	8
TOTAL ALL CROSSINGS	**43**	**20**	**63**

SOURCE: FEDERAL RAILROAD ADMINISTRATION, OFFICE OF SAFETY, OCTOBER 2015

Unfortunately, rail lines can pose potential conflicts with motor vehicle traffic at grade crossings. Information provided by the Federal Railroad Administration's (FRA) Office of Safety indicates that there are 63 roadway CSX railroad crossings in the Greenwood County, of which 43 cross publicly-owned roads and 20 are private rail crossings (Figure 9-18). Private highway-rail grade crossings are on roadways not open to use by the public or maintained by a public authority. Examples of private crossings include farm or industrial crossings that provide access between tracts of land or facilities

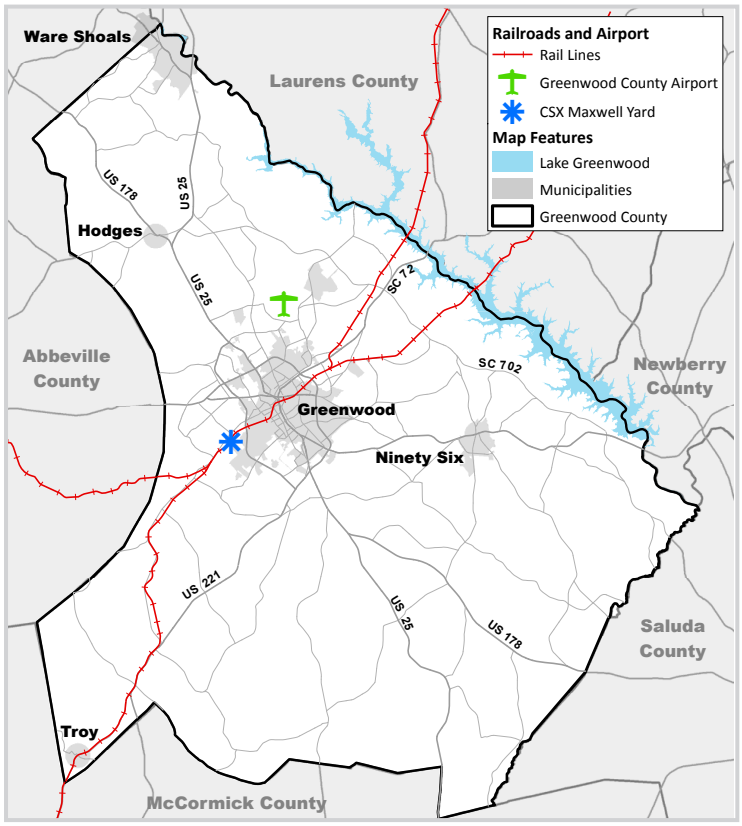
lying on both sides of the railroad and residential access crossings from another road to a private residence. Thirty-five (35) of the railroad crossings in the County are at grade, meaning vehicles must go directly over the railway at crossings, with eight constructed for under grade crossing.

The type of safety crossing warning device used at rail crossings is based on a Federal Railroad Administration formula that includes highway and rail volume. In more urbanized areas with higher traffic volumes, most crossings are public and include some type of safety warning system such as flashers and/or gates. Private crossings in urban areas typically serve manufacturing or large businesses and generally incorporate passive warning systems such as railroad crossbucks or stop signs. In more rural areas where crossings serve lower traffic volumes generated by farms and residential properties, warning equipment is often limited to signs or flashers.

Railroad safety is an important issue in transportation planning. There have been only three railway accidents reported in Greenwood County in the past decade, one each in 2014, 2007 and 2005. All of these accidents involved a CSX Railroad crossing, with the 2014 and 2005 incidents each resulting in two injuries/casualties (FRA, Office of Safety, October 2015).

9.12.2. HIGH SPEED RAIL

FIGURE 9-19. RAILROADS AND AIRPORT



SOURCE: GREENWOOD CITY/COUNTY PLANNING DEPARTMENT, MAY 2015

Georgia DOT, in partnership with South Carolina DOT and North Carolina DOT, is leading development of a multi-tiered review and assessment process for a high speed rail corridor between Charlotte and Atlanta that will pass through the South Carolina Upstate region. The Atlanta to Charlotte Passenger Rail Corridor Investment Plan (PRCIP) began in June 2012 and is scheduled for completion in the Fall of 2017. The Plan is part of a larger Federal Railroad Administration high-speed rail initiative known as the Southeast High Speed Rail (SEHSR) Corridor (Atlanta to Charlotte PRCIP Alternatives Investment Report, October 2015). The planned SEHSR Corridor, originally established in 1992 and extended to Atlanta in 1998, will extend north to Washington, DC and provide important linkages to other East Coast metropolitan areas including New York and Boston. The Atlanta to Charlotte intercity passenger rail corridor connects the cities of Atlanta and Charlotte for an approximate distance of 280 miles. The corridor's termini are the Hartsfield-Jackson Atlanta International Airport in

Atlanta and the proposed Charlotte Gateway Station in Charlotte. Funding for most of the PRCIP was provided by a federal High Speed Intercity Passenger Rail grant awarded in 2010, with additional matching funds provided by the Georgia Department of Transportation.

The purpose of the Atlanta to Charlotte PRCIP is to improve intercity travel and mobility between Atlanta and Charlotte by expanding the region's transportation capacity and reliable mode choices through improvements in passenger rail services. The goals for the proposed Atlanta to Charlotte passenger rail service are:

- **Provide Regional Linkage** – Improve overall regional connectivity by providing an intercity passenger rail linkage between Atlanta and Charlotte and other proposed SEHSR locations, as well as enhance multimodal transportation connections;
- **Improve Capacity** – Supplement Interstate highways and commercial airports to provide increased corridor capacity to support passenger movement;
- **Improve Travel Times** – Decrease travel times between major urban centers compared to auto and total air travel times;
- **Provide an Alternative Mode** – Provide travelers with an alternate choice to automobile, bus, conventional rail and air travel that is safe, reliable and efficient;
- **Enhance Energy Efficiency** – Improve energy efficiency by reducing dependence on foreign oil and decreasing greenhouse gas emissions; and
- **Promote Economic Development** – Increase economic activity and employment opportunities via improved transportation connectivity resulting in a more productive and competitive economy with an expansion of the labor pool market along the corridor.

