CHAPTER VIII. TRANSPORTATION ELEMENT

The transportation and 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. Transportation facilities are 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 traffic, 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. An understanding of these relationships is critical to solving and even preventing transportation related problems such as congestion, energy consumption and conservation, air quality, public health and safety, and access to services and employment.

The Transportation Element provides an analysis of transportation systems serving the City 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.

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, the reality is that most often funding for infrastructure, particularly at the local level, is so limited that transportation resources are directed where needed most urgently – to address immediate problems such as congestion and safety issues that are caused by increased traffic volume. Even the best planned transportation system cannot address every possible future development scenario or advances in technology. 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 shift in 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. Transportation systems are built upon a broad, multi-modal network of

options that include rail, air travel, shipping, reliable and responsive public transit systems, and safe and interconnected pedestrian and bicycle pathways. In general, a transportation system can be defined as any means used to move people and/or products.

The transportation system serving the City of Clemson forms the framework and pattern around which the City has developed. Several physical constraints have shaped the system, notably the rail lines that bisect the City, existing roads that connected the community to the surrounding areas, and Lake Hartwell. In the City's early years residential areas developed in close vicinity to the downtown and Clemson University campus, but most lacked interconnectivity with other residential areas. This continued as the City expanded to the north and east. These growth patterns resulted in suburban development devoid of connectivity between neighborhoods and adjacent land uses, a situation that is common in many communities across the Southeast and throughout the nation.

A. ROAD NETWORK

According to the *South Carolina Comprehensive Multimodal Long Range Transportation Plan*, demand for travel in the State is growing at a pace that is approximately twice as fast as population growth. This growth in travel has far outpaced the rate of expansion of the South Carolina highway system. While travel is 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 the City of Clemson to work with Pickens County and regional partners to plan for transportation needs for the coming decade, particularly as they relate to future land use.

1. LOCAL ROAD FUNDING

a. City of Clemson

The City of Clemson allocates two mills of property tax revenues to the City's Street Fund each year. These funds are used for road maintenance, paving, sidewalks, drainage, and other street improvements. For FY 2014-2015, funding allocated for these purposes was $116,000.

b. C-Funds

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 are 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 its members appointed by the County legislative delegation. The Committee has the authority to decide which transportation projects will be

constructed or improved. The CTC is empowered with the authority to select and approve projects to be funded utilizing C-Funds.

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 spent 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 projects related to the local transportation system.

2. Road Naming and Addressing

Road naming or renaming requests from developers or interested parties in the City of Clemson must be submitted to the Planning Commission for approval. Proposed road names must not duplicate or be similar to existing street names in the City.

Addresses within the City of Clemson are assigned by the City of Clemson E-911 Coordinator. Addresses must be assigned and approved by the E-911 Coordinator before final plat approval can be granted for new developments. Address assignments are coordinated with the County's 911 database to provide the best possible dispatching of emergency services to the community.

3. Road Network

There are more than 95 miles of roads within the City of Clemson, of which 62 miles (65.3%) are owned and maintained by the City. The State of South Carolina owns and maintains approximately 30 miles of road (31.6%) and Pickens County owns and maintains approximately 2.4 miles of road within the City.

As currently established, the road network provides adequate access to neighboring cities and the region. The City is linked to the City of Anderson and Interstate 85 by US 76 and US 123. US 123 connects Clemson to the Cities of Easley and Greenville to the east and the City of Seneca to the west. These transportation corridors open employment and shopping opportunities to residents and provide the region's labor force better access to employers.

B. 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 varies 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. 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:

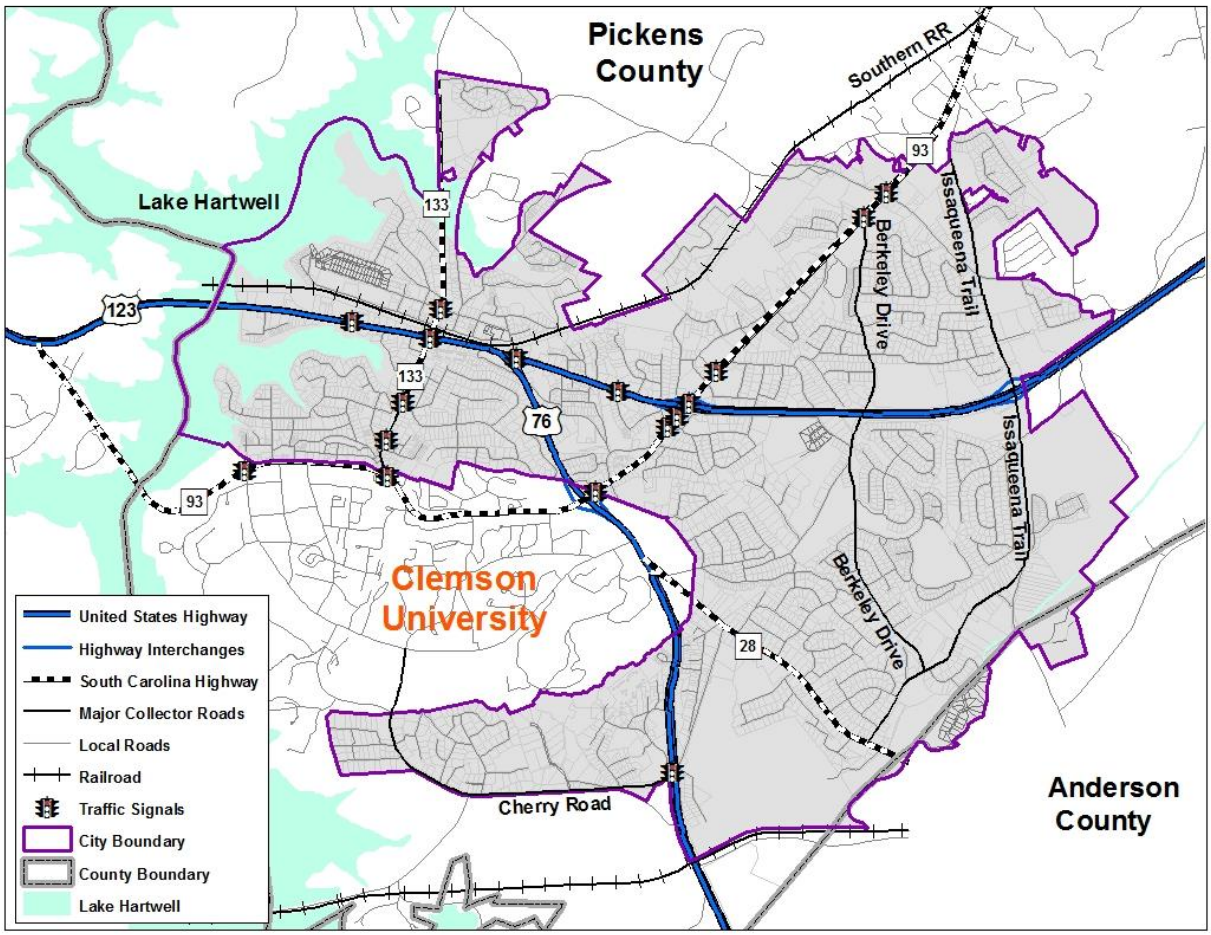
- ***Freeways (Interstates)*** – multi-lane divided roadways with full control of vehicular access. Freeways operate under the purest form of uninterrupted flow, with no fixed elements such as traffic signals to interrupt the traffic flow.
- ***Arterials*** – provide the highest level of service at the 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 whose design should be expected to provide 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 primarily 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 the 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.

Tiger Boulevard (US 123) is the only major arterial within the City. Old Greenville Highway (SC 93), College Ave (SC 133), and Anderson Highway (US 76) are classified as minor arterials (Map 1). The City has several collector roads including Issaqueena Trail, Berkeley Drive, and Pendleton Road. There are three major interchanges with grade separations in the City: US 123 at Issaqueena Trail, US 123 at SC 93, and US 76 at SC 93.

MAP VIII-1. CITY OF CLEMSON ROAD NETWORK



Source: City of Clemson Planning and Codes Department, 2014

C. TRAFFIC COUNTS

Table VIII-1 reflects the average daily traffic counts at locations throughout the City during 2002, 2008, 2011, and 2012. The locations of the traffic counts are depicted in Map VIII-4. In the ten-year period from 2002 to 2012, traffic volumes in the City of Clemson shifted considerably. The change in traffic patterns is likely the result of changing housing patterns. As discussed in the Existing Conditions section of the Housing Element included in the City's 2024 Comprehensive Plan, there has been a shift in the location of residential units, with an increasing number of units being constructed outside of predominantly single-family neighborhoods near the core of the City and along the Old Greenville Highway corridor. As provided in the average daily traffic counts (Table VIII-5), the number of vehicles on Old Greenville Highway (SC 93) south of US 123 increased by 18.6 % from 2002 to 2012. Similarly, the traffic on Berkeley Drive north of US 123 increased by more than 37% during that time period. A major contributing factor to this increase is the 31.3% growth in housing units in the

Berkeley Drive area, coupled (*Map VI-1 - Housing Unit Percent Change by Block Group 2000 to 2010)* with the opening of Clemson Elementary School in 2000.

Other areas around Clemson have seen a net reduction in traffic from 2002 to 2012. Traffic at the intersection of SC 133 at US 123 decreased by 11.6% from 2002 to 2008. However, traffic at the same intersection increased by 18.4% from 2008 to 2012. This recent decrease can be attributed to the Downtown streetscape enhancements that were designed to slow traffic in the inner core of the City and make Downtown a destination rather than a shortcut to Clemson University. Under these projects, the number of lanes was decreased from four to two, on-street parking was added, and sidewalks were widened.

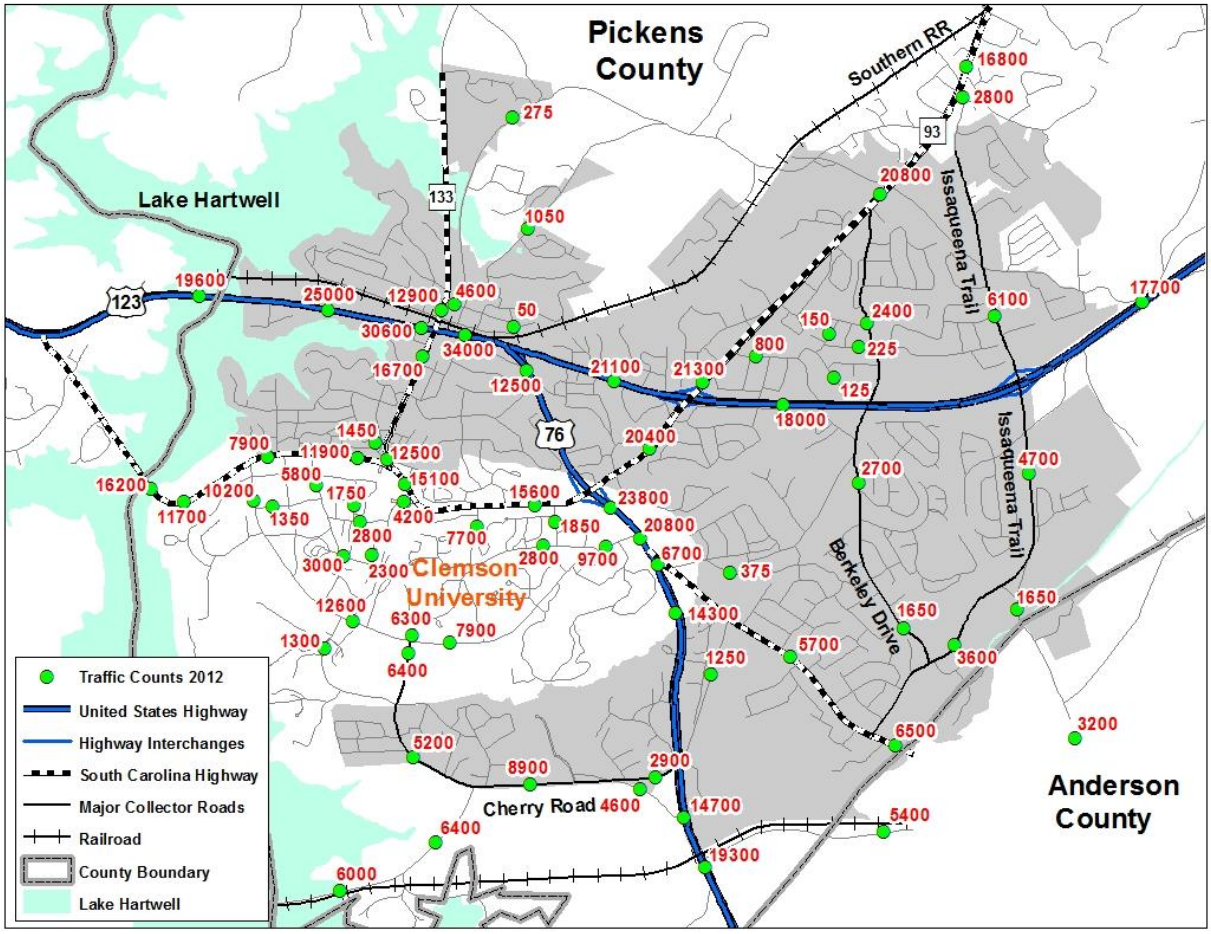
Average daily traffic decreased on Berkeley Drive south of US 123, Issaqueena Trail south of US 123, and Pendleton Road from 2002 to 2012. To contextualize the higher traffic numbers along these corridors in 2002, Old Greenville Highway (SC 93) was experiencing considerable road construction at that time. The sidewalk, bike lane, and travel lane upgrades to Old Greenville Highway (SC 93) have resulted in net decreases in annual average daily traffic on Pendleton Road and on Berkeley Drive, south of US 123. The 9.3% increase in traffic on Issaqueena Trail from 2008 to 2012 is likely due to major upgrades to the Nettles Park recreation facility and construction of the Patrick Square mixed-use development. There were significant upgrades to the Nettles Park facilities in 2003 and to playing fields in 2008. Patrick Square, a traditional neighborhood development, began construction in 2008. From 2008 to 2012, citywide use of these areas increased dramatically, therefore increasing the annual average daily traffic on Issaqueena Trail.

TABLE VIII-1. AVERAGE DAILY TRAFFIC COUNTS, CITY OF CLEMSON

Route Location	DOT Station ID	2002	2008	Change 2002-2008	2011	2012	Change 2008-2012	Change 2002-2012
US 123 East of SC 133	107	34,300	31,600	-7.87%	32,900	34,000	7.59%	-0.87%
US 123 West of SC 133	103	24,700	23,600	-4.45%	23,600	25,000	5.93%	1.21%
SC 133 at US 123	305	18,900	14,100	-25.39%	15,200	16,700	18.44%	-11.64%
SC 93 South of US 123	255	17,200	20,400	18.60%	20,500	20,400	0.00%	18.60%
SC 93 North of US 123	257	21,400	22,000	2.80%	21,600	21,300	-3.18%	-0.47%
Perimeter Rd	699	12,300	12,100	-1.62%	11,500	12,600	4.13%	2.44%
Pendleton Rd	418	7,600	7,200	-5.26%	7,100	6,700	-6.94%	-11.84%
Berkeley Dr South of US 123	681	3,100	3,100	0.00%	3,000	2,700	-12.90%	-12.90%
Berkeley Dr North of US 123	683	1,750	2,700	54.28%	2,900	2,400	-11.11%	37.14%
Issaqueena Trl South of US 123	675	5,100	4,300	-15.68%	4,800	4,700	9.30%	-7.84%
Issaqueena Trl North of US 123	673	6,100	5,400	-11.47%	7,600	6,100	12.96%	0.00%
US 76	113	20,900	21,200	1.43%	21,300	20,800	-1.89%	-0.48%

Sources: City of Clemson Planning and Codes Department, 2014; SCDOT, 2012

MAP VIII-2. ANNUAL AVERAGE DAILY TRAFFIC COUNT LOCATIONS, 2012
CITY OF CLEMSON



Sources: City of Clemson Planning and Codes Department, 2014; SCDOT, 2012

The primary traffic generator within the City and the greater area is Clemson University. Students, faculty, and staff fuel traffic levels on a daily basis. However, the University also generates a significant amount of traffic through spectator events, concerts, conferences, and seminars. Main access routes to the University run through the City, creating congestion during peak travel times. Spectator events, most notably football games where attendance exceeds 80,000 to 100,000 additional people, create substantial traffic issues including bottlenecks before and afterward, particularly along College Ave (SC 133), SC 93, and US 123.