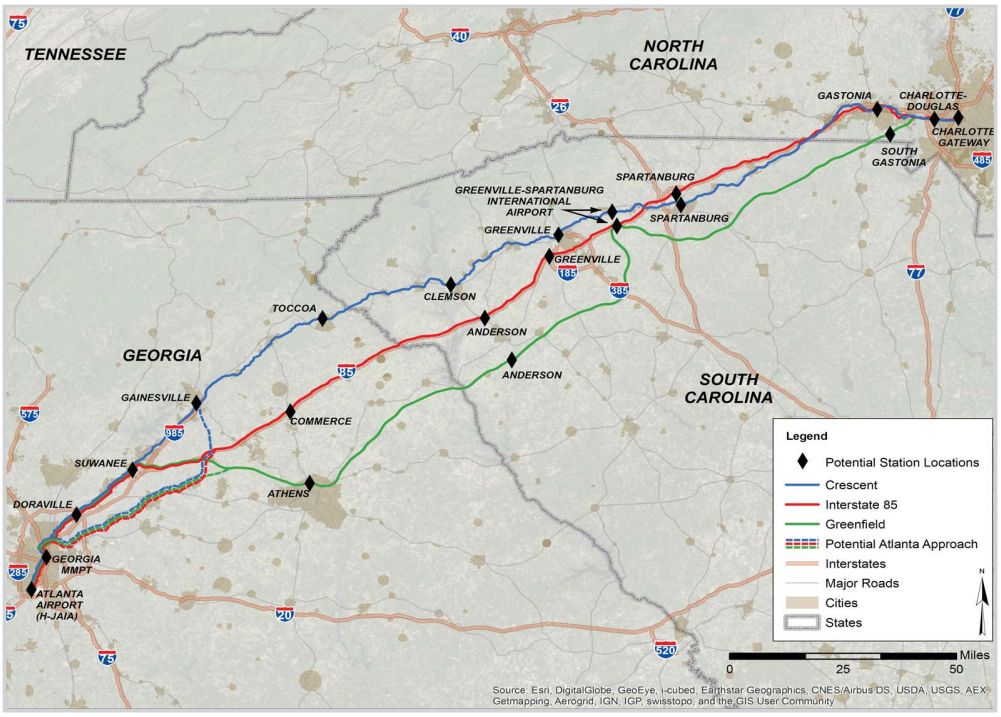
The PRCIP evaluated six route alternatives to identify a preferred route for the Atlanta to Charlotte corridor. Criteria included purpose and need, route length, travel time, geometry (curves), population served, employment served, and regional and intermodal links. Three feasible potential route alternatives were identified through the evaluation process as illustrated in Figure 9-20:

- The ***Southern Crescent*** alternative is a shared-use route that primarily follows the existing Norfolk Southern railroad right-of-way, on which Amtrak currently operates daily passenger service and regular freight rail service between Atlanta and Charlotte, traveling through Spartanburg, Greenville and Clemson, South Carolina and Toccoa, Gainesville, Suwanee and Doraville, Georgia. The Southern Crescent alternative received a score of "good" in the PRCIP evaluation and was strong in areas including purpose and need, population served, and employment served.
- The ***Interstate 85*** alternative is a dedicated-use route that is located predominately within the I-85 right-of-way. The route connects Charlotte to Atlanta through Gastonia, North Carolina; Spartanburg, Greenville and Anderson, South Carolina, and Commerce, Sewanee and Doraville, Georgia. The PRCIP evaluation resulted in a score of "very good" for the I-85 alternative and was strong in the areas of purpose and need, route length, population served, employment served, and regional and intermodal linkage.

- The ***Greenfield*** alternative is a dedicated-use, fully grade-separated route on a new corridor alignment that is designed for higher speeds and to eliminate interference with other modes of travel. The route was laid out to maximize straight track segments and to minimize the number of curves with the goal of achieving faster speeds of up to 220 miles per hour. The PRCIP evaluation concluded that the Greenfield alternative is the best route, scoring high is the areas of purpose and need, travel time, geometry (curves), population served, and regional and intermodal linkages.

The Greenfield alternative is the route that is closest to Greenwood County, with stations planned in nearby Anderson and Greenville. Access to high speed rail would be a benefit to County residents and could be a valuable incentive for economic development efforts.

FIGURE 9-20. ATLANTA TO CHARLOTTE PASSENGER RAIL CORRIDOR - ROUTE ALTERNATIVES



SOURCE: GEORGIA DEPT. OF TRANSPORTATION, ATLANTA TO CHARLOTTE PRCIP, JULY 2016

9.12.3. TRUCKING

"Highway goods movement is a cornerstone to the national freight transportation system" (South Carolina Statewide Freight Plan, August 2014). Trucks transport 70 percent of all the tonnage in the United States to and from rail, water and air transportation hubs, as well as direct service between destinations for the transport of goods and materials. Lower operating costs and a higher level of service customization can make shipping by truck a cost effective and attractive alternative to shipping by rail or air. Truck movements in South Carolina totaled more than 300 million tons in 2011, valued at $506.2 billion. Major freight corridors include the state's five interstates (I-20, I-26, I-77, I-85, and I-95), with the major US and state highways also accommodating significant freight flows (South Carolina Statewide Freight Plan, August 2014).

Greenwood County's strategic location near major transportation corridors linking Greenville, Columbia, Charleston and beyond to Atlanta and Charlotte provides an intermodal freight network that has been attractive to a number of industries over the years. While no interstate highways travel directly through Greenwood County, Interstates 26 and 385 are close by and accessible within 25 miles by four-lane highways. Access to I-85 is 45 miles northeast of the County, while I-77 is located 80 miles eastward. The SC Statewide Freight Plan indicates that the western portion of SC Highway 72, the connecting portion of US Highway 25, and southern portion of US Highway 178 were used to transport between one to five million tons of freight in 2011. Segments of US Highways 25, 178 and 221 and SC Highways 34 and 72 that extend outside of the County were used to transport up to one million tons of freight in 2011.

9.12.4. PORTS

Port service for Greenwood County is available less than three hours southeast through the Port of Charleston – one of the busiest container ports along the Southeast and Gulf coasts and ranking consistently among the top 10 container ports nationwide. The Port of Charleston is recognized as one of the most efficient and productive ports in the nation. The Charleston Customs district ranks as the nation's 8th largest in cargo value, with $63.6 billion in imports and exports traded across the docks in 2012. The Port hosts shipping service by more than 30 of the world's top carriers.

The South Carolina State Ports Authority (SPA) was established by the South Carolina Legislature in 1942. SPA facilities handled 1.095 million containers and moved 1.4 million tons of non-containerized cargo at its seaport terminals in Charleston and Georgetown and the inland port in Greer in FY 2015. The SPA plans to invest $1.355 billion in new and existing facilities in the coming decade. The plan includes a new container terminal in North Charleston on the former Navy Base, as well as major improvements to existing facilities, technology upgrades, and construction of a new cruise terminal (SC Ports Authority, October 2015). While the Port currently has the deepest channels in the region, plans are underway by the US Army Corps of Engineers to deepen the Charleston Harbor channel from 45 feet to 52 feet by 2024, a move that will make the Port even more attractive to freight carriers. For an ocean carrier, each additional foot of water equals the ability to place 100 additional loaded containers on board the vessel, enabling the carrier to maximize the ship's carrying capacity. This expansion will accommodate the larger cargo vessels that will utilize the newly expanded Panama Canal after work is completed by the end of the decade (SC Ports Authority, October 2015).

In October 2013 the South Carolina Inland Port opened less than one hour north of Greenwood in Greer, extending the Port of Charleston's reach by providing an inland area connected by rail from which goods could be distributed to the Southeast. Norfolk Southern serves the inland port through its main rail line, and the facility is positioned along the Interstate 85 corridor between Charlotte and Atlanta, where Norfolk Southern operates additional rail yards. Rail service maximizes tonnage moved per gallon of fuel for importers and exporters, helping them save costs and lower their carbon footprint. The inland port adds an additional benefit – access to empty containers – for regional shippers, who can send trucks to Greer for the containers they need to move their goods (SC Ports Authority, October 2015).

9.13. TRANSPORTATION ENERGY

Of all the economic sectors within the Greenwood region, the transportation sector offers the greatest opportunity for significant reduction of energy consumption. State, regional and local governments have wide-ranging legal and financial powers to influence transportation. They directly supply or regulate the supply of most transportation infrastructure including roadways, sidewalks, transit, bike paths, and parking. If improvements and additions to transportation systems are designed with energy conservation in mind, significant energy savings can be realized. The transportation sector consists of all vehicles with a primary purpose to transport people and/or goods from one physical location to another. Included are automobiles, trucks, buses and motorcycles. Vehicles with a primary purpose other than transportation, such as tractors and construction equipment, are excluded.

The transportation sector is a major energy consumer in Greenwood County, accounting for 28.4% of total energy consumption (US EIA, State Energy Data System, 2013). This is in large part due to the nation's continued dependence on the automobile. Nationally, travel by private automobile is the dominant form of transportation to work and other destinations, with 86% of all workers commuting to work by private vehicle, either alone or in a carpool (US Census, ACS, 2009-2013). This continuing dependence on the automobile is mirrored in Greenwood County, where 94.9% of residents travel to work by car, truck, or van – 2.4% more than the State average and 8.8% higher than the national average (Figure 9-6). However, Census data reveals that the average trip to work is comparatively closer to home for Greenwood County residents. Mean travel time to work at 21.2 minutes is less than the mean travel time statewide at 23.5 minutes and for the nation as a whole at 25.5 minutes.

9.13.1. TRANSPORTATION ENERGY OVERVIEW

South Carolina ranks 22nd highest nationwide in transportation energy consumed (US Energy Information Administration (EIA), State Energy Data System, 2013). Per capita consumption in the State's transportation sector ranks 19th in the nation at 94.9 million Btu (MMBtu), higher than United States per capita consumption at 84.3 MMBtu. The majority (95.1%) of energy consumed by the nation's transportation sector is provided by fossil fuels. Petroleum accounts for nearly 97% of fossil fuels consumed by the transportation sector, with the remainder provided by natural gas (US EIA, Monthly Energy Review, 2016).

Energy consumption in America's transportation sector increased steadily to a 12 year high in 2007, with consumption fluctuating through 2013, then increasing again through 2015 (US EIA, Annual Energy Outlook, 2015). South Carolina ranks 23rd nationwide in vehicle miles traveled at 48,986 million miles (US EIA, State Energy Data System, 2013). The US EIA projects a decline in energy consumption in the transportation sector through 2030, primarily as a result of improvement in light-duty vehicle fuel economy with the implementation of corporate average fuel economy (CAFE) standards and greenhouse emissions standards (US EIA, 2015). While passenger vehicles fueled by motor gasoline currently account for 83% of new sales, the US EIA projects that the percentage will drop to 46% by 2040 due to increased sales of alternative fuel vehicles and vehicles with hybrid technologies, including gasoline vehicles equipped with micro-hybrid systems, E85 flex-fuel vehicles, full hybrid electric vehicles, diesel vehicles, and plug-in hybrid vehicles and electric vehicles.

Automobiles and light trucks are responsible for a large portion of the total energy used within the transportation sector because they are very energy intensive. Cars and trucks consume more energy

per mile than all other modes of ground transportation. Local bus systems use less than one-fourth of the energy of automobiles and light trucks and less than one-sixth of the energy of larger passenger trucks (Figure 9-21).

FIGURE 9-21. ENERGY CONSUMPTION BY MODE OF TRANSPORTATION

TRANSPORTATION MODE	ENERGY CONSUMPTION (BTU PER PASSENGER MILE)
Light Duty Vehicles, long wheel base (2 axle, 4 wheels, including trucks)	5,453
Cars and Light Duty Vehicles, short wheel base (passenger cars)	3,843
Motorcycle	2,665
Bus	823

SOURCE: US DEPARTMENT OF TRANSPORTATION, NATION TRANSPORTATION STATISTICS, APRIL 2016

There are 57,583 licensed vehicles in Greenwood County. Of these vehicles, 40,690 are passenger cars, 15,157 are trucks, 1,523 are motorcycles, 54 are buses, 42 are common carriers, and 117 are designated as other (Figure 9-22). Vehicles classified as "common carriers" or "other" are assumed to be in the light duty vehicle category that includes wagons, vans, SUVs, pickup trucks, and cars with larger wheel bases.

Fuel consumption for each vehicle type can be estimated using vehicular fuel consumption data and fuel economy developed by the US Department of Energy. Vehicles registered in Greenwood County consumed more than 3.7 MMBtu of energy in 2015. Passenger cars were the largest energy consumers of the various vehicle types, accounting for more than two-thirds of the energy used within the transportation sector (2.46 MMBtu). Trucks consumed 33.3% (1.25 MMBtu) of energy used within the County's transportation sector, with other vehicle types consuming less than one percent of transportation energy use.

FIGURE 9-22. ANNUAL FUEL CONSUMPTION, MILES TRAVELED, AND ENERGY CONSUMPTION, GREENWOOD COUNTY REGISTERED VEHICLES, 2015

VEHICLE TYPE	NUMBER OF VEHICLES	AVG. FUEL CONSUMPTION (GALLONS)	TOTAL FUEL CONSUMED (GALLONS)	AVG. FUEL ECONOMY (MPG)	VEHICLE MILES TRAVELED	MMBTU	% MMBTU
Passenger Car	40,690	502.36	20,441,028	22.53	11,318.17	2,462,653.34	65.8%
Truck	15,157	682.52	10,344,956	17.16	9,996.04	1,246,318.88	33.3%
Bus	54	1,896.33	102,402	6.33	66,082.73	14,068.06	0.4%
Common Carriers	42	524.43	22,026	21.64	11,348.67	2,653.61	0.1%
Motorcycles	1,523	55.65	84,755	43.54	2,423.00	10,210.94	0.3%
Other	117	524.43	61,358	21.64	12,170.55	7,392.20	0.2%
TOTAL	**57,583**	--	**31,056,525**	--	**113,339.16**	**3,741,565.93**	**100.0%**

SOURCES: SC DEPT. OF MOTOR VEHICLES, NOVEMBER 2015; US DEPT. OF ENERGY, ALTERNATIVE FUELS DATA CENTER, JUNE 2015

Gasoline prices in South Carolina averaged well below prices nationwide in 2015 and early 2016. Prices in the State dropped to an average of $1.53 for regular grade gasoline in February 2016, but rose to a six month high of $2.036 in May 2016 (AAA Daily Fuel Gauge Report, 2016). The US EIA expects regular gasoline retail prices nationwide to drop slightly in the second half of 2016, potentially equaling an average household savings of $350 compared with 2015, the lowest annual average motor fuel expenditure in 12 years (US EIA, Short-term Energy Outlook, 2016). Long term US EIA projections indicate a gradual rise in motor gasoline prices through 2040 (US EIA, Annual Energy Outlook 2015).