A second contributor to the increase in traffic coincides with Clemson University's academic year. The University allows all students, regardless of academic year, to keep a car on campus. Historically, freshmen were not able to keep a car on campus during their first year, but more recently, this tradition has changed. With parking on and near campus in short supply, this creates additional traffic issues. Often students, faculty, students, staff, and visitors must circle the roads to find an open parking space. While this parking shortage does not increase the

number of cars on the road, it does increase vehicle miles traveled. However, Clemson University is working on innovative smartphone applications to provide real-time data for available parking on campus.

D. COMMUTING PATTERNS

More than two-thirds of Clemson workers (4,168 persons) are employed in Pickens County and nearly one-third (1,998 persons) are employed within the City. Nearly one-third (30.5%) of workers (1,854 person) who live in the City travel outside of the County for employment. By comparison, just over half (55.3%) of Pickens County resident workers aged 16 and older are employed in Pickens County, while the other 43.6% of workers travel outside of the County to work. Statewide, only 23.5% of workers travel outside of their county of residence to work.

TABLE VIII-2. PLACE OF WORK, 2012
CITY OF CLEMSON, PICKENS COUNTY, AND SOUTH CAROLINA

Place of Work	Clemson		Pickens County		South Carolina	
Total Workers 16 and Older	6,077	100.0%	49,932	100.0%	1,988,444	100.0%
Worked in County of Residence	4,168	68.6%	27,606	55.3%	1,417,773	71.3%
Worked in City/Town of Residence*	1,998	32.9%	5,185	10.4%	321,488	16.2%
Worked Outside County of Residence	1,854	30.5%	21,787	43.6%	467,626	23.5%
Worked Outside State of Residence	55	0.9%	539	1.1%	103,045	5.2%

* Of those persons living in a city or town – also included in those working in County of Residence
Source: US Census Bureau, 2007-2012 American Community Survey.

Table VIII-3 lists the ten counties with the most residents traveling to employment in Pickens County, as well as those counties with the largest numbers of Pickens County commuters. Map VIII-2 illustrates the county of origin for most workers commuting into Pickens County and the top destinations of Pickens County workers.

More than 11,500 workers from surrounding counties travel to Pickens County employers. An estimated 30% of jobs in the County are held by non-residents. Anderson County leads with the most residents who travel to Pickens County employers, followed by Oconee, Greenville, and Spartanburg Counties (Table VIII-3).

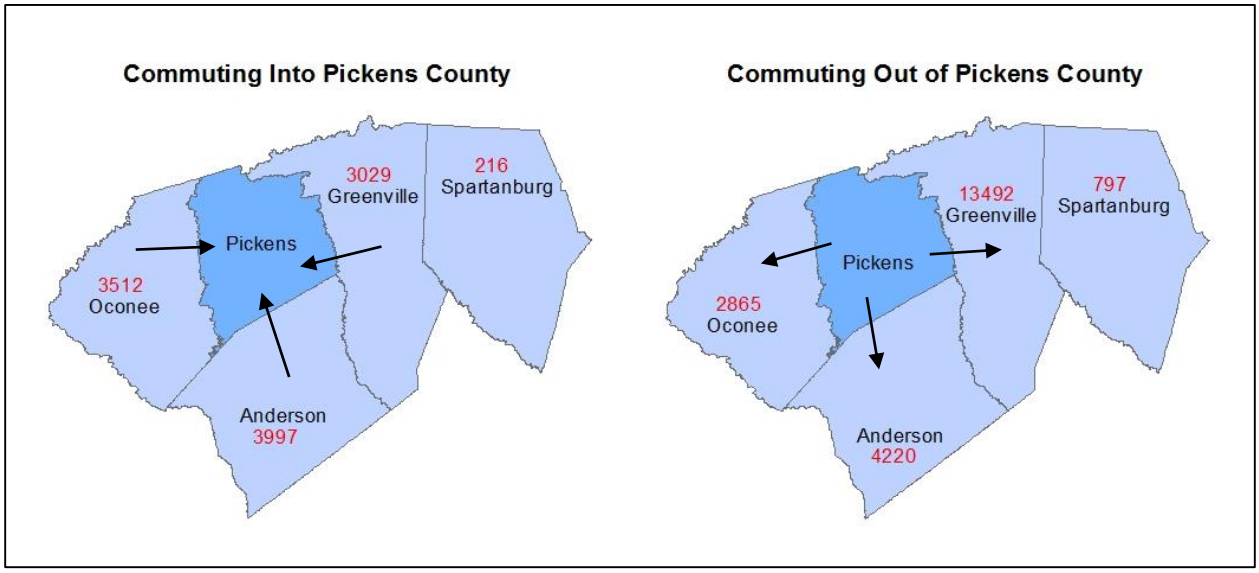
Just over 22,500 workers from Pickens County commute to jobs outside the County. The majority of the Pickens County residents who travel outside the County for employment commute to Greenville County, followed by Anderson, Oconee, Spartanburg Counties in South Carolina and Mecklenburg County in North Carolina (Table VIII-3).

TABLE VIII-3. WORKERS COMMUTING INTO AND FROM PICKENS COUNTY, 2010
TOP 10 COUNTIES

Non-residents Working in Pickens County		Pickens County Residents Commuting Out of County	
27,836	Pickens County, SC	27,836	Pickens County, SC
3,997	Anderson County, SC	13,492	Greenville County, SC
3,512	Oconee County, SC	4,220	Anderson County, SC
3,029	Greenville County, SC	2,865	Oconee County, SC
216	Spartanburg County, SC	797	Spartanburg County, SC
132	Richland County, SC	110	Mecklenburg County, NC
58	Habersham County, GA	92	Richland County, SC
51	Newberry County, SC	78	Laurens County, SC
51	York County, SC	76	Caroline County, VA
43	Fulton County, GA	64	Lexington County, SC

Source: US Census Bureau, 2006-2010 American Community Survey.

MAP VIII-2. WORKERS COMMUTING INTO AND FROM PICKENS COUNTY, 2010



Source: US Census Bureau, 2006-2010 American Community Survey.

Data from Alliance Pickens (Table VIII-4) provides a picture of where workers in Pickens County live. While the majority of Pickens County workers live outside of municipalities or in other counties, 5.4% (1,929 workers) live in the City of Clemson. In recent years this percentage has remained relatively steady, dropping only slightly from 5.6% in 2008 and 2009. This information supports data provided in Table VIII-2, indicating that a comparatively high percentage of Clemson residents work within the City.

TABLE VIII-4. JURISDICTIONS WHERE PICKENS COUNTY WORKERS LIVE, 2010

Jurisdictions	2008		2009		2010	
	Count	Share	Count	Share	Count	Share
Total Jobs in Pickens County	**39,854**	**100.0%**	**37,393**	**100.0%**	**35,639**	**100.0%**
Easley City, SC	3,079	7.7%	2,819	7.5%	2,534	7.1%
Clemson City, SC	2,200	5.6%	2,088	5.6%	1,929	5.4%
Greenville City, SC	704	1.8%	718	1.9%	670	1.9%
Liberty City, SC	639	1.6%	663	1.8%	617	1.7%
Central Town, SC	669	1.7%	528	1.4%	584	1.6%
Seneca City, SC	632	1.6%	527	1.4%	522	1.5%
Pickens City, SC	670	1.7%	567	1.5%	504	1.4%
Anderson City, SC	515	1.3%	582	1.6%	445	1.2%
Arial CDP, SC	468	1.2%	425	1.1%	429	1.2%
Powdersville CDP, SC	435	1.1%	372	1.0%	411	1.2%
All other locations	29,823	74.8%	28,104	72.2%	26,994	75.7%

Source: Alliance Pickens, Worker Commuting Patterns, July 2012

Estimates provided by the US Census Bureau reveal that the population of Pickens County decreases by 9.3% during the daytime due to workers traveling to neighboring counties. Statewide, county populations collectively decrease by 0.7% during the daytime. These trends are in contrast to the City of Clemson, where the population increases by 9.5% due to an influx of workers from neighboring communities (Table VIII-5).

TABLE VIII-5. DAYTIME POPULATION AND EMPLOYMENT RESIDENCE RATIOS, 2010
CITY OF CLEMSON, PICKENS COUNTY AND SOUTH CAROLINA

Employment-Residence Ratio Factor	City of Clemson	Pickens County	South Carolina
Total Resident Population	13,596	117,823	4,511,428
Total workers working in area	7,354	39,571	1,957,105
Total workers living in area	6,057	50,511	1,989,319
Estimated daytime population	14,893	106,883	4,479,214
Daytime population change due to commuting	1,297	-10,940	-32,214
Daytime population change due to commuting	9.5%	-9.3%	-0.7%
workers who lived and worked in same area	1,612	27,836	1,888,695
Workers who lived and worked in same area	26.6%	55.1%	94.7%
Employment Residence (E-R) Ratio	1.21	0.78	0.98

Source: US Census Bureau, 2006-2010 American Community Survey.

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 Pickens County is 0.78, indicating that the County is considered to be a net exporter of labor to other counties (Table VIII-5). Conversely, the City of Clemson's overall E-R ratio of 1.2 indicates that the City is an importer of labor from other areas, with 21% more persons in the workforce working in the City than living in the City.

Personal vehicles are the primary travel mode for most Clemson residents (Table VIII-6). Just over three-fourths of City workers drive solo to work, while approximately 20% use alternate modes to travel to work such as public transportation, bicycles, or walking. The City has one of the most well used transit systems in the State, as evidenced by the higher percentage of the population (3.6%) who use public transportation to travel to work, compared with only 0.5% of County workers and 0.6% of workers statewide. Nearly 4% of workers in the City work at home, high when compared to the 2.3% of County workers and 3.6% of workers statewide who work at home.

TABLE VIII-6. MEANS OF TRANSPORT AND TRAVEL TIME TO WORK, 2010
CITY OF CLEMSON, PICKENS COUNTY, AND SOUTH CAROLINA

Workers 16 and Older	City of Clemson	Pickens County	South Carolina
Means of Transport to work			
Car, Truck, or Van - Drove Alone	77.8%	85.2%	82.2%
Car, Truck, or Van - Carpooled	6.6%	7.7%	9.9%
Public Transportation	3.6%	0.5%	0.6%
Walked	6.1%	3.2%	2.0%
Bicycle	1.9%	0.3%	0.3%
Taxicab, Motorcycle, or Other Means	0.1%	0.8%	1.3%
Worked at Home:	3.9%	2.3%	3.6%
Travel Time to work			
14 minutes or less	53.6%	31.9%	28.6%
15 - 29 minutes	28.6%	34.6%	40.3%
30 to 59 minutes	14.1%	28.9%	25.9%
60 minutes or more	3.6%	4.6%	5.2%
Mean Travel Time to Work (minutes)	17.0	23.4	23.4

Source: US Census Bureau, 2006-2010 American Community Survey

More than half (53.6%) of City residents have relatively short commutes of less than 15 minutes – higher than the percentages countywide and statewide at 31.9% and 28.6%, respectively. Only 14.1% of Clemson workers travel 30 minutes or longer to work –less than half of the percentage of workers in Pickens County (28.9%) and much lower than South Carolina workers (25.9%). Mean travel time to work for Clemson workers is only 17.0 minutes – much shorter than for workers both countywide and statewide at 23.4 minutes.

E. TRANSPORTATION PLANNING

1. STATEWIDE PLANNING

In June 2007, the *Department of Transportation Reform Bill* (*Act 114*) was signed into State law. *Act 114* gives direct control over the top three levels of the South Carolina Department of Transportation (SCDOT) to the Governor, enables the Governor to appoint a Secretary of Transportation, and provides stringent criteria for the ranking of State road projects within the context of a state transportation plan. In addition to creating an at-will Director appointed by the Governor, the legislation is intended to encourage sound infrastructure investments by requiring that these decisions be made within the context of the statewide transportation 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;
1. Public safety;
2. Potential for economic development;
3. Traffic volume and congestion;
4. Truck traffic;
5. Pavement quality index;
6. Environmental impact;
7. Alternative transportation solutions; and
8. Consistency with local land use plans.

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.

2. Regional Planning

a. Greenville Urbanized Area

Per the 2010 Census, the City of Clemson is located in the Greenville Urbanized Area (UZA). The Greenville Urbanized Area is one of 3,573 urbanized areas in the United States, of which 179 are classified as Large Urbanized Areas. Large Urbanized Areas are defined as having over 200,000 persons living in the area, as determined by the US Census. The Greenville Urbanized Area includes 400,492 people, living in 32 cities in Greenville County, Pickens County, and Anderson County (Map VIII-2).

The Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) require all Large Urbanized Areas with populations over 200,000 be designated as Transportation Management Areas (TMA). All TMAs are subject to special planning and programming requirements. In 2012, the City of Clemson was incorporated into the Greenville TMA. Since 2013 all federal transit funding decisions for the City of Clemson have been made through the Greenville Pickens Area Transportation Study (GPATS) Metropolitan Planning Organization (MPO). Prior to the 2010 Census, all federal transportation funds were issued through the Appalachian Council of Governments (ACOG), the regional planning organization which works with SCDOT to develop regional priorities for rural areas of upstate South Carolina.

b. Greenville Pickens Area Transportation Study

The Greenville Pickens Area Transportation Study (GPATS) Metropolitan Planning Organization (MPO) plans and prioritizes all of the federally-funded transportation improvements in the Greenville UZA, which includes the municipalities of Central, Clemson, Easley, Fountain Inn, Greenville, Greer, Liberty, Mauldin, Norris, Pelzer, Pendleton, Pickens, Simpsonville, Travelers Rest, West Pelzer, and Williamston. MPOs are required for all census-defined UZAs with 50,000 or greater populations. There are eleven MPOs in South Carolina: Anderson, Aiken, Charleston, Columbia, Florence, Greenville, Grand Strand, Hilton Head, Rock Hill, Spartanburg, and Sumter.

Transportation planning under GPATS is carried out under the guidance of the Federal *Moving Ahead for Progress for the 21st Century* or MAP-21, which was signed into law on July 6, 2012. MAP-21 was created 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. MAP-21 prescribes participatory, comprehensive long-range transportation planning and development of financially feasible local intermodal plans. The legislation incorporates seven national goals, listed in Figure VIII-1.

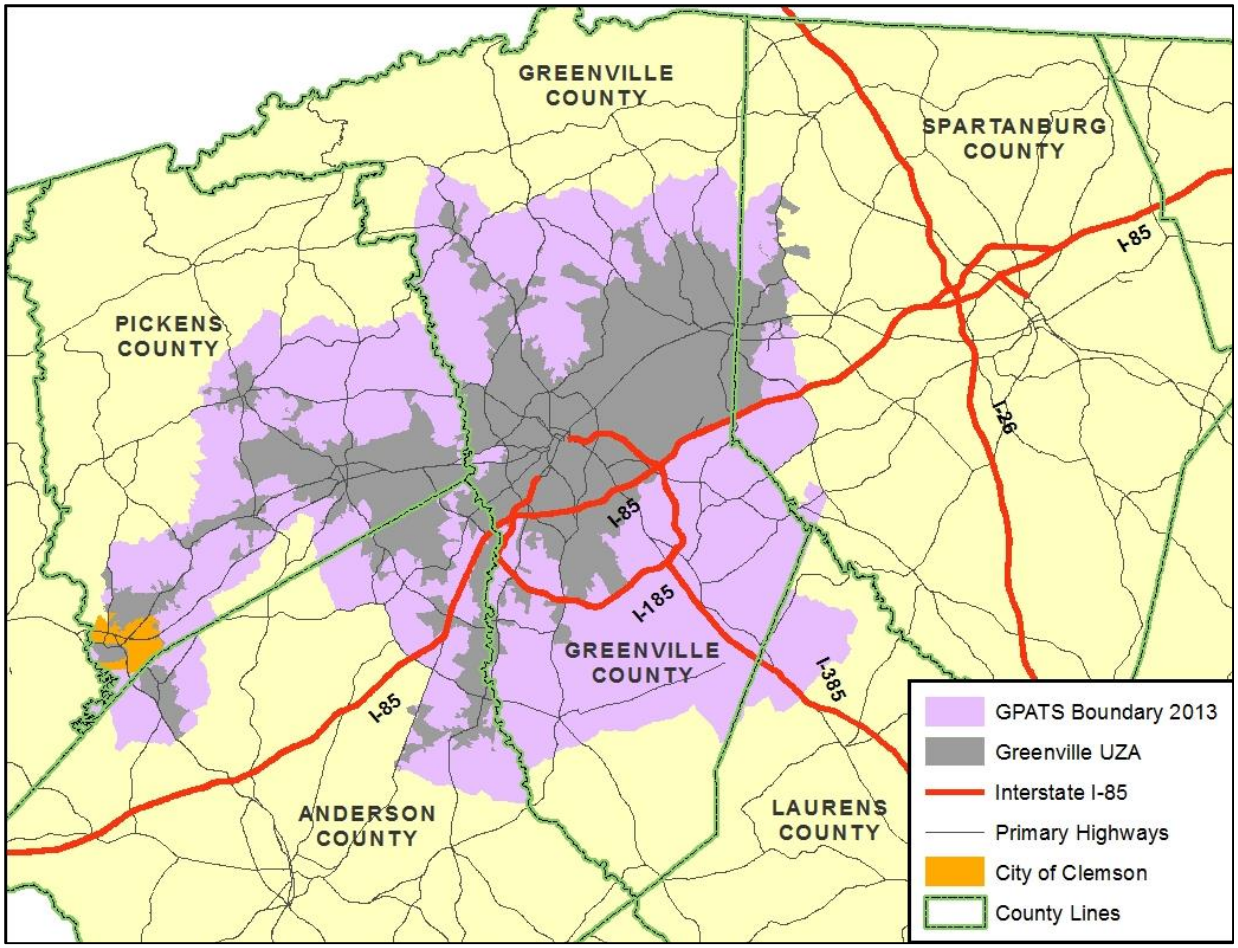
FIGURE VIII-1. MAP-21 NATIONAL GOALS

1. *Safety* - To achieve reduction in fatalities and serious injuries on all public roads.
2. *Infrastructure Condition* – To maintain highway infrastructure assets in 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 Analysis, AASHTO, July 2012

GPATS is organized and administered based on decisions made by the GPATS Policy Committee. These decisions are reviewed and recommended by the GPATS Study Team, GPATS Staff, and the Citizen Advisory Committee. The GPATS Policy Committee is comprised of 27 committee members that include: mayors of member municipalities, County Council members, State senators and representatives, South Carolina Department of Transportation (SCDOT) Commissioners, and representatives from area public transportation agencies. The Study Team includes planners, engineers, public works staff, city and county representatives from member jurisdictions, SCDOT staff, FHWA staff, ACOG staff, and staff from the two public transit operators in the UZA– Clemson Area Transit and Greenlink. The 2010 Census delineations expanded the GPATS region to include seven additional municipalities: Liberty, Norris, Central, Clemson, Pendleton, West Pelzer, and Williamston (Map VIII-3). While GPATS has historically been administered by four persons employed by Greenville County, the GPATS staff has been expanded to accommodate the increased complexities and workload generated by this expansion.