The estimated total annual energy cost for Greenwood County's transportation sector is estimated at more than $55.6 million (Figure 9-23). Fuel for passenger cars accounts for nearly two-thirds of the total energy cost for the sector, with an annual cost of nearly $36.6 million. More than one-third of total fuel costs ($18.5 million) are attributed to trucks. However, it should be noted that public and private entities with large vehicle fleets often receive discounts on fuel prices. Because such discounts are generally not disclosed, it is not possible to include these reduced prices in an estimation of vehicle energy cost.

FIGURE 9-23. ESTIMATED VEHICLE ENERGY COST, 2016

VEHICLE TYPE	NUMBER OF VEHICLES[1]	AVG. FUEL CONSUMPTION (GALLONS)[2]	TOTAL FUEL CONSUMED (GALLONS)	AVG. PRICE PER GALLON[3]	ANNUAL TRANSPORTATION FUEL BILL
Passenger Car	40,690	502.36	20,441,028	$1.79	$36,589,440.84
Truck	15,157	682.52	10,344,956	$1.79	$18,517,470.60
Bus	54	1,896.33	102,402	$1.91	$195,587.48
Common Carriers	42	524.43	22,026	$1.79	$39,426.65
Motorcycles	1,523	55.65	84,755	$1.79	$151,711.36
Other	117	524.43	61,358	$1.79	$109,831.37
TOTAL	**57,583**	--	**31,056,525**	--	**$55,603,468.29**

SOURCES: [1]SC DEPARTMENT OF MOTOR VEHICLES, NOVEMBER 2015; [2]US DEPARTMENT OF ENERGY, ALTERNATIVE FUELS DATA CENTER, JUNE 2015; [3]SOUTH CAROLINA GASBUDDY, MAY 2016

9.13.2. ENERGY USE IN CITY AND COUNTY TRANSPORTATION FLEETS

Transportation fleets are an important component of local energy use and as such merit closer examination. Fleet management practices represent one of the greatest opportunities for local governments to reduce energy consumption within their operations. Many of these procedures are relatively simple and inexpensive to implement.

Both the City of Greenwood and Greenwood County operate sizable vehicle fleets that include a variety of on-road vehicles. There are a total of 251 on-road vehicles in the County fleet (Figure 9-24). More than 31% of County-owned vehicles are passenger cars, 25.9% are trucks, 23.5% are sports utility vehicles (SUVs), and 10.4% are heavy trucks. The City's transportation fleet totals 138 vehicles. More than one-third (35.5%) of the City-owned fleet is comprised of trucks and 33.3% are passenger cars. Heavy trucks, including fire and trash trucks, comprise 15.2% of the City fleet and 13.8% are SUVs. The City fleet also includes one electric vehicle, which is used for parking enforcement.

*FIGURE 9-24. FLEET INVENTORY – ON-ROAD VEHICLES, GREENWOOD COUNTY AND CITY OF GREENWOOD, 2016**

	GREENWOOD COUNTY		CITY OF GREENWOOD	
VEHICLE TYPE	#	%	#	%
Ambulance	9	3.6%	0	0.0%
Bus	2	0.8%	1	0.7%
Heavy Truck	26	10.4%	21	15.2%
Passenger Car	78	31.1%	46	33.3%
SUV	59	23.5%	19	13.8%
Tractor Trailers	6	2.4%	0	0.0%
Truck	65	25.9%	49	35.5%
Van	6	2.4%	2	1.4%
TOTAL	**251**	**100.0%**	**138**	**100.0%**

* Includes one electric vehicle

SOURCES: GREENWOOD COUNTY AND THE CITY OF GREENWOOD, MAY 2016

Greenwood County spent $495,701 to fuel its on-road vehicles in 2015, using nearly 88,000 gallons of gasoline, more than 78,000 gallons of diesel fuel, and almost 55,000 gallons of propane (Figure 9-25). County vehicles consumed 26,322 MMBtu of energy in 2015, with gasoline producing 40.2%, diesel fuel 40.7%, and propane 19% of total energy consumed.

FIGURE 9-25. FLEET ENERGY USE AND EXPENDITURES, FY 2014-2015 GREENWOOD COUNTY AND THE CITY OF GREENWOOD

CITY OF GREENWOOD				
FUEL TYPE	**GALLONS**	**PRICE**	**MMBTU**	**% MMBTU**
Gasoline	70,752.90	$129,627.05	8,524.03	54.8%
Diesel Fuel	1,163.26	$101,668.69	7,028.86	45.2%
Total	121,916.16	$231,295.74	15,552.89	100.0%
GREENWOOD COUNTY				
Gasoline	87,884.13	$218,435.55	10,587.93	40.2%
Diesel Fuel	78,033.59	$193,958.38	10,720.33	40.7%
Propane	54,896.31	$83,307.14	5,013.84	19.0%
Total	220,814.03	$495,701.07	26,322.11	100.0%

SOURCES: GREENWOOD COUNTY AND THE CITY OF GREENWOOD, MAY 2016

Expenditures for the City's transportation fleet fuel were more than $231,295 in FY 2014-2015. The City's vehicles consumed nearly 70,753 gallons of gasoline and more than 51,163 gallons of diesel fuel during that year, with a total energy consumption of 15,553 MMBtu.

9.13.3. OPPORTUNITIES FOR TRANSPORTATION ENERGY CONSERVATION AND SUSTAINABILITY

During the past century, no single force has had a greater impact on the pattern of land development in American cities than transportation. Improved roadways and affordable cars have enabled families to relocate from housing near their workplaces to homes in the suburbs that provided more housing per dollar in the form of larger lots, detached houses, and cleaner environments. In turn, retailers and service providers followed their customers to the suburbs. Subsequently, businesses that serve retailers and service providers also moved to the suburbs to be closer to their customers. In short, transportation improvements have been a major factor in the exodus of households and businesses from urban areas to the suburbs.

Substantial energy savings can be realized if improvements and additions to transportation systems are designed with energy conservation in mind and implemented in conjunction with effective land use policies. Options for reducing transportation energy consumption include:

1. Shifting traffic to more efficient modes, by lowering the Btu per seat miles from auto to buses, mass transit, and human powered sources;
2. Increasing load factor, by raising the passenger mile per seat with carpooling and vanpooling;
3. Reducing demand, by reducing passenger miles through land use planning, telecommunications, and other methods;
4. Increasing energy conversion efficiency, by lowering the Btu per seat mile using smaller and more efficient vehicles; and
5. Improving use patterns, by lowering seat miles through traffic design and control.