MAP VIII-3. GREENVILLE PICKENS AREA TRANSPORTATION STUDY GEOGRAPHY



Source: City of Clemson Planning and Codes Department 2014

GPATS sets priorities for all federal transportation funding in the area, in cooperation with SCDOT, FHWA, and the Federal Transit Administration (FTA). GPATS encourages public involvement and feedback and helps determine how funds will be spent in the study area. GPATS is responsible for developing and updating several transportation programming plans, including the Long Range Transportation Plan (LRTP), Transportation Improvement Program (TIP), Unified Planning Work Program (UPWP), and a travel demand forecasting model for the study area. Together these plans foster a comprehensive and cohesive transportation network in the Greenville UZA.

GPATS is responsible for the allocation of federal funding for all federal and state roads in the Clemson area. As previously depicted in Map VIII-1, these roads include Tiger Boulevard (US 123), Old Greenville Highway (SC 93), College Ave (SC 133), Anderson Highway (US 76), Issaqueena Trail, Cambridge Drive, Pendleton Road, Old Central Road, and Berkeley Drive.

c. *Long Range Transportation Plan*

The GPATS *Long Range Transportation Plan* (LRTP) defines regional priorities based on a 25-year horizon. The LRTP includes a fiscally constrained and prioritized list of highway, transit, bicycle, and pedestrian projects to be completed in the next 25 years, based on current funding levels. The LRTP is updated and adopted by the GPATS Policy Committee every five years. During these updates, each potential road project is evaluated by the GPATS Study Team in conjunction with SCDOT. The GPATS Policy Committee must create a LRTP that provides a balance of economic development goals and strategies with community investments. This balancing act involves cooperation at local, regional, state, and federal levels. As high-priority road projects approach construction they are moved from the Long Range Transportation Plan to the Transportation Improvement Program (TIP).

As of 2014, there are several roadway and intersections projects in the City of Clemson on the GPATS LRTP. Table VIII-7 identifies the City's highway projects and provides the ranking of each project within the plan. Table VIII-8 highlights Clemson's intersection projects in the LRTP. A complete list of projects is included in the GPATS LRTP (www.gpats.org).

TABLE VIII-7. CITY OF CLEMSON LONG RANGE TRANSPORTATION HIGHWAY PROJECTS IN GPATS

Rank	Project Name	Termini	Improvement
46	SC 133	US 123 to Madden Bridge Rd	Complete Street – widen to 3 lanes
64	US 123	SC 76 to SC 133	General Improvements
82	Pendleton Rd	SC 76 to Canterbury Rd	Complete Street – widen to 3 lanes
84	Old Central Rd	SC 93 to Elm St	Complete Street – widen to 3 lanes
85	Issaqueena Trl	SC 93 to Pendleton Rd	Complete Street – widen to 3 lanes
89	Berkeley Dr	SC 93 to Issaqueena Trl	Complete Street – widen to 3 lanes
92	SC 76	Pendleton Rd to Old Stone Church Rd	General Improvements

Source: Greenville-Pickens Area Transportation Study: Long Range Transportation Plan, 2014

TABLE VIII-8. CITY OF CLEMSON LONG RANGE TRANSPORTATION INTERSECTION PROJECTS IN GPATS

Score	Intersection Project Name
13	Issaqueena Trail and Cambridge Drive
12	Issaqueena Trail and Pendleton Road
12	Issaqueena Trail at US 123 ramps

Source: Greenville-Pickens Area Transportation Study: Long Range Transportation Plan, 2014

d. *Transportation Improvement Program*

The *Transportation Improvement Program* (TIP) is the agreed-upon multi-year list of specific projects for which federal funds are anticipated. Required by federal and state law, the TIP

represents the transportation improvement priorities of the GPATS region. The list of projects is multi-modal and includes maintenance and resurfacing projects, intersection and signalization improvements, corridor improvements to minimize incidents, system and widening upgrades, transit alternatives, as well as bicycle, pedestrian, and freight-related projects. The projects proposed by the TIP for each COG or Metropolitan Planning Organization (MPO) are evaluated and incorporated into the State TIP by the SCDOT Commission.

The GPATS Transportation Improvement Program (TIP) is a short-range program that addresses projects to be funded within the next six years. Projects are first included in the Long Range Transportation Plan (LRTP) and, based on priorities established in the LRTP, are moved into the TIP as funding becomes available. A project cannot appear in the TIP unless it is first included in the LRTP. Projects included in the TIP are typically funded over several years, with funding allocated to the preliminary engineering, right-of-way acquisition, and construction phases. As of 2014, projects included in the current TIP are scheduled for implementation between 2014 and 2019.

Because all proposed highway improvements in the City of Clemson have a low ranking in the LRTP, the City of Clemson currently has no projects included in the GPATS TIP. As the LRTP is updated every five years, projects will move from the LRTP to the TIP depending upon updated travel demand models. As traffic levels fluctuate in the Clemson area, these projects will move up or down in ranking in the LRTP. Projects that move up the ranking system have a greater chance for inclusion in the TIP.

e. Transportation Alternatives Program

The GPATS TIP also includes other federally funded non-vehicular roadway projects allocated through the US Department of Transportation's *Moving Ahead for Progress in the 21st Century Act* (MAP-21) *Transportation Alternative Program* (TAP). MAP-21 allocates all federally funded surface transportation programs and creates a streamlined and performance-based surface transportation program. TAP, formerly known as Transportation Enhancements, was created to help expand non-motorized transportation choices and provide funding for activities that are often excluded from transportation projects. TAP is a federal grant program that provides funding on a reimbursement basis. Costs are only eligible for reimbursement after a project has been approved by the SC Department of Transportation or 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. 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, and address documented safety deficiencies.
- *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 SAFETEA-LU. Available funding from SCDOT for the Program is provided in three population-based divisions, of which Clemson (with a population greater than 13,900) would currently be eligible in the second category:
    - $2.897 million designated for areas of the State with an urbanized area population of more than 200,000, also known as a Transportation Management Area;
    - $1.772 million designated for areas of the State other than urban areas with a population greater than 5,000; and
    - $2.512 million designated for areas of the state with a population less than 5,000.

In 2013, GPATS allocated TAP funds through 2017. The City of Clemson received $800,000 of these TAP funds to construct a multi-use path and bridge spanning US 123 near the Clemson Elementary school. The local match for these funds is being provided by the City of Clemson and the Pickens County Transportation Committee. Construction on this project will commence in early 2015.

f. Future MPO Status

While the 2010 Census included the Clemson area in the Greenville Urbanized Area, the City of Clemson has been advised that this inclusion may change after Census 2020 is complete. The City of Seneca and rural Oconee County are currently classified as an urban cluster. As the areas between Clemson and Seneca continue to develop and near build out, these areas could be combined to create a new and separate small urbanized area. If this occurs, the City of Clemson should be prepared to join or help to establish a separate MPO.

F. MAINTENANCE RESPONSIBILITIES AND OWNERSHIP

The responsibility for the maintenance of roads and their associated features (shoulders, drainage structures, sidewalks, and landscape) is dependent upon ownership. More than two-thirds of road miles (62.1 miles) in the City of Clemson are owned and maintained by the City (Table VIII-9). The State of South Carolina (SCDOT) maintains 30.65 road miles in the City, with the small number of remaining road miles owned/maintained by private entities or Pickens County. It should be noted that many of the older roads in the City were built prior to current design and dedication practices. As such, some of these roads were never formally deeded to the City. Because public funds have been expended for maintenance of these roads over the years and the public has used these roads without objection, they have become City roads by right of adverse possession.

TABLE VIII-9. OWNERSHIP AND MAINTENANCE OF ROADS IN THE CITY OF CLEMSON

	Total Miles of Roads Maintained	Percentage of Roads Maintained
City of Clemson	62.10	65.1%
SCDOT	30.65	32.2%
Pickens County	2.39	2.5%
Privately Owned	0.19	0.2%
Totals	95.33	100%

Source: City of Clemson Planning and Codes Department, 2014

The width of a road right-of-way (the width inclusive of the car path and any additional ancillary property used for shoulders or sidewalks) varies from road to road. For many of the older roads in the City, the right-of-way covers only the driving surface. For others, the right-of-way is of sufficient width to meet current design standards as statutorily required by the City's Land Development Regulations (LDR). The minimum required by the LDR is typically 50 feet, however the minimum width increases as the projected traffic volume increases. The requirements of the Land Development Regulations are based on nationally recognized engineering standards, most commonly AASHTO (American Association of State Highway and Transportation Officials).

Because owning the appropriate right-of-way width enables the City to more effectively maintain and/or enhance City roads, an ongoing program to acquire additional right-of-way to supplement deficient widths is carried out on an as-needed basis. As the City undertakes improvement projects within established rights-of-way, every effort is made to acquire additional widths. When land is subdivided or developed, the Land Development Regulations require the owners of land adjacent to these rights-of-way to provide additional easements to the City to address the issue. An inventory of City roads including right-of-way information is maintained by the City Engineer.

In 2008, the Pickens County "C" Fund Committee funded replacement of the bridge over the Southern Railway tracks on Old Central Road at a location adjacent to the western City limits. The $2.5 million project addressed a serious safety concern and now enables passage of larger vehicles, including emergency service and fire apparatus.

In conjunction with the closure of Old Central Road, the City corrected the intersection of Old Central Road and West Lane in front of the City of Clemson's Public Works facility. Historically, this intersection created a safety hazard due to the oblique angles of intersection and poor lines of sight. The intersection was changed to a four-way stop to force all lanes of traffic to stop to ensure safe passage of vehicles through this traffic node.

In 2009, SCDOT replaced the bridge on Nettles Road located to the east of the entrance to the City's Nettles Park Recreational complex. This project corrected a safety concern associated with the old bridge, improved the line of sight as traffic transitions though that section of roadway, and created a more attractive entry into the Park. SCDOT also used this opportunity to address drainage problems associated with Eighteen Mile Creek flow restriction caused by the old bridge.

A listing of bridges in the City of Clemson can be found at the National Bridge Database (http://nationalbridges.com). This site also provides information about the individual bridges, including their age, type of construction, and 2011 traffic volumes.

The City began a streetscape enhancement project in 2009 along Tiger Boulevard (US 123), and continues to complete upgrades throughout the City's main corridors as monies are available. In 2009, existing sidewalks were widened to promote walkability and safety on Tiger Boulevard (US 123). A tree planting area was installed to separate the two surfaces and enhance the appearance of this vital corridor. Decorative street lights were installed to provide better night-time lighting and mast arm signals were used to replace the wire-hung traffic lights at the intersection of College Avenue (SC 133) and Tiger Boulevard (US 123). Pavers stamped to resemble bricks were added to better delineate the pedestrian crossing at this intersection and to tie the streetscape of the two corridors together by incorporating common design themes. Sidewalks and other enhancements were extended from the intersection of Tiger Boulevard (US 123) and Anderson Highway (US 76) to the intersection of Tiger Boulevard (US 123) and Old Greenville Highway (SC 93). Since the inception of the streetscape enhancement project, the City has redeveloped 3.95 miles of roadway and sidewalk space, making the highly visual commercial corridors a more attractive place to do business. The street enhancement projects have also helped to spur downtown business activity and mixed-use growth in the commercial corridors.

G. SIGNALIZED INTERSECTIONS

Traffic signals are located along US 123 at SC 133, at the intersection with US 76, and at the Lakeview Shopping Center west of SC 133. Mechanized signals also are located at various points along Old Greenville Highway (SC 93), Calhoun Drive, College Avenue (SC 133), Palmetto Boulevard (Clemson University), Azalea Drive, at the intersection of Perimeter Road and Cherry Road, and at the US 76 and Old Stone Church Road intersection, among others (Table VIII-10).

TABLE VIII-10. SIGNALIZED INTERSECTIONS IN THE CITY OF CLEMSON

Intersection	Type of Signal	City of Clemson or SCDOT Maintained	Turn Lanes
Tiger Blvd/ Lakeview Shopping Center	Wire-hung, Conventional	SCDOT	No
Tiger Blvd/ College Ave	Mast-arm	SCDOT	North and South bound on College Ave, West bound on Tiger Blvd
Tiger Blvd/ Anderson Hwy	Mast-arm	SCDOT	Both lanes of Tiger Blvd
Off-ramp of Tiger Blvd (east bound)/ Old Greenville Hwy	Mast-arm	SCDOT	Two left turns and one right turn onto Old Greenville Hwy
College Ave/ Edgewood Ave	Mast-arm	City of Clemson	No
College Ave/ Keith St	Mast-arm	City of Clemson	No
College Ave/ Old Greenville Hwy	Mast-arm	City of Clemson	West bound lane of Old Greenville Hwy
Old Greenville Hwy/ Perimeter Rd	Wire-hung, Conventional	SCDOT	Two left turn lanes on Old Greenville Hwy Two left turns on Perimeter Rd and one right turn onto east bound Old Greenville Hwy
Old Greenville/ Williamson Rd	Mast-arm	SCDOT	No
Old Greenville Hwy/ Parkway Dr	Mast-arm	SCDOT	No
Old Greenville/ Cherry Rd	Mast-arm	SCDOT	Left turn lane from west bound Old Greenville Hwy onto Cherry Rd
Old Greenville Hwy/ Frontage Rd	Mast-arm	SCDOT	No
Old Greenville Hwy/ Newton St	Mast-arm	SCDOT	Left turn north bound on Old Greenville Hwy onto Newton St
Old Greenville Hwy/ Cambridge Dr	Mast-arm	SCDOT	No
Old Greenville Hwy/ Berkeley Dr	Mast-arm	SCDOT	No
Tiger Blvd/ Freedom Dr	Mast-arm	SCDOT	Left and right turn from Freedom Dr. onto Tiger Blvd. Left turn into Freedom Dr

Source: City of Clemson Planning and Codes Department, 2014

H. SIDEWALKS

Over the last two decades the City has allocated monies for the construction of new sidewalks in several sections of town. In many cases, there were no existing sidewalks to enable residents to walk safely in their neighborhoods. Sidewalks along Sloan Street and Pendleton Road were replaced with new, wider surfaces. The construction of Clemson Elementary prompted the

need for sidewalks that were installed the length of Berkeley Drive in 2006. In 2013, the City of Clemson and the Pickens County Transportation Commission applied for and were awarded $800,000 in Transportation Alternative Program funds through the Greenville Pickens Area Transportation Study (GPATS) to install a multi-use path along Berkeley Drive. This money will be used to construct a multi-use bridge over US 123 on Berkeley Drive that will link South Berkeley Drive to Clemson Elementary, as well as a multi-use path that will link neighboring subdivisions to the bridge. These improvements, once constructed, will create a seamless sidewalk connection along Berkeley Drive from Old Greenville Highway (SC 93) to Pendleton Road.

There are continuous sidewalks along all the major commercial corridors in Clemson including Old Greenville Highway (SC 93), Tiger Boulevard (US 123), Anderson Highway (US 76), and College Avenue (SC 133). These facilities are used by many residents and students and are regularly maintained and in good condition. However, there are a few portions of sidewalk along on west bound Tiger Boulevard (US 123) that will require maintenance in the short term.

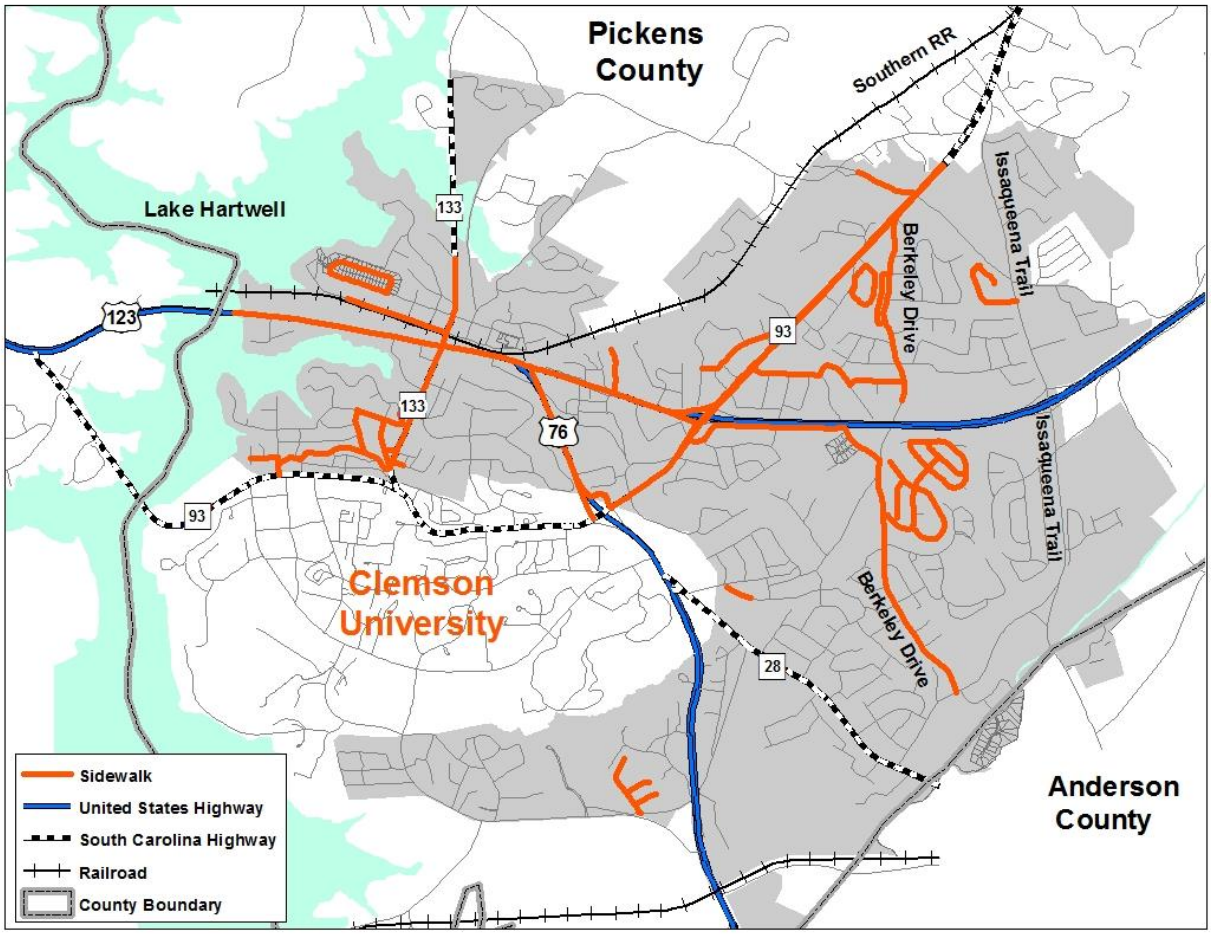
New developments have also added segments to the overall sidewalk system. The Land Development Regulations require that sidewalks be installed on at least one side of all new streets. Newer subdivisions that have constructed comprehensive sidewalk networks include Country Walk, The Village at Berkeley, and Patrick Square.

The City maintains an inventory of sidewalks within its jurisdiction that forms the basis of its *Sidewalk Plan* (Map VIII-4). A yearly assessment of the Sidewalk Plan is conducted by City staff, with those findings forming the basis for proposed funding allocations. Several established neighborhoods in Clemson are interested in having sidewalks installed. However, given the loss in recent years of several traditional funding sources utilized by the City to fund sidewalk construction, funding for this work may not be available. Unless additional state and federal monies are acquired it is likely that yearly allocations for sidewalk improvements will decline until alternative funding can be secured.

One method of extending sidewalks and bikeways throughout the City for all new construction would be the adoption of a *complete streets ordinance* by the City of Clemson. A complete streets ordinance "ensures that transportation planners and engineers, (both locally, and at the state and federal levels), consistently design and operate the entire roadway with all users in mind – including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities" (www.smartgrowthamerica.org). In 2003, the South Carolina Department of Transportation (SCDOT) Commission adopted a *Complete Streets Resolution* that requires all new roadway projects to establish the feasibility and need for bikeways, sidewalks, and transit. The resolution states that "bicycle and pedestrian planning should be a routine part of the department's planning, design, construction and operating activities, and that South Carolina

municipalities and counties are required to make bicycle and pedestrian improvements an integral part of their programs where state and deferral funding is utilized".

MAP VIII-4. SIDEWALKS IN THE CITY OF CLEMSON



Sources: City of Clemson Planning and Codes Department, 2014

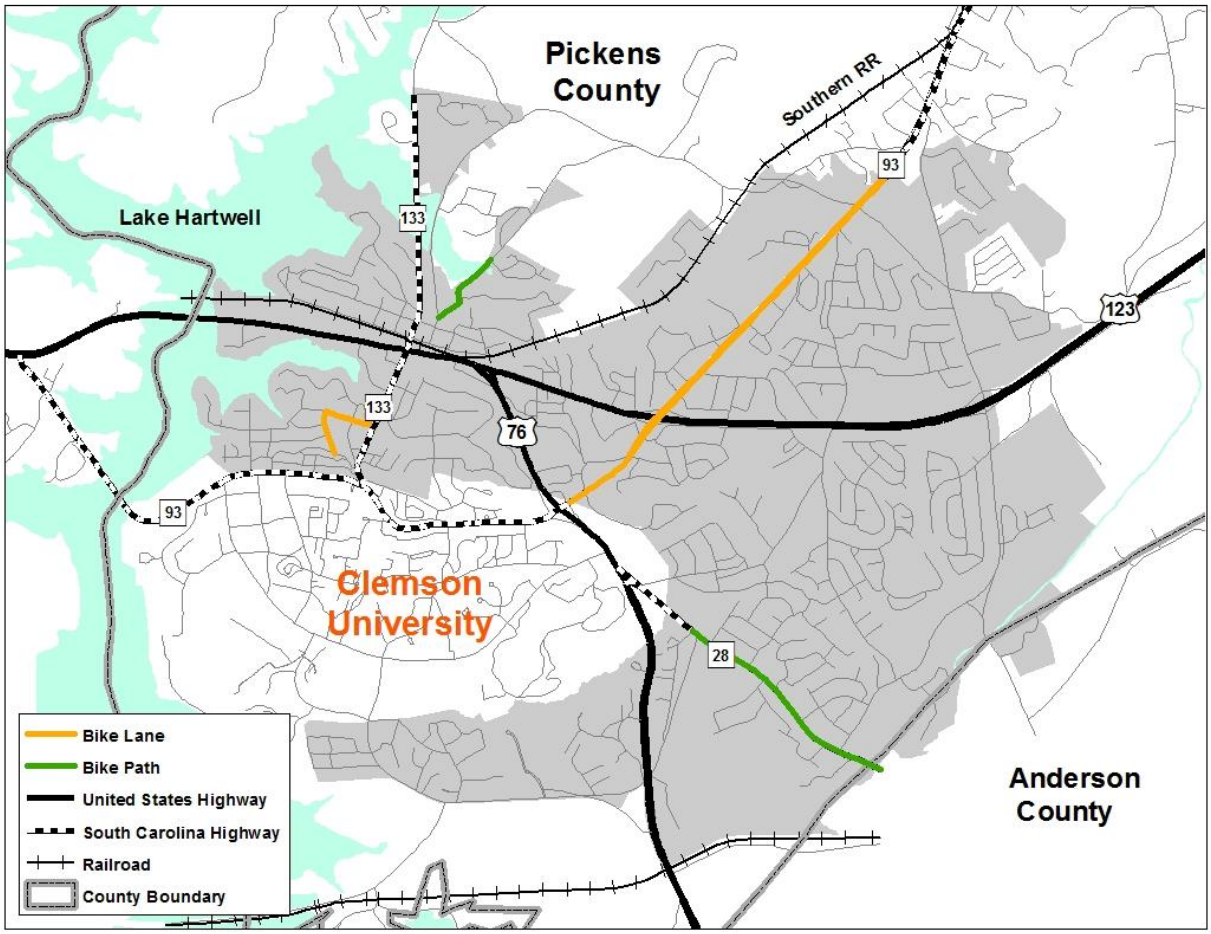
I. BIKEWAYS

In fall 2012, City Planning and Codes Administration staff began updating the 1997 Clemson Bikeways Plan. As of the summer of 2014 the plan revision is nearly complete. There are 15.17 miles of bikeways in the City (Table VIII-11). These bikeways are categorized into three classes based upon facility features. Class I is a paved, bike-only path that is physically separated from the roadway and visibly marked. Class II is a striped bike lane that is a minimum of four feet wide without curb and gutter, or five foot wide with curb and gutter. Class III is a shared roadway that is clearly identified using street signs and/or pavement markings.

With the exception of US Highway 76 (Anderson Hwy) and US Highway 123, all major roads and corridors within the City feature some level of bicycle facility. The majority of these improvements are Class III bikeways. Many of the Class I and Class II facilities have maintenance

issues, while many of each type of bikeway has subpar markings and/or signage indicating the presence of a designated facility for a certain type of use. The *Clemson Bikeways Master Plan* Draft provides a complete inventory and existing conditions report for Clemson's bikeway facilities.

MAP VIII-5. BIKEWAY FACILITIES IN THE CITY OF CLEMSON



Source: City of Clemson Planning and Codes Department, 2014

TABLE VIII-11. BIKEWAY NETWORK MILES, CITY OF CLEMSON

Bikeway Network Miles	
Class I Bikeway	1.06 miles
Class II Bikeway	5.31 miles
Class II Bikeway, one-side	0.18 miles
Class III Bikeway	8.25 miles
Multi-Use Path, one-side	0.37 mile
Total Miles	**15.17 miles**

Source: City of Clemson Planning and Codes Department 2014

Currently, the City of Clemson utilizes signage on Class II and Class III bicycle routes, but there is room for improvement. Often the signage is lacking in number or is in need of maintenance. Because the City does not have any bicycle way-finding signage, bicycle routes such as the College Avenue (SC 133) Bypass receive little, if any, use. In accordance with the City of Clemson's Land Development Regulation (LDR), signage is to be installed at the developer's expense when a new bikeway is constructed.

In June 2012, City staff conducted a bicycle parking facilities count. The count revealed that there are only 15 designated bicycle parking areas throughout the City, not including facilities located on the Clemson University campus, providing a total of 96 spaces. All of the 15 parking facilities are short-term racks. Seven of these racks are located in the heart of downtown along College Avenue (SC 133), which includes a Class III bikeway. Two bicycle parking facilities are sited at the intersection of US 123 and College Avenue (SC 133), one at Rite Aid Pharmacy and another at CVS Pharmacy. The other six parking facilities are all near businesses or civic areas along SC Highway 93 along Class II and Class III bikeways. Clemson City Council adopted new parking standards in 2013 for all zones in the City that require all new developments in Clemson to supply a minimum of three bicycle parking spaces.

Bridges also play an important role in bicycle infrastructure capabilities. Bridges are long-term infrastructure that are generally unsuitable for retrofitting for bicycling needs. The City of Clemson has several narrow bridges that lack the right-of-way for the addition of a Class II bicycle lane. Construction on a multi-use pedestrian bridge over U.S. 123 near Berkeley Drive is expected to begin in 2014. This bridge will provide a safer pedestrian and bicycling environment near Clemson Elementary and surrounding neighborhoods.

As with pedestrian facilities, bikeways could be substantially increased if Clemson adopts a Complete Streets Ordinance. Complete streets are those that are safer, more livable, and welcoming to pedestrians and cyclists, as compared to streets designed solely for use by motor vehicles. They incorporate pedestrian infrastructure, traffic calming measures, and bicycle and mass transit accommodations. The City of Clemson boasts one section of a complete street, located on the north side of Berkeley Drive near Clemson Elementary.

Clemson Area Transit (CAT) is the primary provider of public transportation in the City of Clemson. All CAT buses are equipped with front-loading bicycle racks and step-by-step user instructions are posted at all stops, on route information pamphlets, and on the front page of the CAT website. Often riders take their bicycles on CAT buses for use at their final destination. CAT estimates an average of 755 bicycles are transported on its buses per month. Bus utilization allows bicyclists to avoid hazardous or difficult areas on a route such as steep grades, and helps to shorten long commute times, therefore encouraging cycling as the primary mode of transportation for more trips.

Bikeway facility maintenance is an integral part of a functioning bikeway system. Without clean bike lanes routes become unsafe, forcing cyclists to ride in motorized traffic. The City of Clemson and SCDOT are responsible for the cleanliness and maintenance of the existing bikeway system. The City of Clemson cleans College Avenue (SC 133) on a weekly basis. SCDOT maintains the remainder of the Class II and Class III bikeways on major highways throughout the City and uses a street sweeper approximately once a month to remove debris from the lanes.

In order to determine the number of people bicycling on an average day in the City of Clemson, a bicycle count was conducted by City planning staff on specific days and times in March and April of 2012. Table VIII-12 illustrates the results of the 2012 count and compares existing bicycle usage with previous counts from the 1990 and 1996 Clemson Bikeway plans.

TABLE VIII-12. CLEMSON BICYCLE COUNTS: 1990, 1996 AND 2012

	Cyclists Observed					
Location and Dates	**1990 4-5 PM**	**1996 4-5 PM**	**% Change 1990-1996**	**2012 3:45-4:45 PM**	**% Change 1996-2012**	**% Change 1990-2012**
US 123 and College Ave – 10/1/90, 10/7/96, and 4/3/12	25	12	-52.0%	8	-33.3%	-68.0%
SC 93 and US 76 – 10/3/90, 10/9/96, and 3/29/12	21	14	-33.3%	14	0.0%	-33.3%
SC 93 and College Ave – 10/5/90, 10/11/96, and 3/8/12	31	43	38.7%	30	-30.2%	-3.2%
Totals	**77**	**69**	**-10.4%**	**52**	**-24.6%**	**-32.5%**

Source: Clemson Bikeways Plan, 1990 & 1996; Clemson Planning and Codes Administration Staff, 2012

The 2012 bicycle counts were conducted at the same intersections and at roughly the same time of day with comparable weather conditions to that of previous counts. The cyclists were counted during the late afternoon hours, with the majority of cyclists counted traveling away from the University. The study area with the highest number of cyclists was at the intersection

of SC 93 and College Avenue (SC 133), where observations revealed 30 riders from 4:00-5:00 p.m. – only one less rider than was observed in 1990 at the same intersection during the same time period. The intersection with the fewest number of cyclists was the intersection of College Avenue (SC 133) and US 123, with eight riders recorded from 3:45-4:45 p.m. The comparatively low number of riders at this intersection could be due to the size of the intersection, the number of vehicles traveling at fast speeds, the lack of a bicycle lane or connecting sidewalk, and the growth of bicycles being placed on Clemson Area Transit (CAT) buses. In addition, portions of this intersection were under construction at the time of the 2012 study. The only intersection studied with a dedicated bicycle lane was that of SC 93 and US 76, where the number of cyclists was consistent with those recorded in 1996, with a total of 14 riders on Thursday, March 23, 2012, between 3:30-4:30 p.m.