Although residential development in Greenwood County has begun to shift outward into historically rural areas in recent years, a large percentage of the population remains within the urban and suburban area of the County. While Greenwood County residents on average enjoy the shortest commutes in the State, with a mean travel time to work of only 21.2 minutes, they are also highly dependent on the automobile for transportation (Figure 9-6). Only 2% of Greenwood commuters walk to work and none reported biking to work, with 2.4% working at home. Perhaps the most significant statistic related to travel to work is the use of public transportation within the County. Less than one percent (0.4%) of Greenwood workers travels to work by public transportation.

While traffic congestion is not a serious problem in Greenwood County at present, there are some emerging areas of concern. Information from the SCDOT Engineering District 2 staff indicates that improvements are needed on SC Highways 246 and 34, and the US Highway 25/178 Bypass to accommodate traffic. In addition, new roads are needed to connect Mathis Road to Marion Avenue and to connect South Main Street to the Genetic Center. Most of the road segments with the County's highest traffic counts are within or in close proximity to the City of Greenwood (Figures 9-4 and 9-5).

An increase in vehicle miles traveled (VMT) is a major contributor to traffic congestion. Annual VMT in Greenwood County has steadily increased in recent years, resulting in a five-year increase of 5.9% through 2015 (Figure 9-26). Greenwood's percentage increase in VMT from 2011 to 2015 was consistent with the statewide increase of 6.1%.

FIGURE 9-26. ANNUAL VEHICLE MILES TRAVELED, GREENWOOD COUNTY AND SOUTH CAROLINA, 2011-2015

	2011	2012	2013	2014	2015	% CHANGE 2011-2015
Greenwood County	538.10	553.37	557.07	559.24	570.00	5.9%
South Carolina	48,732.40	48,902.08	48,987.43	49,949.82	51,723.08	6.1%

SOURCE: SCDOT PLANNING OFFICE, MAY 2016

The US Department of Energy estimates that 70% of the energy usage in the transportation sector is expended by passenger modes of travel (US Department of Energy, 2014). Cars and light duty vehicles (including SUVs and small trucks) are responsible for a large portion of the total energy used because they are very energy intensive (Figure 9-21). Local bus systems use less than one-fourth the energy of cars and smaller light duty vehicles and less than one-sixth the energy of larger light trucks. Additional energy savings can be realized per person when the mode of travel is capable of transporting larger numbers of people (buses or rail systems), or even when an automobile or light truck transports more than one person per trip. Energy savings are even more dramatic when residents walk or bike to destinations instead of traveling by motor vehicle.

The fuel efficiency of light duty vehicles has improved substantially in recent decades, achieving gains in both fuel economy and performance. Fuel economy has risen steadily from 19.3 miles per gallon (MPG) in 2004 to 24.7 MPG in 2015 (US EPA, 2015). Since 2005, new automotive technology has improved both fuel economy and power, while keeping vehicle weight relatively constant – enabling drivers to continue to find larger passenger vehicles with increasingly higher fuel economy.

Alternative fuel vehicles (AFVs) designed to operate on at least one alternative fuel are increasingly being used in place of gasoline and diesel fuel made from petroleum, as these vehicles and appropriate fuel

become more readily available. AFVs include any dedicated, flexible-fuel, or dual-fuel vehicle designed to operate on at least one alternative fuel. The US Department of Energy currently recognizes the following as alternative fuels – pure methanol, ethanol, and other alcohols; blends of 85% or more of alcohol with gasoline; natural gas; propane; coal-derived liquid fuels; hydrogen; electricity; pure biodiesel (B100); fuels, other than alcohol, derived from biological materials; and P-Series fuels (renewable, non-petroleum, liquid fuels).

There are a number of alternative fuels in production for use in ATVs and advanced vehicles. While most are in use by government and private sector vehicle fleets, consumer interest is growing. ***Ethanol*** is a renewable, domestically produced transportation fuel that is most commonly used to increase octane and improve the emissions quality of gasoline. Ethanol is produced by fermenting and distilling starch crops such as corn, barley and wheat that have been converted into simple sugars or from "cellulosic biomass" such as trees and grasses. ***Biodiesel*** is a domestically produced, renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled cooking grease for use in diesel vehicles. Natural gas is a domestically abundant gaseous fuel that can have significant cost advantages over gasoline and diesel fuel. ***Propane*** is also a readily available gaseous fuel that has been widely used in vehicles throughout the world for decades. ***Hydrogen*** is a potentially emissions-free alternative fuel that can be produced from domestic resources for use in fuel cell vehicles.

Electricity can be used as a primary or secondary power source for vehicles. ***Hybrid Electric Vehicles*** are primarily powered by an internal combustion engine that runs on conventional or alternative fuel and an electric motor that uses energy stored in a battery. The battery is charged through regenerative braking and by the internal combustion engine. ***Plug-in Hybrid Electric Vehicles*** are powered by an internal combustion engine that can run on conventional or alternative fuel and an electric motor that uses energy stored in a battery. The vehicle can be plugged into an electric power source to charge the battery. ***All-Electric Vehicles*** use a battery to store the electric energy that powers the motor, and are charged by plugging the vehicle into a power source.

VEHICLE CHARGING STATION

A 2015 telephone survey of local automobile dealerships was undertaken to examine recent sales of alternative fuel vehicles and hybrids in Greenwood County. While most area dealers reported very light sales of alternative fuel vehicles and hybrids, Ballentine Ford sold at least 20 Ford AFVs and approximately 70 Toyota AFVs and hybrids in 2014. This reflects an increase from 2000 to 2003 sales reported from the same

dealer of approximately 68 AFVs and 12 hybrid vehicles. However, some of these sales could represent fleet purchases through state or local government procurement outside of the County. Greenwood County residents may also purchase alternative fuel vehicles from dealers outside of the County and from manufacturers not represented by local dealerships.

9.13.3.1. FLEET EFFICIENCY

Many local governments and institutions operate and maintain a fleet of vehicles. Although these fleets vary greatly in size and composition, they present a prime opportunity to institute energy saving measures. Local governments and institutions can save significant amounts of energy and money by increasing the fuel efficiency of individual vehicles, operating vehicles more efficiently, and improving overall fleet management practices.

There are numerous opportunities for local governments and institutions to make fleet operations more energy efficient. Potential measures include:

- Implement a management information system to closely track maintenance schedules, fuel consumption, mileage, fuel costs and other related information.
- Assign vehicles appropriate to the task.
- Purchase fuel-efficient and appropriately-sized vehicles.
- Practice preventative maintenance, such as keeping tires properly inflated.
- Train maintenance staff in practices that improve fuel economy.
- Train drivers in fuel-efficient driving techniques.
- Centralize fleet operations to achieve an economy of scale, improve maintenance efficiency, and more effectively implement fuel efficiency programs.
- Automate fueling stations to track fuel efficiency, schedule preventative maintenance, and discourage excessive personal use of fleet vehicles.
- Explore the use of alternative fuel vehicles.