Although access to bicycle lanes in the City has increased significantly since 1990, the number of cyclists has decreased according to the 2012 bicycle count. However, because these counts were conducted at a specific point in time and road construction was underway at key survey points, they may not accurately represent the total number of people cycling in the City.

The CAT bus system has provided a big boost to bicycle travel in the Clemson area. CAT buses include bicycle mounts, providing cyclists with transportation to more bicycle friendly areas in the City. While the number of bikes counted at the survey intersections has decreased over the years, the number of individual bicycle mounts on the CAT bus has steadily increased. In 2011, CAT buses transported an average of 25 bicycles per day.

As recommended in the draft of the *Bikeways Master Plan*, the City of Clemson Comprehensive Plan should encourage and prescribe a more accessible and better connected network of bikeway facilities. The Plan provides numerous opportunities to expand the scope of bicycle policies to increase and enhance the City's bikeway system.

J. TRANSIT SYSTEM

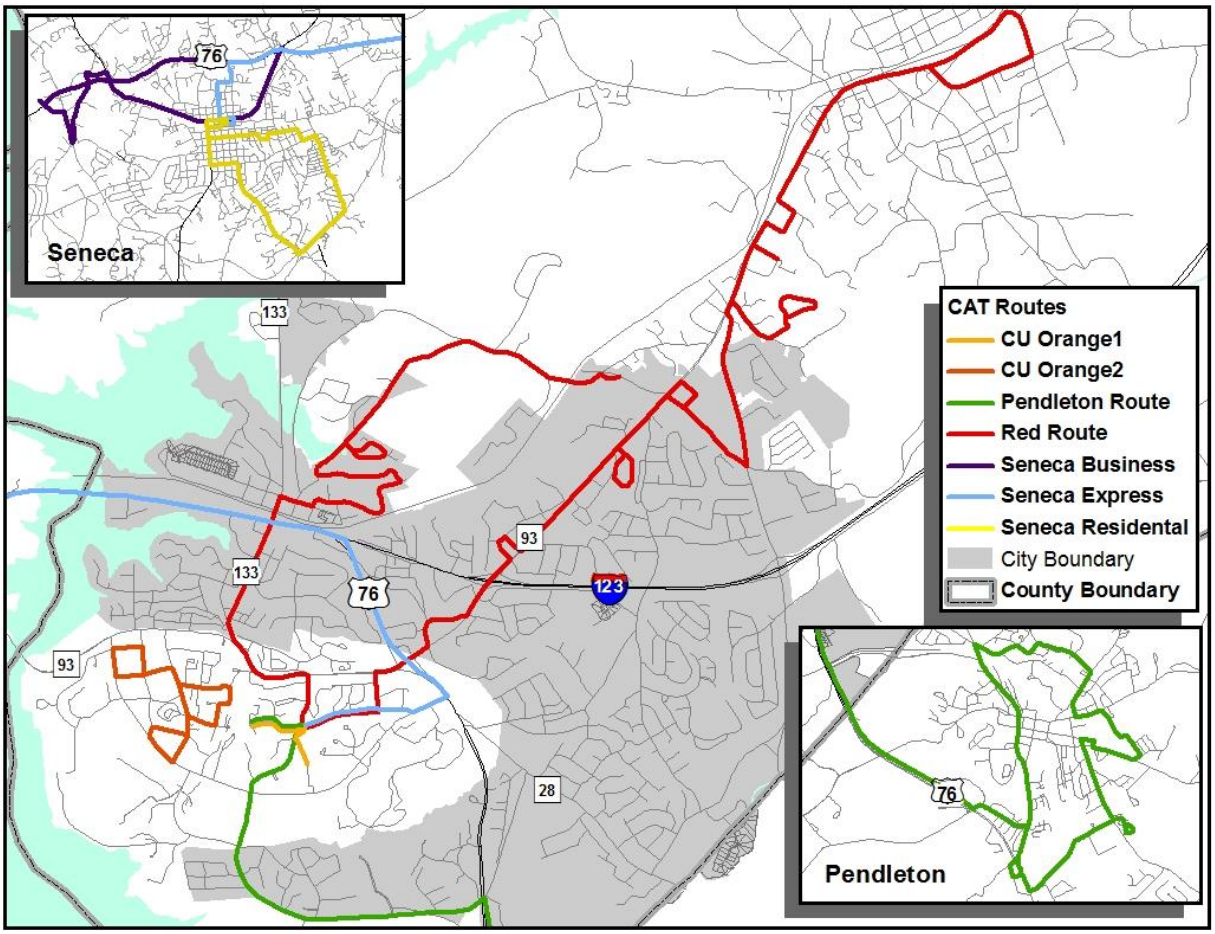
> **"Clemson Area Transit (CAT) is dedicated to excellence in serving everyone with safe, friendly, and reliable public transportation." – CAT Mission Statement**

Established in 1996, the Clemson Area Transit (CAT) system is a "fare-free" program developed as a viable alternative mode of transportation. No fares are paid on the bus, but are paid through alternate programs and partnerships. CAT was created in response to community concerns related to increased traffic congestion on roadways leading to and from the Clemson University campus, loss of core campus parking spaces as new construction pushed parking to

the campus perimeter, and access to the campus for low and moderate income students living in surrounding areas. The City and the University were the founding partners for CAT, with neighboring jurisdictions joining the program to grow and expand the service area. Member jurisdictions now include the City of Clemson, Clemson University, the Towns of Central and Pendleton, Anderson County, and the City of Seneca.

Today Clemson Area Transit provides service to three counties and five cities, as well as three institutions of higher education – Clemson University, Tri-County Technical College, and Southern Wesleyan University (Map VIII-6).

MAP VIII-6. CAT SERVICE AREA



Source: City of Clemson Planning and Codes Department, 2014

1. CLEMSON AREA TRANSIT FUNDING SOURCES

The operational funds for the CAT system are provided by the partner jurisdictions and state and Federal grants. Funding from Federal grants and other sources is routinely sought for capital equipment and facilities, with local match monies from sources including the Clemson

University student transit fee and contributions from partnering communities leveraged to acquire such assistance.

From 2009 to 2013, CAT operated with an annual budget of approximately $3.2 million. Operating expenses in FY 2011-2012 were highest at $3.5 million due to new facility costs and high maintenance costs for older buses that had reached their useful life but had not yet been replaced. In FY 2011-2012 and FY 2012-2013, capital expenses exceeded $1 million as the purchase of five new 40-foot Nova buses and one 62-foot bus was required to replace an aging fleet and to increase ridership capacity. In FY 2009-2010, Clemson University contributed $1.4 million. This amount has decreased incrementally over time and reached a low in 2013, when the University contributed $1.1 million dollars because of reduced routes. However, at the same time Federal operating assistance increased. In 2009, CAT received $827,845 in Federal grants, while in 2013 the Federal contribution was $2,293,205– a 177% increase due to several years of increased funding for new buses (Table VIII-13).

Table VIII-13 provides total expenses and revenue from FY 2009-2010 to FY 2012-2013. Total expenses and total revenue rose 26% and 28% in the two fiscal years following FY 2009-2010. Overall, CAT had a net gain in revenue, except for FY 2011-2012 when there was a negative balance of $179,440. Capital or operating reserve accounts are used when a positive balance of revenue exists at the end of a fiscal year. These reserve funds are used to pay any deficits from other years.

TABLE VIII-13. FINANCIAL STATISTICS FOR THE CAT SYSTEM, 2009 – 2013

Financial Measure	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
Operating Expenses	$3,282,199	$3,154,858	$3,516,383	$3,113,120
Capital Expenses	$3,729	$173,972	$1,325,612	$1,038,880
Total Expenses	**$3,285,928**	**$3,328,830**	**$4,841,995**	**$4,152,000**
Clemson University Revenue	$1,402,451	$1,265,082	$1,180,840	$1,141,260
Federal Operating and Capital Assistance	$827,845	$1,117,199	$2,283,914	$2,293,205
State Operating Assistance	$295,403	$338,999	$307,288	$0
Other Sources	$83,884	$25,898	$62,764	$35,986
Contributions from CAT Partners	$758,014	$791,529	$827,749	$827,749
Total Revenue	**$3,367,597**	**$3,538,707**	**$4,662,555**	**$4,298,200**

Source: Clemson Area Transit, 2014

In FY 2012-2013, Clemson Area Transit faced Federal funding challenges. The 2010 Census placed the City of Clemson and the Towns of Central and Pendleton into the Greenville Large Urbanized Area. This inclusion resulted in a change in Federal funding for CAT. Previously the Clemson area was classified as a Rural Census area and CAT was able to apply for Rural Transit Assistance Program (5311) funding. When Clemson and the surrounding towns of Central and Pendleton were placed in the Greenville Large Urbanized Area, Federal funding shifted to

specific grants dedicated to transit providers located in Large Urbanized Areas (UZA). Similar to the Federal Guideshare funding for roadway projects as previously described, the inclusion of the City in the Greenville Large Urban Area requires CAT to obtain Federal grant funding through the Greenville Pickens Area Transportation Study (GPATS) Metropolitan Planning Organization (MPO).

Prior to the 2010 US Census, the GPATS MPO had one transit agency acting as the Designated Recipient, Greenville Transit Authority (GTA), and one public transit provider acting as the Direct Recipient, Greenlink. After the 2010 Census, CAT was added to the public transit providers in the GPATS MPO. In order for CAT to receive any Federal money, they had to do one of two things: 1) become a direct recipient under the Designated Recipient of GTA; *or* 2) become a sub-recipient under the Direct Recipient of Greenlink. CAT is pursuing Direct Recipient status, and should be designated as such by January 2015.

2. Operational Statistics

In 2013, Clemson University and CAT hired the KFH Group, a transit consultant, to complete a Comprehensive Operational Analysis (COA) of the CAT system. The COA study focused largely on the Red Route, which is the primary off-campus route that serves off-campus housing, large commercial areas, and Clemson University. The study found the following:

- CAT is an efficient transit program, with productivity measures that are well above the statewide averages and above the mean when looking at peer systems. Route productivity has increased significantly over the past three years.
- CAT is a cost-effective program, with cost per hour and cost per trip averages that are lower than the mean for its peers.
- CAT is known to community members and generally well-regarded.
- The contract rate between transit partners and the way rates are developed needs to be re-visited to ensure accuracy, transparency, and equity among local partners.
- There are some specific improvements that riders would like to see to make their trips more timely and convenient and more comfortable.
- There are capacity and timing issues on the Red Route that frustrate riders.
- There are unmet transit needs in the City and the region. These needs include service span, frequency, and geographic coverage.
- CAT may have to make some changes with regard to serving people with disabilities to be in full compliance with the *Americans with Disabilities Act (ADA)*.

- The City of Clemson and Clemson University have both publicly adopted comprehensive and master plans that feature the provision of high quality public transportation.
- The relationship between the City and the University needs to be a partnership in order to maximize resources given the drop in federal funds that have resulted from being included in the Greenville Urbanized Area.

As noted in the KFH Group study, CAT is highly efficient, meaning the system is able to move many people with limited capital and operating costs. From 2008 to 2013, the total ridership on the CAT system increased by almost 15%, while vehicle miles decreased by almost 4% (Table VIII-14). After the purchase of two articulated buses in 2013, ridership increased by almost 5% and total vehicle miles decreased 0.66%, while the number of vehicles, number of routes, and number of drivers stayed the same. CAT has been able to increase ridership with fewer trips, increasing system efficiency.

TABLE VIII-14. OPERATIONAL STATISTICS FOR THE CAT SYSTEM, 2008 – 2013

Operational Measure	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	Percent Change 2008-2013	Percent Change 2008-2013
Total Ridership	1,613,403	1,609,349	1,622,498	1,758,870	1,849,064	5.13%	14.61%
Total Vehicle Miles	727,946	725,487	676,374	704,465	699,790	-0.66%	-3.87%
# of Vehicles	26	26	26	26	26	0.00%	0.00%
# of Routes	6	7	7	7	7	0.00%	16.67%
# of CAT Drivers	61	60	60	60	60	0.00%	-1.64%
# of CAT Employees (total)	70	69	69	69	69	0.00%	-1.43%

Source: Clemson Area Transit, 2014

3. RIDERSHIP SERVICES

CAT provides a number of special services to meet the needs of all of its riders. Services to assist those in need of accessible transportation as required by the *Americans with Disability Act* (ADA), including lifts and para-transit are provided. The buses are also equipped with front-mounted bike racks to allow riders to safely transport their bikes. In 2009, CAT became the first transit system in the country to use the Google map trip planner application as a resource to assist its riders in planning trips.

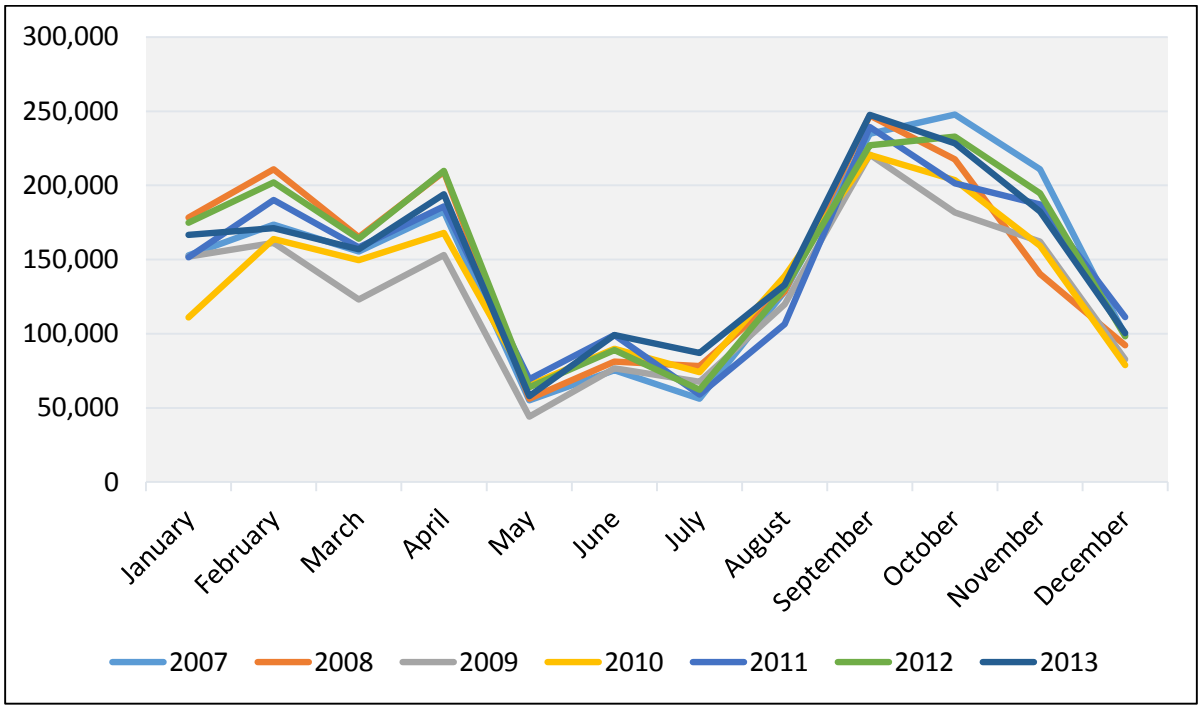
In 2013, in an effort to make trips more timely, convenient, and more comfortable, CAT began to develop and seek funding for a smart phone application (app) that will use "Next Bus

Technology" to help track bus locations, minutes until arrival at the next stop, and bus capacity levels. The app tracks the number of boardings and alightings to help with National Transit Database (NTD) reporting. The device will also be used to monitor and record payroll for bus operators and will assist in shift inspections of bus equipment. A request for proposals (RFP) is being prepared for the development and installation of the app amid plans to have the devices installed as soon as possible in the entire bus fleet.

In 2011, CAT began replacing 40-foot buses with 60-foot buses to increase capacity without increasing operating expenses. Similarly, in 2014 CAT purchased two articulated (bendy) buses which increased the number of passengers without dramatically increasing operating costs. These are the only two articulated buses in use in the State of South Carolina.

CAT ridership levels have gradually increased since 2007 (Table VIII-14). Monthly ridership varies by the time of year, with the highest ridership taking place in September and October. As shown in the graph in Figure VIII-2, ridership remains high from January to April, varying monthly depending on weather patterns. From May to August ridership levels drop significantly due to the Clemson University summer break and increase significantly in late August and September with the beginning of the academic year.