In 2011, Greenwood County Council voted to convert 19 Sheriff's Department vehicles – nearly half of their marked patrol vehicles – to propane. The County received an $116,000 Carolina Blue Skies grant through *American Recovery and Reinvestment Act (*ARRA) funding that paid for the conversion of the vehicles and the installation of a propane filling station. The County purchased 18 additional cars and the conversion kits needed to convert to the vehicles to propane in 2013. Each of these cars runs primarily on propane and switches to gasoline when propane levels are low. The County has also received a $0.50 Federal Excise Tax refund for every gallon of propane used in the converted vehicles, totaling nearly $63,530 through FY 2015. As of May 2016 the conversion of the 37 vehicles to propane has resulted in savings of approximately $250,000 for the County.

9.13.3.2. STREET DESIGN

The evolution of street design in the United States has primarily been a product of a growing population's increasing dependence on the automobile. As traffic volumes increased, road design standards were modified to make auto travel more safe and efficient, often at the expense of the character of residential areas. Standards required streets wide enough to accommodate increased traffic, turning radii large enough for service and emergency vehicles to negotiate cul-de-sacs, and T-configured intersections that minimized traffic conflicts. Traditional grid systems fell out of favor because they allowed through traffic on residential streets, while cul-de-sacs were encouraged because they prevented such through traffic. In addition, parking standards were designed to accommodate the maximum number of automobiles needed for each land use category, with little consideration for shared parking, carpooling or alternative methods of travel, shift changes, number of employees, or the unique needs of individual businesses or industries.

Many of these practices, while providing solutions to some problems, have created or contribute to others. Unnecessarily wide streets encourage faster speeds, discourage walking or biking, increase impervious surface area and ambient temperatures. Poor connectivity often restricts the viability of other transportation modes, making driving the most attractive travel option. Cul-de-sacs lengthen distances for travelers, discourage pedestrian travel, and make transit service more difficult to operate and use, while placing an added financial burden on local governments that must provide emergency, safety and maintenance services. Wide intersections and the placement of sidewalks adjacent to travel lanes make negotiation by pedestrians and cyclists difficult. Expansive parking lots increase impervious surfaces, make walking prohibitive, increase ambient temperatures, and are often underutilized.

The problems associated with conventional street and parking design ultimately result in increased energy usage. Street design that encourages and enables alternative modes of travel not only saves energy, but can also enhance the overall character and livability of an area. Alternative means of transportation can be made safer and more attractive by redesigning streets and intersections within intensively developed areas to give equal priority to pedestrians, cyclists, buses, and automobiles.

Substantial energy savings can also be realized by sizing streets to accommodate their use. Retaining higher speed street designs and capacities outside intensively developed neighborhoods and developments allows driving speeds to be sustained where they will not endanger residents. A system of interconnecting streets of varying designs can provide multiple routes that diffuse traffic congestion by keeping local traffic off regional roads and diverting through traffic away from local streets. Automobiles are most efficient when operated at steady, relatively low speeds (35-45 mph) with no stops. Optimizing the timing of existing signals and installing advanced control equipment can significantly reduce traffic congestion and fuel use. Conversely, increasing the number of stops and slow-downs or decreasing the average speed below optimal levels will increase energy consumption.

The *2000 Thoroughfare Plan* developed for Greenwood County and its municipalities identifies current and future carrying capacities of all roadways. The Plan also identifies areas for new construction and expansion of existing facilities, with the goal of greatly reducing travel times. Level of service indicators have been used to model the actual travel patterns within the County. A priority list of upgrades for use as funding becomes available was also developed that identified actual costs for improvements. While many of the improvements recommended in the Plan are still relevant, the Plan is dated and should be revised to reflect new and emerging road issues as well as the impact of new technologies on the County's road system.

9.13.3.3. MULTI-MODALISM

Sensible development practices encourage people to use alternative modes of travel – biking, walking or using transit – by providing safe routes to destinations. Interconnected streets reduce distances between points and ma_ke destinations easily accessible by multiple methods of travel. Although the option of driving to a destination still exists, better connections make the choice of an alternative mode for shorter trips much more appealing. Connections between adjacent commercial buildings and areas can be so poor that patrons are forced to return to their cars, drive back out to an arterial road, travel a few hundred feet to the adjacent parking lot and park again to reach a neighboring building.

DESIGNATED BIKE LANE

Most modern development patterns maximize convenience and safety for the automobile driver, but not for the pedestrian or cyclist. Today's suburban pedestrian must often travel a route five times longer than the direct distance to their destination. For people to choose to walk or bike on neighborhood streets they must feel as welcome and safe as those who choose to drive. Streets designed with many different users in mind encourage non-vehicular travel. Without a comfortable and safe environment for all users, people will continue to rely on the car for trips to and from home. The key principle to follow in designing successful multi-modal road systems is balance – ensuring the safety and quality of the street environment for all users.

South Carolina's mild winters and moderate temperatures throughout most of the year make walking a popular activity among residents. There is substantial evidence that if safe and adequate facilities are provided, many people will choose to walk to work, to run errands, and to obtain personal services. In addition to safety factors, field studies have shown that the level of aesthetic interest is a critical factor in choosing a walking route. People are generally unwilling to walk farther than 600 feet through a parking lot to reach a desired destination, yet they will walk much further along a street of storefronts.

Bikeways are most successful in reducing automobile travel in communities where development is compact and a mixture of land uses is encouraged. Although cycling for transportation and recreation is widespread, it is most popular in areas with relatively gentle terrain and in areas with a large student population such as a college or university. Bicycle paths should be physically separated from roadways whenever possible, and clearly marked by striping and signage when located adjacent to automobile travel lanes. Intersections and bridges should be designed to safely accommodate bicycle access where needed. To be effective,

pedestrian walkways and bike paths should be continuous, linking areas and activities on the site and connecting to locations and paths adjacent to the site.

Most Greenwood residents commute by car because it is convenient and provides reliable on-demand, door-to-door service, usually in a timely manner. However, public transit can provide a viable alternative to car travel if it provides a similar service. Many factors can encourage transit use, including traffic congestion, close proximity to home and work, ease of use, safety, reliability, timely delivery, and affordability. Transit systems are most convenient and yield the greatest energy and environmental benefits when a rider's origin and destination are located within walking distance of the transit station or stop. By placing housing and employment centers near existing and planned transit stations and stops, more people are likely to use transit. At present, there is no public transit system in Greenwood County. However, in recent years a travel alternative has emerged that enables customers to order personal door-to-door transportation services on demand, through the use of apps accessed by smart phones. While more expensive than public transit, on demand transportation is easily accessible and convenient, and can reduce the need for a personal vehicle.

9.13.3.4. TRAVEL ALTERNATIVES

Advances in technology have resulted in new ways to reduce vehicular traffic and conserve energy. While 657 Greenwood County residents reported working from their homes in 2013 (ACS, 2008-2013), improvements in communications and technology have the potential to produce significantly more home-based workers in the future. Although many of these workers operate their own businesses from their homes, a number of companies utilize telecommuting as a work option for their employees. Telecommuting is a practice in which employees work at home and communicate with the office by telephone and through the internet. Some telecommuters do all of their work from their home, while others work part of the week at home and part at their place of business. Each day an employee telecommutes or works at home eliminates at least one round trip.

Teleconferencing can also reduce work-related travel by removing the need to travel for meetings and training. Participants use telephone and internet video conferencing technology to hear and view other participants and to view presentations or other materials and exchange data and documents. The benefits of teleconferencing for employers include higher meeting attendance and increased participation, elimination of costly trips, less time away from the job for participants, and greater scheduling flexibility. These technologies can be utilized by individual companies, businesses, agencies, educational institutions, hospitals, and local governments.

Many communities are also encouraging employers to develop work schedule strategies that will help to reduce traffic congestion. Traffic congestion leads to reduced travel speeds, which results in excessive energy consumption. Alternative work schedules can reduce traffic congestion and energy consumption by shifting commuters out of the peak travel periods and eliminating commuter trips. With "compressed work weeks" employees work more than eight hours a day for four days in order to take the fifth day off – resulting in the elimination of one round trip per week. "Flex-time" scheduling allows workers to set their schedules depending upon their needs, with certain core hours when they must be at work. "Staggered work hours" can be used to reduce peak congestion by staggering start times of employees. Both flex-time and staggered work hour programs can reduce the number of workers commuting during peak travel times, although such programs may limit ridesharing opportunities.

9.14. GOALS, OBJECTIVES AND STRATEGIES FOR IMPLEMENTATION

GOALS/OBJECTIVE/STRATEGIES	ACCOUNTABLE AGENCY	TIMEFRAME
GOAL 9.1. PLAN THE LOCATION AND DEVELOPMENT OF TRANSPORTATION INFRASTRUCTURE TO ACCOMMODATE PRESENT AND FUTURE NEEDS		
OBJECTIVE 9.1.1. DEVELOP AND IMPLEMENT PLANS TO AID IN DECISION MAKING ON TRANSPORTATION ISSUES		
STRATEGY 9.1.1.1.		
Continue regional coordination with Upper Savannah COG, municipalities and neighboring counties, and with other public and private agencies in matters related to transportation and transit planning and prioritization.	Greenwood County, Municipalities, Upper Savannah COG, Neighboring Counties, Related Public and Private Organizations	On-going
STRATEGY 9.1.1.2.		
Develop a Comprehensive Transportation Plan for Greenwood County that fully incorporates multi-modal transportation options.	Greenwood County, Municipalities, SCDOT, Upper Savannah COG	2018
STRATEGY 9.1.1.3.		
Explore options for a light rail/trolley line through the development of a feasibility study and cost-benefit analysis.	City of Greenwood, Greenwood County	2020
STRATEGY 9.1.1.4.		
Adopt the Lake Greenwood Master Plan and implement transportation-related action items, to improve access to and promote the use of the Lake for a variety of activities for a wide range of residents.	Greenwood County, Municipalities, SCDOT	2016
STRATEGY 9.1.1.5.		
Evaluate the use of low speed vehicles such as golf carts with regard to safety concerns, efficient and appropriate integration into the transportation system, and considering the needs of such vehicles and their operators in planning for roads and parking.	Greenwood County, Municipalities, SCDOT	2018
GOAL 9.2. PROVIDE A SAFE, EFFICIENT, AND ACCESSIBLE MULTI-MODAL TRANSPORTATION SYSTEM		
OBJECTIVE 9.2.1. PROVIDE A SAFE AND EFFICIENT ROADWAY NETWORK THAT SUPPORTS LAND USE GOALS		
STRATEGY 9.2.1.1.		
Continue to acquire and allocate C-funds and leverage in-kind resources to maintain and enhance the County road network and supporting infrastructure.	Greenwood County, County Transportation Committee	On-going
STRATEGY 9.2.1.2.		
Encourage connected street systems within new developments and between new and existing developments.	Greenwood County, Municipalities	On-going
STRATEGY 9.2.1.3.		
Maximize the connectivity of local, connector and arterial components of the County's roadway network.	Greenwood County, Municipalities	On-going
STRATEGY 9.2.1.4.		
Explore incentives or requirements that would increase vehicular, pedestrian, and bicycle connectivity between existing subdivisions, commercial areas, public facilities, and employment centers.	Greenwood County, Municipalities, Private developers, local greenway and trail organizations	2018
STRATEGY 9.2.1.5.		
Support efforts and programs to increase transportation safety, such as the "Safe Routes to School" program.	Greenwood County, Municipalities, Greenwood County School Districts	On-going
STRATEGY 9.2.1.6.		
Assist CSX and SCDOT in their efforts to prevent rail crossing collisions.	Greenwood County, SCDOT, CSX	On-going
STRATEGY 9.2.1.7.		
Explore options to provide alternative access to residential areas with sole access across rail lines.	Greenwood County, SCDOT, CSX	2019
STRATEGY 9.2.1.8.		
Fully adopt and implement Complete Streets policies for all jurisdictions.	Greenwood County, Municipalities	2019