FIGURE VIII-2. CAT RIDERSHIP, 2007 TO 2013



Source: Clemson Area Transit, 2014

4. World's First All Electric Bus Fleet

In 2014, CAT began operation of the world's first all-electric bus fleet, which is based out of Seneca. The City of Seneca contracts for transit service through Clemson Area Transit. In 2013 the City of Seneca was awarded a $4.1 million grant by the Federal Transportation Administration to purchase four Proterra electric buses (e-buses). The e-buses, which are made locally in Greenville, South Carolina, are emission free and serve the Seneca Express route, which travels from downtown Seneca to Clemson University sixty times a week.

5. CAT Facility

After years of operating out of numerous locations around the City, CAT began construction of a new state-of-the-art transportation complex on West Lane in 2010. CAT was awarded a $2.5 million Economic Recovery Act grant to incorporate green building features in the new facility. The facility provides 7,000 square feet for administrative offices, areas to serve the driver needs, a training room, and a 16,500 square foot covered parking garage for storage of the fleet when not in use. The building meets LEED Certified Structure criteria and features 210 solar panels, advanced energy sensors and controls, heat-retaining and reflecting windows, energy efficient heating and cooling, storm water reclamation, pervious parking surface, and two outlets for plug-in hybrid electric vehicles.

Figure VIII-3. CAT Facility

Source: City of Clemson, 2013

FIGURE VIII-4. CAT BUS CREW WITH THE NEW ARTICULATED BUS

Source: Clemson Area Transit, 2014

K. PARKING

Adequate parking is a challenge in most communities, particularly in more urbanized areas. If too little parking is provided, it can contribute to traffic congestion as motorists circle destinations looking for a vacant space. If too much parking is provided, the landscape can become dominated by vacant parking lots and unused spaces. The City provides more than 400 parking spaces to serve the needs of its Downtown businesses and residents (Table VIII-15). In the mid-2000s the City built a parking deck with 250 spaces, with almost half metered during the daytime hours and half leased to private businesses. The City also provides 137 on-street spaces located throughout Downtown. These spaces have various time limitations based on their locations. Surface parking is also available to Downtown patrons through a partnership with the University Lutheran church. All Downtown parking is policed by a full-time parking attendant.

TABLE VIII-15. PUBLICLY OWNED AND MAINTAINED PARKING IN DOWNTOWN CLEMSON

	Time Limitations	Metered	Leased/ Reserved	Number of Spaces
Parking Deck	None	Yes	No	124
Parking Deck	None	No	Yes	126
On-Street	One-Hour	No	No	64
On-Street	Two-Hour	No	No	27
On-Street	Three-Hour	No	No	46
On-Street	No-Time Limits	No	No	
Surface Lot (Lutheran Church)	None	No	Yes	21
Surface Lot (Lutheran Church)	Two-Hour	No	No	28
Former Planning and Codes Office	None	No	Yes	7
Total				**443**

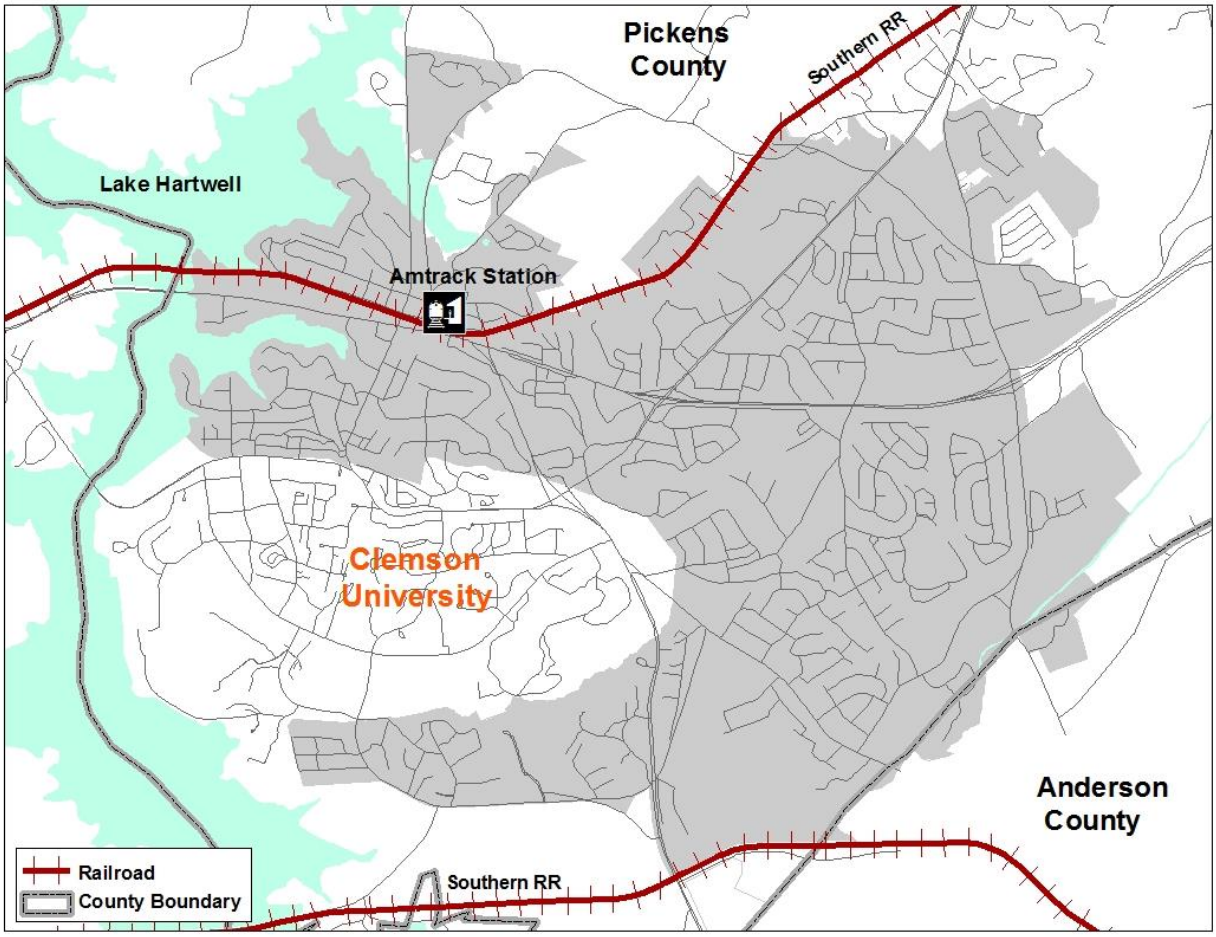
Source: City of Clemson Planning and Codes Department, 2014

L. RAILWAYS

Rail service for the Clemson area is provided by Norfolk Southern Railway. The rail route travels through the northern area of the City above US 123 and is depicted in Map VIII-7. In 2010 Norfolk Southern, in partnership with the South Carolina Department of Transportation (SCDOT), began replacement of a major railroad overpass over SC 133, located near the intersection of US 123 and SC 133. Although the new overpass bridge was constructed, additional measures will be required to meet ADA compliance. Once these measures are completed the bridge will improve railroad safety and improve the left traffic turn onto US 123.

A second rail line to the south and outside the City limits is owned by Norfolk Southern Railroad. This line, historically known as the Blue Ridge Railroad, functions as a freight line to the immediate region. It operates one trip daily and serves the Upstate manufacturing community.

MAP VIII-7. NORFOLK SOUTHERN RAILROAD LINES
CITY OF CLEMSON, 2014



Source: City of Clemson Planning and Codes Department, 2014.

1. AMTRAK PASSENGER RAIL

The City of Clemson acquired and renovated the historic Clemson Depot in 2002. While the Clemson Area Chamber of Commerce occupies the majority of the building, a portion was set aside as a waiting room to serve the Amtrak rail system. Amtrak's Crescent route, which connects New York and New Orleans, travels through the City, providing daily passenger rail services for area residents. The waiting room is open daily during the hours of 5:30-7:00 a.m. and 9:30-11:00 p.m. Train schedules and route durations are provided in Table VIII-16.

FIGURE VIII-5. CLEMSON DEPOT

Source: City of Clemson Planning and Codes Department, 2014.

TABLE VIII-16. AMTRAK CRESCENT ROUTE PASSENGER RAIL SERVICES BETWEEN CLEMSON AND SELECTED MAJOR CITIES

Scheduled Departure	Scheduled Arrival	Duration
New York, NY Penn Station 2:15 pm	Clemson, SC 5:39 am	15h 24m
Clemson, SC 10:16 pm	New York, NY Penn Station 1:46 pm	15h 30m
Washington, DC Union Station 6:30pm	Clemson, SC 5:39 am	11h 9m
Clemson, SC 10:16 pm	Washington, DC Union Station 9:30 am	11h 37m
New Orleans, LA 7:00 am	Clemson, SC 10:16 pm	14h 16m
Clemson, SC 5:39 am	New Orleans, LA 7:32 pm	14h 53m
Atlanta, GA 8:04 pm	Clemson, SC 10:16 pm	2h 12m
Clemson, SC 5:39 am	Atlanta, GA 8:13 am	2h 34m

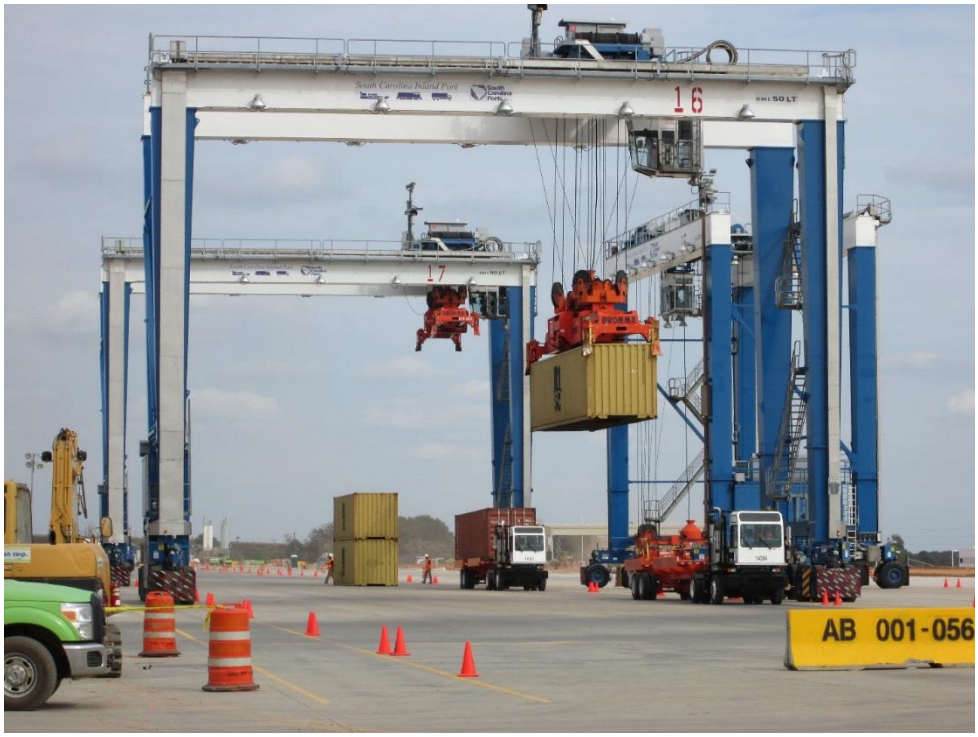
Source: Amtrak, 2014.

M. SOUTH CAROLINA INLAND PORT

The South Carolina Inland Port opened in October 2013, extending the Port of Charleston's reach 212 miles inland to Greer, and providing shippers with access to more than 95 million consumers within a one-day drive. Located in Spartanburg County near Interstate 85 and several major manufacturers, the inland port boosts efficiency for international freight movements between the Port of Charleston and companies located across the Southeast. Norfolk Southern serves the inland port through its main rail line, and the facility is positioned

along the Interstate 85 corridor between the major southeastern business hubs of Charlotte and Atlanta, where Norfolk Southern operates additional rail yards.

FIGURE VIII-6. SOUTH CAROLINA INLAND PORT

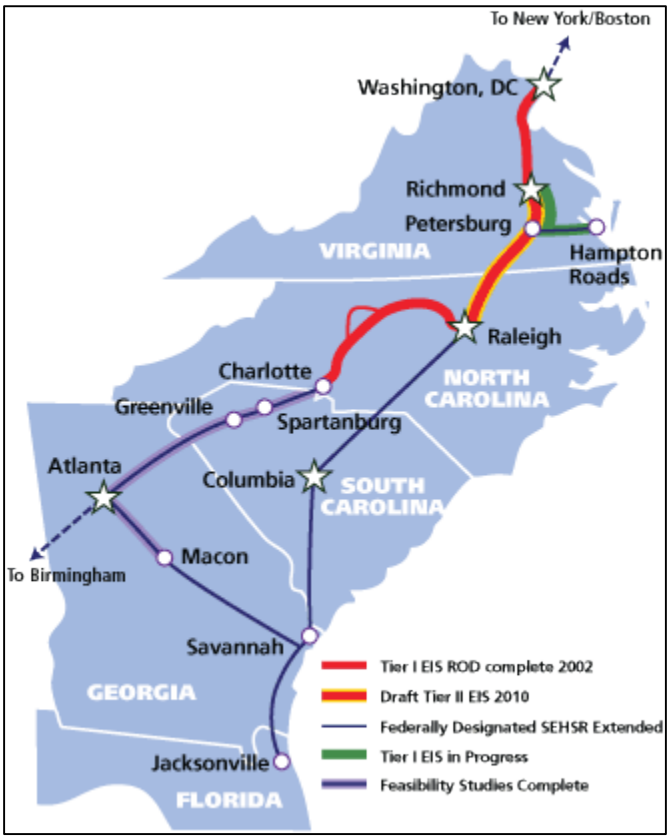


Source: City of Clemson Planning and Codes Department, 2014.

N. HIGH SPEED RAIL CORRIDOR

The Georgia, South Carolina, North Carolina, and Virginia Departments of Transportation recently completed the final phase of a Tier II Environmental Impact Statement (EIS) for the planned Southeast High Speed Rail Corridor that will connect Washington, DC to Charlotte, NC. The study evaluates the overall suitability and costs of developing high-speed passenger rail service between Charlotte, NC and Macon, GA as an extension of the high-speed rail from Washington DC to Charlotte. The goal of the project is for passenger service to be launched between Washington DC to Charlotte in 2020. However, funding for the project has not yet been secured.

MAP VIII-8. SOUTHEAST HIGH SPEED RAIL



Source: Southeast High Speed Rail Corridor, www.sehsr.org

In 2008, the Macon-Charlotte Southeast High Speed Rail Corridor Study examined the potential for improving 366 miles of rail connecting Charlotte, Spartanburg, Greenville, Atlanta, and Macon to accommodate the operation of two to six high-speed trains daily. The study concluded that the most cost effective program of public and private infrastructure improvements to the Norfolk Southern railroad line would permit top passenger train speeds between 79-90 mph. The report recommended a cooperative effort among the states, Norfolk Southern, and the Federal Railroad Administration to develop a program of infrastructure improvements, conduct detailed environmental impact analyses and capacity studies, and promote public outreach efforts along the corridor.

If the project is developed, Clemson would be on the high-speed route between Charlotte and Macon. The Southeast High Speed Rail reported the proposed route and discussions are underway to determine if a stop in the area should be located in Clemson, Greenville, or Seneca, South Carolina. In anticipation of this decision, the replacement of the railroad underpass on College Avenue (SC 133) has been designed to accommodate the track space needs of this new route. While this section would be considered high-speed, in reality speeds

would be around 79-90 mph, which is significantly lower that other high speed trains around the world.

A true high-speed route with speeds of 200+ mph is proposed by SCDOT in the draft of the *2040 Statewide Multimodal Transportation Plan* and by the Georgia Department of Transportation. There are six routes proposed, and SCDOT favors the route which would be constructed on greenfields (all new construction). The favored route would traverse South Carolina connecting Charlotte to Atlanta with a proposed stop around Iva, SC and Starr, SC. More details of these routes can be found online at http://www.dot.state.sc.us/Multimodal/default.aspx.

O. PERSONAL RAPID TRANSIT

Clemson Area Transit is exploring the feasibility of Personal Rapid Transit (PRT) with area stakeholders. PRT is a mode of public transportation that features small automated vehicles operating on a network of specially built tracks. One of the most notable examples is already in operation at the University of West Virginia. As Clemson University enrollment grows and traffic congestion continues to increase, PRT presents an interesting solution that could enhance transportation innovations to the area.

P. AIRPORTS

The immediate Clemson area is served by three aviation facilities: Greenville-Spartanburg International Airport (GSP), located 45 miles away; Anderson County Airport, located 18 miles away; and the Oconee County Airport, located within a mile of the City's western boundary. The Greenville-Spartanburg International Airport serves 1.75 million passengers through six major airlines that offer 53 non-stop daily departures to 18 major cities and 22 airports across the United States.

TABLE VIII-17. AIRPORTS CERTIFIED FOR CARRIER OPERATIONS NEAR CLEMSON

Name	Location	ID	Distance from Clemson
Anderson Regional	Anderson, SC	AND	16 miles
Donaldson Center	Greenville, SC	GYH	32 miles
Greenville-Spartanburg International	Greer, SC	GSP	44 miles

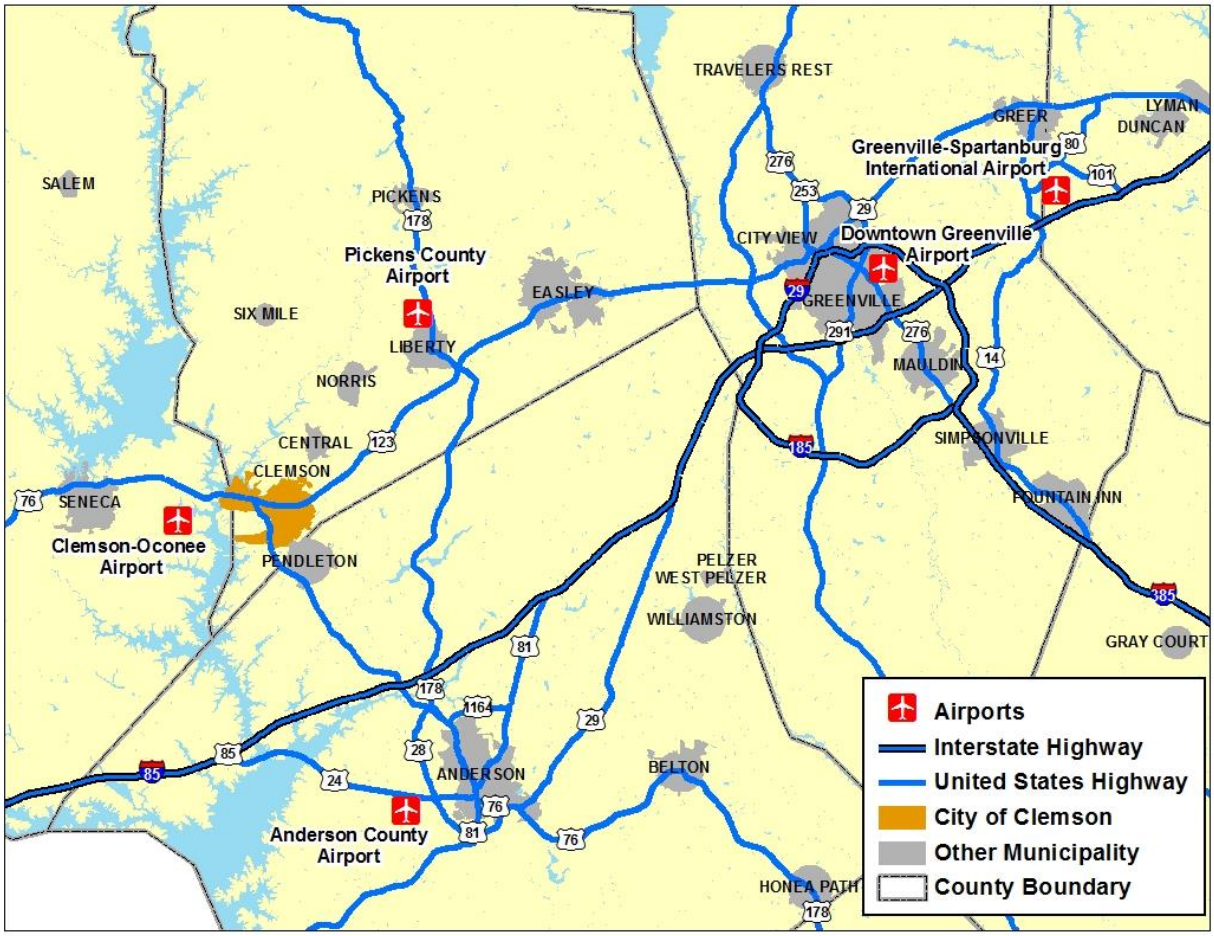
Source: www.airnav.com

TABLE VIII-18. OTHER PUBLIC-USE AIRPORTS NEAR CLEMSON

Name	Location	ID	Distance from Clemson
Oconee County Regional	Clemson, SC	CEU	3 miles
Pickens County	Pickens, SC	LQK	12 miles
Franklin County	Canon, GA	18A	33 miles
Greenville Downtown Airport	Greenville, SC	GMU	33 miles

Source: www.airnav.com

MAP VIII-9. AIRPORTS IN THE CLEMSON AREA



Source: City of Clemson Planning and Codes Department, 2014

Q. OTHER TRANSPORTATION OPTIONS

Shuttle services for Clemson area residents are provided by several human service agency programs and by the Clemson Downs retirement community. There are also several taxi services and an airport shuttle service in the Clemson area. The City regulates these businesses through a licensing program administered by the Police Department and City Clerk. In addition, the following programs provide vehicular transportation for Clemson residents.

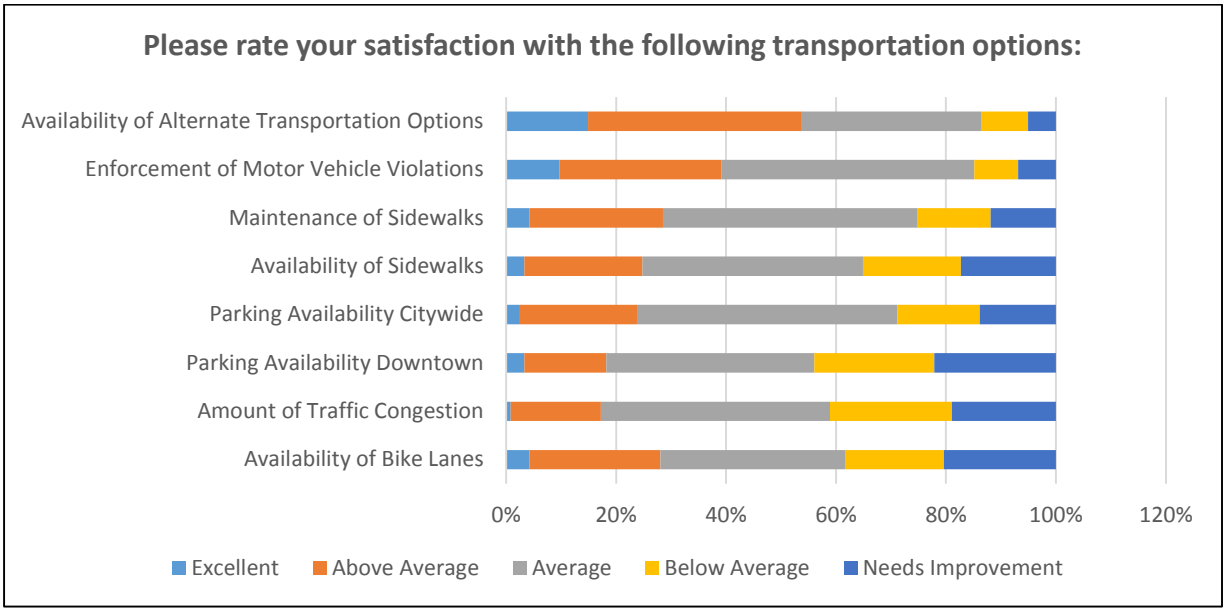
RidePost. Clemson University offers several services to reduce the number of cars on campus, including a new Ride-Sharing Program called "RidePost." Ridepost is web-based social network interface that provides students, faculty, and staff a safe option to find other drivers with similar destinations.

CarShare. Clemson University is also one of the first major institutions of higher education in the Southeast to provide a car-sharing program. In conjunction with Enterprise-Rent-A-Car, Clemson University offers a commuter choice that lowers the cost of and reduces the hassle of traditional automobile transportation. There are five locations on campus for students, faculty, and staff to access this service. Prices range from $7.50 per hour to $57 per day, with gas and roadside assistance included. A one-time application is needed to receive a membership ID which is used to reserve and access a vehicle.

R. TRANSPORTATION SURVEY RESULTS

A citywide survey was conducted in Clemson from December 2013 to February 2014 in both an online and print format to help guide the 2024 Comprehensive Planning Process. The survey included several questions pertaining to transportation. Nearly half of survey respondents said the "fare free" CATbus is an important service offered to those living in Clemson and the nearby communities. Similarly, more than 70% of respondents indicated that preserving and protecting public transportation is important. Figure VIII-7 shows the results of the transportation questions and highlights the major transportation concerns shown by survey respondents. Over 50% found the availability of parking in Downtown below average and identified traffic congestion as an issue. Other concerns noted were lack of bike lanes and the availability of sidewalks citywide.

FIGURE VIII-7. TRANSPORTATION SATISFACTION RESULTS
2024 COMPREHENSIVE PLAN SURVEY



Source: City of Clemson Planning and Codes Department, 2014

S. SUMMARY FINDINGS

The City of Clemson faces transportation challenges that affect other similarly sized cities in the South. The City's road network provides few access opportunities that connect the northern area of Clemson to the south or that connect the eastern area of the City to the west. There are six main arteries carrying the majority of the City's traffic, with US 123 being the most heavily traveled road in the City. This lack of connectivity creates congested roadways and few emergency access routes to various parts of the City.

Congestion is increased by the number of workers commuting into Clemson on a daily basis. Clemson University is a large economic generator, attracting faculty, staff, and students from all of South Carolina and surrounding counties in Georgia and North Carolina.

While there are over 400 spaces of available public parking in downtown, many do not perceive it as being convenient.

Many Clemson residents want access to bike trails and sidewalks. Due to connectivity issues and lack of available open land for trails, creating a comprehensive network of sidewalks and bikeways poses a challenge, especially at a time of reduced funding for transportation projects.

Clemson residents have access to one of the best public transportation systems in the southeastern United States. Clemson University's proximity provides City residents with access to a high quality public transportation service that is generally not available in other similar

sized municipalities. A good relationship between Clemson Area Transit and area partners is an essential part of the functionality and sustainability of the system.

There is a high demand for more biking and walking facilities along the City's main corridors and in neighborhoods.

T. ISSUES AND TRENDS

- As transit dollars become more scarce it will be imperative to find innovative methods and funding tools to improve all transportation infrastructure in the area.
- As Clemson University enrollment increases, traffic congestion on the roadways will continue to become more of a problem. Innovative solutions such as limitations of on campus parking and additional funding for measures such as car sharing and bike sharing are sought. Clemson University Traffic Engineering professors have also recommended high density residential development in and around downtown Clemson, within close proximity to Clemson University.
- The perceived lack of parking availability is a pressing issue in downtown Clemson. The City needs to investigate ways to increase public parking Downtown through land acquisitions or public-private partnerships, or look at ways to draw visitors further down College Avenue where more parking is available.
- As surrounding communities such as Easley, Anderson, and Greenville continue to grow, the amount of congestion on US 123 will most likely increase, as the route provides the primary connection between Seneca and Greenville. Traffic management tools should be utilized to alleviate traffic congestion on US 123 and SC 93 including access management through the addition of raised medians.
- Because all Federal funding is funneled to the Clemson area through the Greenville Pickens Area Transportation Study (GPATS), transparency, advocacy, and open communications on local transportation needs is imperative, especially for the long term operation of Clemson Area Transit.
- Motorists increasingly use neighborhood roads as shortcuts, especially residential areas near the University. Residents are concerned about an increase in this thru-traffic as development continues on campus and Downtown. The City should explore innovative traffic calming methods to make cutting through neighborhoods inconvenient.

U. GOALS, OBJECTIVES AND STRATEGIES FOR IMPLEMENTATION

TRANSPORTATION ELEMENT VISION

"The City is committed to providing safe, sustainable, efficient, and equitable multi-modal transportation systems and services to enhance the quality of life and foster economic vitality in the City of Clemson."