GOALS/OBJECTIVE/STRATEGIES	ACCOUNTABLE AGENCY	TIMEFRAME
OBJECTIVE 9.2.2. IMPROVE THE TRANSPORTATION NETWORK		
STRATEGY 9.2.2.1.		
Continue to actively seek funding and partnerships to improve and enhance roadways and corridors within the County.	Greenwood County, Municipalities	On-going
STRATEGY 9.2.2.2.		
Provide east-west roadway linkages south of the Airport and Uptown.	Greenwood County, Municipalities, Upper Savannah COG, SCDOT	2025
STRATEGY 9.2.2.3.		
Prioritize road improvements north of SC Highway 72 West and SC Highway 34 East.	Greenwood County, Municipalities, Upper Savannah COG, SCDOT	2018
STRATEGY 9.2.2.4.		
Implement the 2000 Greenwood County Thoroughfare Plan.	Greenwood County, Municipalities, Upper Savannah COG, SCDOT	On-going
STRATEGY 9.2.2.5.		
Seek Transportation Alternatives Program funding for planned bicycle and pedestrian facilities, streetscaping projects, and Safe Routes to School programs.	Greenwood County, Municipalities, Upper Savannah COG, SCDOT	On-going
STRATEGY 9.2.2.6.		
Explore the implementation of a penny sales tax to fund transportation improvements.	Greenwood County, Municipalities	On-going
STRATEGY 9.2.2.7.		
Explore the incorporation of exactions such as impact fees to fund the cost of infrastructure associated with new development.	Greenwood County, Municipalities	2018
STRATEGY 9.2.2.8.		
Evaluate road design standards to determine if updates are needed to accommodate current and future needs and reflect changes in the transportation industry.	Greenwood City/County Planning Commission	2017
STRATEGY 9.2.2.9.		
Incorporate pedestrian and bicycle infrastructure requirements into County and City development standards.	Greenwood City/County Planning Commission	2017
STRATEGY 9.2.2.10.		
Discourage the inclusion of dead end streets and cul-de-sacs in developments that can discourage bicycle and pedestrian travel and increase vehicle miles traveled.	Greenwood County, Municipalities	2017
STRATEGY 9.2.2.11.		
Support state, regional and local efforts for the implementation of high speed rail route in close proximity to the County.	Greenwood County City of Greenwood Greenwood Partnership Alliance SCDOT	On-going
OBJECTIVE 9.2.3. SUPPORT TRANSIT OPTIONS TO INCREASE MOBILITY AND ACCESSIBILITY FOR RESIDENTS AND VISITORS		
STRATEGY 9.2.3.1.		
Conduct a comprehensive long-range transit study for Greenwood County.	Greenwood County, Municipalities, Upper Savannah COG, SCDOT, Related Public and Private Organizations	2018
STRATEGY 9.2.3.2.		
Facilitate and encourage the use of alternative modes of travel by County and municipal employees.	Greenwood County, Municipalities	On-going
OBJECTIVE 9.2.4. SUPPORT AND PROMOTE THE GREENWOOD COUNTY AIRPORT		
STRATEGY 9.2.4.1.		
Continue to improve airport infrastructure, facilities, and related amenities.	Greenwood County	On-going
STRATEGY 9.2.4.2.		
Explore options to increase utilization of the Airport and promote the Airport and as a regional transportation and shipping option.	Greenwood County Partnership Alliance Airport Advisory Group	Ongoing

GOALS/OBJECTIVE/STRATEGIES	ACCOUNTABLE AGENCY	TIMEFRAME
STRATEGY 9.2.4.3.		
Install and upgrade facilities, technology and equipment as needed to accommodate current and future airport needs.	Greenwood County	On-going
STRATEGY 9.2.4.4.		
Provide upgrades to accommodate regional freight transport.	Greenwood County, Partnership Alliance	On-going
GOAL 9.3. CREATE AN INTERCONNECTED NETWORK OF TRAILS, SIDEWALKS, AND GREENWAYS THAT PROMOTES ACTIVE ACCESS TO LIVE, WORK, AND RECREATION DESTINATIONS FOR A WIDE RANGE OF NON-MOTORIZED USERS		
OBJECTIVE 9.3.1. PROVIDE AND MAINTAIN ADEQUATE, SAFE AND ACCESSIBLE TRAILS, SIDEWALKS AND GREENWAYS IN APPROPRIATE AREAS TO ENCOURAGE THE USE OF ALTERNATIVE MODES OF TRAVEL BY RESIDENTS AND VISITORS		
STRATEGY 9.3.1.1.		
Implement the Greenwood Pedestrian and Bicycle Master Plan and update as needed.	Greenwood County, Municipalities	2016
STRATEGY 9.3.1.2.		
Explore additional opportunities to provide pedestrian and bicycle connectivity between existing and planned parks, recreation areas, subdivisions, trails, and greenways.	Greenwood County, Municipalities, local greenway and trails organizations	On-going
STRATEGY 9.3.1.3.		
Prioritize the construction of sidewalks, bikes lanes, trails, and greenways that will create connectivity between existing facilities.	Greenwood County, Municipalities, US COG, SCDOT	2016
STRATEGY 9.3.1.4.		
Explore ways to provide bicycle and pedestrian connections between residential, public facilities, commercial, and industrial uses that will enable alternative transportation opportunities, to include the dedication of rights-of-way to accommodate future connections.	Greenwood County, Municipalities	On-going
STRATEGY 9.3.1.5.		
Work with the County School Districts to include maximizing opportunities for walking and biking to school when selecting sites for new schools.	Greenwood County, Municipalities, Greenwood County School Districts	On-going
STRATEGY 9.3.1.6.		
Work with County school districts and SCDOT to include enhanced bicycle and pedestrian facilities in the design of new roads and improvements to existing roads within close proximity to schools.	Greenwood County, Municipalities, Greenwood County School Districts	On-going
STRATEGY 9.3.1.7.		
Evaluate the efficiency of bicycle and pedestrian efforts and programs through measures that include an inventory of bicycle and pedestrian\trail miles, bike lanes, and other facilities; review of traffic counts and online and on-site surveys of cyclists and pedestrians at key locations to analyze facility use; and pre and post evaluations of road and traffic calming projects using data on bicycle and pedestrian accidents, traffic volumes for motor vehicles, cyclists and pedestrians, and average motor vehicle speeds.	Greenwood County, Municipalities, Upper Savannah COG	2017
STRATEGY 9.3.1.8.		
Review and revise parking standards to encourage bicycle and pedestrian access, accommodate cyclists at park and ride facilities, and provide bicycle parking.	Greenwood County, Municipalities	2017
STRATEGY 9.3.1.9.		
Develop a mapped inventory of sidewalks in the County and municipalities and update the inventory on a regular basis.	Greenwood County, Municipalities	2018

GOALS/OBJECTIVE/STRATEGIES	ACCOUNTABLE AGENCY	TIMEFRAME
GOAL 9.4. REDUCE ENERGY USED FOR TRANSPORTATION		
OBJECTIVE 9.4.1. REDUCE ENERGY USE THROUGH STREET AND PARKING DESIGN		
STRATEGY 9.4.1.1.		
Encourage pedestrian protection measures at intersections.	Planning Commission	On-going
STRATEGY 9.4.1.2.		
Discourage the use of cul-de-sacs in developments.	Planning Commission	2018
STRATEGY 9.4.1.3.		
Encourage connection between parking areas within adjacent development when possible.	SCDOT, City/County Engineering	On-going
STRATEGY 9.4.1.4.		
Focus economic development efforts on the reuse of existing properties and the use of infill properties.	Planning Commission	2018
OBJECTIVE 9.4.2. PROVIDE A MULTI-MODAL TRANSPORTATION SYSTEM		
STRATEGY 9.4.2.1.		
Encourage integration of alternative modes of transportation in new developments.	Planning Commission	2018
STRATEGY 9.4.2.2.		
Study the feasibility of adding a ride share facility for residents that travel outside of the County for employment.	Upper Savannah COG	2017
OBJECTIVE 9.4.3. PROVIDE AND PROMOTE TRAVEL ALTERNATIVES		
STRATEGY 9.4.3.1.		
Promote telecommuting and home occupations as a way to reduce the need for travel.	Planning Commission	On-going
STRATEGY 9.4.3.2.		
Promote the use of video conferencing for local and out of town meetings to reduce the need for travel.	Greenwood County, City of Greenwood	On-going
STRATEGY 9.4.3.3.		
Explore the use of compressed work weeks, flex time and staggered work hours to reduce traffic congestion at peak times.	Greenwood County, City of Greenwood	On-going

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