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Goal VIII.1. The City will continue to foster, develop, and improve the Clemson area multi-modal transportation systems and service.			
Objective VIII.1.1. Improve traffic flow by reducing congestion on the major corridors serving the City and discouraging thru traffic on neighborhood roads.			
Strategy VIII.1.1.1. Adopt a "Complete Streets" ordinance and require sidewalks on all new or updated roads and bikeways as identified by the Bikeway Master Plan and Master Sidewalk and Trails Plan.	City Council Administration Planning and Codes Dept	Short-term	
Strategy VIII.1.1.2. Research the feasibility of a second vehicular and pedestrian access point across the Norfolk Southern railroad tracks near the intersection of US 76 and US 123.	Engineering Dept Planning and Codes Dept City Council Administration	Mid-term	
Strategy VIII.1.1.3. Support signalization of the following intersections if traffic levels warrant improvements: Keowee Trl and College Ave; Old Central Rd and Calhoun St; Issaqueena Trl on and off-ramps at US 123; Issaqueena Trl and Chapman Hill Rd; Issaqueena Trl and Tilawa Ct; Issaqueena Trl and Pendleton Rd; Issaqueena Trl and Cambridge Dr; Berkeley Place and Aspen Heights; Old Stone Church Rd and New Hope Rd; Old Stone Church Rd and US 76; Pendleton Rd and US 76; and any major intersection near new large developments.	Engineering Dept Planning and Codes Dept City Council Administration	Ongoing	
Strategy VIII.1.1.4. Work with SCDOT to gain rights-of-way access and will determine the best adjacent land use to prevent the extension of urban sprawl if SCDOT builds a limited access bypass.	Engineering Dept Planning and Codes Dept City Council Administration	Long-term	
Strategy VIII.1.1.5. Amend the Zoning Ordinance and Land Development Regulations to require a traffic impact study for all developments with 100 or more parking spaces.	City Council Administration Planning and Codes Dept	Short-term	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Strategy VIII.1.1.6. Invest in public-private partnerships as a method of constructing additional parking deck facilities in downtown Clemson.	City Council Administration Private Investors	Ongoing	
Objective VIII.1.2. Make streets and intersections functional for all modes of transportation.			
Strategy VIII.1.2.1. Add a turn arrow in both directions and warning signals at the intersection of SC 93 and Frontage Rd.	SCDOT City Council	Short-term	
Strategy VIII.1.2.2. Improve safety at the intersection at SC 93 and US 76 on-ramps by adding a traffic signal at the south ramp and by increasing signal visibility on the north ramp.	SCDOT City Council	Short-term	
Strategy VIII.1.2.3. Improve connection points/thresholds among jurisdictions to provide a cohesive transportation network including areas near the City of Pendleton, Town of Central, Clemson University and Lake Hartwell crossings.	SCDOT City Council Engineering Dept	Mid-term	
Strategy VIII.1.2.4. Research the feasibility of constructing a pedestrian bridge over US 123 near Keowee Trl.	SCDOT City Council Engineering Dept	Long-term	
Strategy VIII.1.2.5. Install shoulders on all existing and future City roads.	SCDOT City Council Engineering Dept	Ongoing	
Objective VIII.1.3. Improve pedestrian safety throughout the City.			
Strategy VIII.1.3.1. Expand the ban on "right turns on red" where there is a high volume of pedestrians.	SCDOT, City Council Engineering Dept	Short-term	
Strategy VIII.1.3.2. Require all new development and redevelopment within one mile of Clemson Elementary School to install sidewalks (including individual single-family homes).	SCDOT City Council Engineering Dept Planning and Codes Dept	Ongoing	
Strategy VIII.1.3.3. Create a "Pedestrian Plaza" at the intersection of US 123 and SC 133 to increase awareness of pedestrian traffic.	SCDOT City Council Engineering Dept Planning and Codes Dept	Short-term	
Strategy VIII.1.3.4. Encourage the utilization of *Section 15-41* of the City Code to gain land for greenways, parks, and bikeways in lieu of impact fees.	City Council Engineering Dept Planning and Codes Dept Utilities	Ongoing	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Objective VIII.1.4. Improve cyclist safely throughout the City.			
Strategy VIII.1.4.1. Engineer and install all bikeway facilities to AASHTO and NACTO standards.	Engineering Dept City Council	Ongoing	
Strategy VIII.1.4.2. Install bike boxes at all major intersections in the City to NACTO standards.	Engineering Dept Planning and Codes Dept City Council	Short-term	
Strategy VIII.1.4.3. Work with SCDOT to increase street sweeping on all state roads and increase enforcement of littering and dumping of trash in roadways.	City Council Public Works	Ongoing	
Strategy VIII.1.4.4. Increase street sweeping on all City-owned streets that are designated bikeway facilities, with prioritization of the cleaning schedule based on annual bicycle traffic counts.	City Council Public Works Planning and Codes Dept	Ongoing	
Strategy VIII.1.4.5. Increase awareness of cyclists in high vehicular areas including College Ave, SC 93, and Issaqueena Trl.	Police Planning and Codes Dept	Ongoing	
Strategy VIII.1.4.6. Consistently enforce the "rules of the road" for cyclists and motorists.	City Council Police	Ongoing	
Strategy VIII.1.4.7. Install signalization for cyclists at major intersections.	Engineering Dept City Council Administration	Short-term	
Objective VIII.1.5. Continue to invest in, support, and improve Clemson Area Transit to maintain and increase the level of transit service provided to the Clemson area.			
Strategy VIII.1.5.1. Partner with Clemson University to provide ONE transit system to serve the Clemson area.	Clemson Area Transit Clemson University City Council	Ongoing	
Strategy VIII.1.5.2. Continue to expand the bus fleet as needed to decrease headway times and increase passengers.	Clemson Area Transit Clemson University City Council	Ongoing	
Strategy VIII.1.5.3. Install bus shelters and/or signage along the Red Route where boarding and alightings are high.	Clemson Area Transit Clemson University City Council	Short-term	
Strategy VIII.1.5.4. Streamline routes to provide the most efficient transit service as possible while providing exceptional service to its riders.	Clemson Area Transit Clemson University City Council	Ongoing	
Strategy VIII.1.5.5. Invest in operational measures to accurately count passengers boardings and alightings.	Clemson Area Transit Clemson University City Council	Short-term	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Strategy VIII.1.5.6. Continue to invest in driver training opportunities to better the service and safety of the system.	Clemson Area Transit City Council	Ongoing	
Strategy VIII.1.5.7. Support Clemson Area Transit in purchasing electric high capacity buses to decrease operational costs.	Clemson Area Transit City Council	Ongoing	
Strategy VIII.1.5.8. Explore a public transit impact fee for all developments that are on an existing or planned bus routes.	City Council Administration Planning and Codes Dept Clemson Area Transit	Mid-term	
Strategy VIII.1.5.9. Study the feasibility to install a fare system.	City Council Administration Clemson Area Transit	Mid-term	
Strategy VIII.1.5.10. Continue night service to keep Clemson streets safe.	City Council Administration Clemson Area Transit	Ongoing	
Strategy VIII.1.5.11. Increase geographic coverage of service as demand grows.	City Council Administration Clemson Area Transit	Ongoing	
Objective VIII.1.6. Continue to promote and support rail travel.			
Strategy VIII.1.6.1. Cooperate with GPATS, SCDOT, and others to support additional passenger train service to Charlotte, Atlanta, and nationwide.	City Council Clemson Area Transit Administration Planning and Codes Dept SCDOT	Ongoing	
Strategy VIII.1.6.2. Encourage the location of a high speed passenger rail stop in the Clemson area.	City Council Clemson Area Transit Administration Planning and Codes Dept	Short-term	
Goal VIII.2. Improve routing, modes, and volume of transportation to be compatible with a livable environment in the Clemson community.			
Objective VIII.2.1. Alleviate traffic congestion on major arteries (US 123, SC 133, SC 93, US 76/SC 28).			
Strategy VIII.2.1.1. Monitor the volume of traffic and waiting times at major intersections at various times during the day and the week to determine peak congestion.	Engineering Dept SCDOT	Ongoing	
Strategy VIII.2.1.2. Work with transportation engineers to reduce congestion throughout the City.	Engineering Dept SCDOT City Council	Ongoing	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Strategy VIII.2.1.3. Analyze, study, and publicize peak congestion times to alert drivers to potential traffic problems and suggest alternate travel times.	Engineering Dept SCDOT City Council Administration Planning and Codes Dept	Mid-term	
Strategy VIII.2.1.4. Work with high traffic generators to change operating hours to relieve congestion at peak hours.	City Council Administration Clemson University	Long-term	
Strategy VIII.2.1.5. Design a new route to bring traffic from Old Central Road to US 76/SC 28, thereby reducing congestion under the railroad bridge on SC 133.	Engineering Dept SCDOT City Council Administration	Long-term	
Strategy VIII.2.1.6. Use access management techniques in the median of US 123 and SC 93 to increase flow of traffic, and to provide easier pedestrian crossings on large right-of-ways.	Engineering Dept SCDOT City Council Planning and Codes Dept	Mid-term	
Strategy VIII.2.1.7. Redesign College Avenue to allow for multi-modal travel north of Edgewood Avenue, including two lanes of travel, bike lanes, wide sidewalks, and on-street parking.	Engineering Dept SCDOT City Council Planning and Codes Dept	Short-term	
Strategy VIII.2.1.8. Add bike lanes and widen sidewalks on Upper College Ave between US 123 and Edgewood Ave.	Engineering Dept SCDOT City Council Planning and Codes Dept	Short-term	
Strategy VIII.2.1.9. Collaborate with Clemson University to encourage car-pooling and other strategies to reduce vehicle traffic at peak times.	City Council Clemson University	Mid-terms	
Strategy VIII.2.1.10. Continue to encourage and invest in alternate modes of transportation on major corridors including bicycles, pedestrians, and public transportation to reduce the use of single-driver motorized vehicles.	City Council Administration	Ongoing	
Strategy VIII.2.1.11. Solicit the expertise of Clemson University's Transportation Engineering Faculty and students to periodically update a travel demand model of the City of Clemson and the surrounding areas.	Planning and Codes Dept	Short-term	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Strategy VIII.2.1.12. Establish an annual alternate transportation week that encourages walking, busing, and biking to work and school.	City Council Planning and Codes Dept Area Schools and Businesses	Short-term	
Objective VIII.2.2. Minimize cut-through traffic in neighborhoods.			
Strategy VIII.2.2.1. At various times during the day and week in a month during the academic year, monitor the volume of traffic through neighborhoods, particularly CHWE (Clemson Historic West End) and CHEE (Clemson Historic East End). Establish a baseline of traffic volume before Campus View, Dukes Project and Douthit Hills come on board, utilizing the 2013 traffic study as baseline data. Apply this traffic monitoring to other neighborhoods as needed.	Police Engineering Dept SCDOT	Short-term	
Strategy VIII.2.2.2. Work with transportation engineers and public safety departments to design and implement methods to discourage cut-through traffic through neighborhoods while increasing connectivity. Utilize traffic calming techniques and devices such as small scale traffic circles, traffic funneling, raised medians and others.	Engineering Dept SCDOT Planning and Codes Dept City Council Administration Pickens County Schools Public Safety Depts.	Ongoing	
Strategy VIII.2.2.3. Increase enforcement of traffic laws (speed and stopping at stop signs) through neighborhoods.	City Council Police	Ongoing	
Strategy VIII.2.2.4. Monitor traffic through neighborhoods to determine the number of trips to residential destinations in the neighborhoods or due to thru-traffic.	Police Planning and Codes Dept	Ongoing	
Strategy VIII.2.2.5. Post signs that restrict residential traffic only through neighborhoods.	Police Public Works City Council	Short-term	
Strategy VIII.2.2.6. Reduce speed to 15 mph through Downtown neighborhoods.	City Council Planning Commission Neighborhood Associations	Short-term	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Goal VIII.3. Improve and expand alternative transportation systems, including but not limited to, bicycles, pedestrians, mopeds, and public transportation.			
Objective VIII.3.1. Continue to implement and maintain sidewalks throughout the City.			
Strategy VIII.3.1.1. Create, adopt, and implement a *Sidewalk and Trail Master Plan* that prioritizes connectivity and network connections.	City Council Planning Commission Planning and Codes Dept	Short-term	
Strategy VIII.3.1.2. Implement a *Safe Routes to School* Program with the help of the Pickens County School District.	City Council SCDOT Pickens County Schools	Mid-term	
Strategy VIII.3.1.3. Install sidewalks in established neighborhoods including those Downtown, along Issaqueena Trail, and Berkeley Dr.	City Council Administration	Ongoing	
Strategy VIII.3.1.4. Update, adopt, and implement the *Greenway Master Plan*.	City Council Planning Commission Planning and Codes Dept	Short-term	
Strategy VIII.3.1.5. Periodically distribute a citywide survey to determine the current use of alternative transportation such as biking, walking, riding mopeds, and riding buses, as well as future use if conditions improve.	City Council Planning Commission Planning and Codes Dept	Ongoing	
Objective VIII.3.2. Continue to implement and maintain bikeway facilities throughout the City.			
Strategy VIII.3.2.1. Develop a biking/walking system to foster non-motorized travel from Downtown Clemson to businesses on US 123. Consider using Larry Abernathy Park for this project.	City Council Planning Commission Parks and Recreation Planning and Codes Dept	Long-term	
Strategy VIII.3.2.2. Establish a bikeshare program.	City Council Planning and Codes Dept Clemson Area Transit	Mid-term	
Strategy VIII.3.2.3. Include comprehensive bikeway maps on all CAT route maps.	City Council Planning and Codes Dept Clemson Area Transit	Short-term	
Strategy VIII.3.2.4. Adopt, Implement, and update the *Bikeways Master Plan*.	City Council Planning Commission Planning and Codes Dept	Short-term	
Strategy VIII.3.2.5. Establish a scheduled maintenance plan and annually set aside funds for maintaining existing and installing new bicycle infrastructure.	City Council Administration Engineering Dept	Short-term	
Strategy VIII.3.2.6. Explore the options for instituting a licensing fee for bicycles and mopeds.	City Council Administration	Short-term	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Strategy VIII.3.2.7. Conduct annual bicycle counts at strategic intersections around the City to monitor cycling trends and infrastructure usage.	Planning and Codes Dept	Ongoing	
Strategy VIII.3.2.8. Strive to become a *Bicycle Friendly Community* through the implementation of bikeway facilities and programs.	City Council Administration	Long-term	
Objective VIII.3.3. Continue to support and expand Clemson Area Transit throughout the region.			
Strategy VIII.3.3.1. Continue to work with GPATS and other regional governmental bodies to provide a regional multi-modal transportation system that is safe, sustainable, efficient, and equitable.	City Council Administration Clemson Area Transit	Ongoing	
Strategy VIII.3.3.2. Continue to foster and improve the relationships between Clemson Area Transit and other area partners to provide the best public transportation system in the southeast, including, but not limited to, Clemson University, Greenville Transit Authority, Electric City Bus System, Seneca, Central, Pendleton, Easley, Greenville, Anderson County, Pickens County, and Greenville County.	City Council Administration Clemson Area Transit	Ongoing	
Strategy VIII.3.3.3. Require all new and updated bus stops on two lane roads to have dedicated pull-offs outside the regular lane of traffic.	City Council Administration Planning and Codes Dept	Mid-term	
Goal VIII.4. Identify, pursue, and implement innovative funding opportunities and strategies for making improvements to the transportation system.			
Objective VIII.4.1. Partner with mutually beneficial area jurisdictions and other providers of high quality transportation services and facilities.			
Strategy VIII.4.1.1. Pair with regional jurisdictions to seek additional Federal transportation grants for the Greenville Large Urbanized Area.	City Council Administration Clemson Area Transit	Ongoing	
Strategy VIII.4.1.2. Maintain a list of "shovel ready projects" to take full advantage of any available transit grants offered by FTA, USDOT, SCDOT, GPATS, and other agencies for transit funding.	City Council Administration Clemson Area Transit Planning and Codes Dept Engineering Dept	Ongoing	
Strategy VIII.4.1.3. Partner with regional agencies to gain funding and support for high speed rail in the Upstate of South Carolina.	City Council Administration Clemson Area Transit Planning and Codes Dept Engineering Dept	Ongoing	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Objective VIII.4.2. Examine traffic impacts for all new or redeveloped areas.			
Strategy VIII.4.2.1. Implement a traffic impact policy ordinance for all new developments.	City Council Administration Planning Commission Planning and Codes Dept	Mid-term	
Strategy VIII.4.2.2. Update the City's Land Development Regulations to require increased connections to the City's transportation network during the planning and development phase.	City Council Administration Planning Commission Planning and Codes Dept	Short-term	
Strategy VIII.4.2.3. Amend the Zoning Ordinance and Land Development Regulations to require a traffic impact study for all developments with 100 or more parking spaces.	City Council Administration Planning Commission Planning and Codes Dept	Short-term	
Goal VIII.5. Collaborate with Clemson University to provide a cohesive, comprehensive, efficient, and attractive transportation system.			
Objective VIII.5.1. Partner with Clemson University to provide ONE transit system to serve the Clemson area.			
Strategy VIII.5.1.1. Create a comprehensive transit system serving all City areas and Clemson University land.	Clemson University City Council Clemson Area Transit	Short-term	
Strategy VIII.5.1.2. Create an annual transit summit with the President, Board of Trustees, Student Body Government, Mayor, Administration, Clemson Area Transit, and members of the public.	Clemson University City Council Administration Student Government Clemson Area Transit	Short-term	
Strategy VIII.5.1.3. Hire a consultant to study both Clemson Area Transit service and Clemson University transit service to determine how to best serve the population of Clemson University and the City of Clemson and to create a single transit provider.	Clemson University City Council Clemson Area Transit	Short-term	
Strategy VIII.5.1.4. Create partner contracts at least one fiscal year in advance, in order to solidify grant funding matches.	Clemson University City Council Clemson Area Transit CAT Partners	Short-term	
Strategy VIII.5.1.5. Continue to include the depreciation value into the budget for Clemson Area Transit.	Clemson University City Council Clemson Area Transit CAT Partners	Ongoing	
Strategy VIII.5.1.6. Partner with Clemson University to create a transit hub on the CU campus with buses, bike shares, car shares, and bike lockers.	Clemson University City Council Student Government Clemson Area Transit	Long-term	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Objective VIII.5.2. Encourage Clemson University to utilize innovative traffic improvements for multi-modal access on and off campus.			
Strategy VIII.5.2.1. Work with SCDOT and Clemson University to improve the intersection at SC 93 and Perimeter Road.	City Council Administration Engineering Dept	Long-term	
Strategy VIII.5.2.2. Support Clemson University in creating a pedestrian zone at the intersection of SC 93 and College Ave.	City Council Administration	Long-term	
Strategy VIII.5.2.3. Cooperate with CAT and Clemson University to establish bus pull-offs nearby on SC 93 near Sikes Hall.	City Council Administration Clemson Area Transit	Mid-term	
Strategy VIII.5.2.4. Rework ramp access from SC 93 to US 76/SC 28 to increase safety and improve traffic flow destined for Pendleton, Anderson and Perimeter roads.	City Council Administration Engineering Dept SCDOT	Long-term	
Strategy VIII.5.2.5. Support improvements on SC 93 as identified by the *Douthit Hills Traffic Study*.	City Council Administration Engineering Dept	Long-term	
Strategy VIII.5.2.6. Encourage and support Clemson University in constructing parking structures, enabling the reduction of the number of commuter lots on the periphery.	City Council Administration Engineering Dept	Short-term	
Strategy VIII.5.2.7. Encourage and support the construction of a pedestrian bridge over SC 93 near Clemson House and Sikes Hall.	City Council Administration Engineering Dept Planning and Codes Dept	Long-term	
Strategy VIII.5.2.8. Encourage Clemson University and SCDOT to rework the intersection at SC 76 and Perimeter Road to accommodate all modes of traffic including cyclists and pedestrians.	City Council Clemson University SCDOT	Mid-term	
Objective VIII.5.3. Collaborate with Clemson University's Development, Facilities, Parking and Transportation, Engineering, and Planning Departments to foster an open and transparent planning process.			
Strategy VIII.5.3.1. Cooperatively address transportation problems to lessen congestion and to provide a cohesive, comprehensive, and mutually beneficial transportation system.	City Council Administration Clemson University	Ongoing	
Strategy VIII.5.3.2. Hold monthly meetings to discuss upcoming transportation projects and needs.	Engineering Dept Planning and Codes Dept Clemson University	Ongoing	

Goals/Objectives/Strategies	Accountable Agencies	Time Frame for Completion	Completion Date
Strategy VIII.5.3.3. Continue to work with Clemson University to enhance the Clemson Area Transit service.	City Council Administration Clemson Area Transit	Ongoing	
Strategy VIII.5.3.4. Support Clemson University in exploring the option of eliminating on campus Freshman parking	City Council Administration Clemson University	Mid-term	

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