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February 20, 2004

Ms. Kay Prince, Chief
Air Planning Branch
U.S. EPA, Region 4
Sam Nunn Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Dear Ms. Prince:

As stated in our February 18, 2004 letter, please find enclosed compelling evidence as to why the South Carolina Department of Health and Environmental Control (Department) believes that Cherokee, Pickens, and York Counties should be designated **attainment** for the 8-hour ozone standard.

The Department hopes that EPA will review and carefully consider this information regarding recommended boundary areas and any additional supporting technical documentation regarding our application of EPA's eleven criteria that we may submit, including the March 2004 Early Action Plan submittals. With the information provided and considering our demonstrated ability to attain National Ambient Air Quality Standards, we encourage EPA to concur with these recommendations as we have followed EPA's published guidance in establishing these recommendations. We look forward to continued discussions regarding these matters and expect EPA would provide us with similar scientific analyses of the data should you not concur with this information. If there are any questions concerning this information please feel free to contact me at (803) 898-4299 or by e-mail at shealyrg@dhec.sc.gov.

Sincerely,

Renee G. Shealy

Renee G. Shealy, Division Director
Division of Air Planning, Development & Outreach
Bureau of Air Quality

Enclosures

cc: Henry Phillips, Bureau of Air Quality

February 27, 2004

Ms. Kay Prince, Chief
Air Planning Branch
U.S. EPA, Region 4
Sam Nunn Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Dear Ms. Prince:

As stated in our February 18, 2004 letter, please find enclosed compelling evidence as to why the South Carolina Department of Health and Environmental Control (Department) believes that partial and separate nonattainment boundaries for Anderson, Greenville, and Spartanburg Counties is appropriate for the 8-hour ozone standard. Additionally, the Department believes that the combined partial counties of Lexington and Richland is the appropriate designation for the Columbia area.

The Department hopes that EPA will review and carefully consider this information regarding recommended boundary areas and any additional supporting technical documentation regarding our application of EPA's eleven criteria that we may submit, including the March 2004 Early Action Plan submittals. With the information provided and considering our demonstrated ability to attain National Ambient Air Quality Standards, we encourage EPA to concur with these recommendations as we have followed EPA's published guidance in establishing these recommendations. We look forward to continued discussions regarding these matters and expect EPA would provide us with similar scientific analyses of the data should you not concur with this information. If there are any questions concerning this information please feel free to contact me at (803) 898-4299 or by e-mail at shealyrg@dhec.sc.gov.

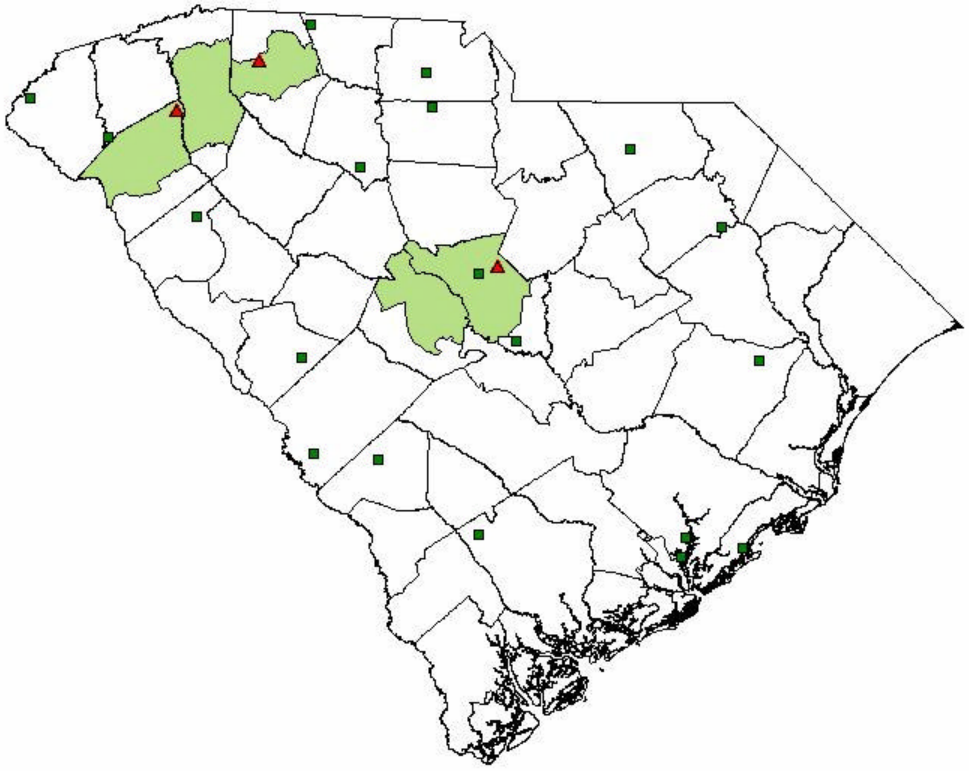
Sincerely,

Renee G. Shealy, Division Director
Division of Air Planning, Development & Outreach
Bureau of Air Quality

Enclosures

cc: Henry Phillips, Bureau of Air Quality

South Carolina Ozone Nonattainment Boundary Recommendations



Ozone Monitoring Sites
- Attaining
- Violating

Recommended Nonattainment Boundaries (based on 2001-2003 ozone design values)

0 50 Miles

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This map is a product of the South Carolina Department of Health and Environmental Control. Reasonable efforts have been made to ensure the accuracy of this map. SCDHEC disclaims any responsibility with regards to this map.
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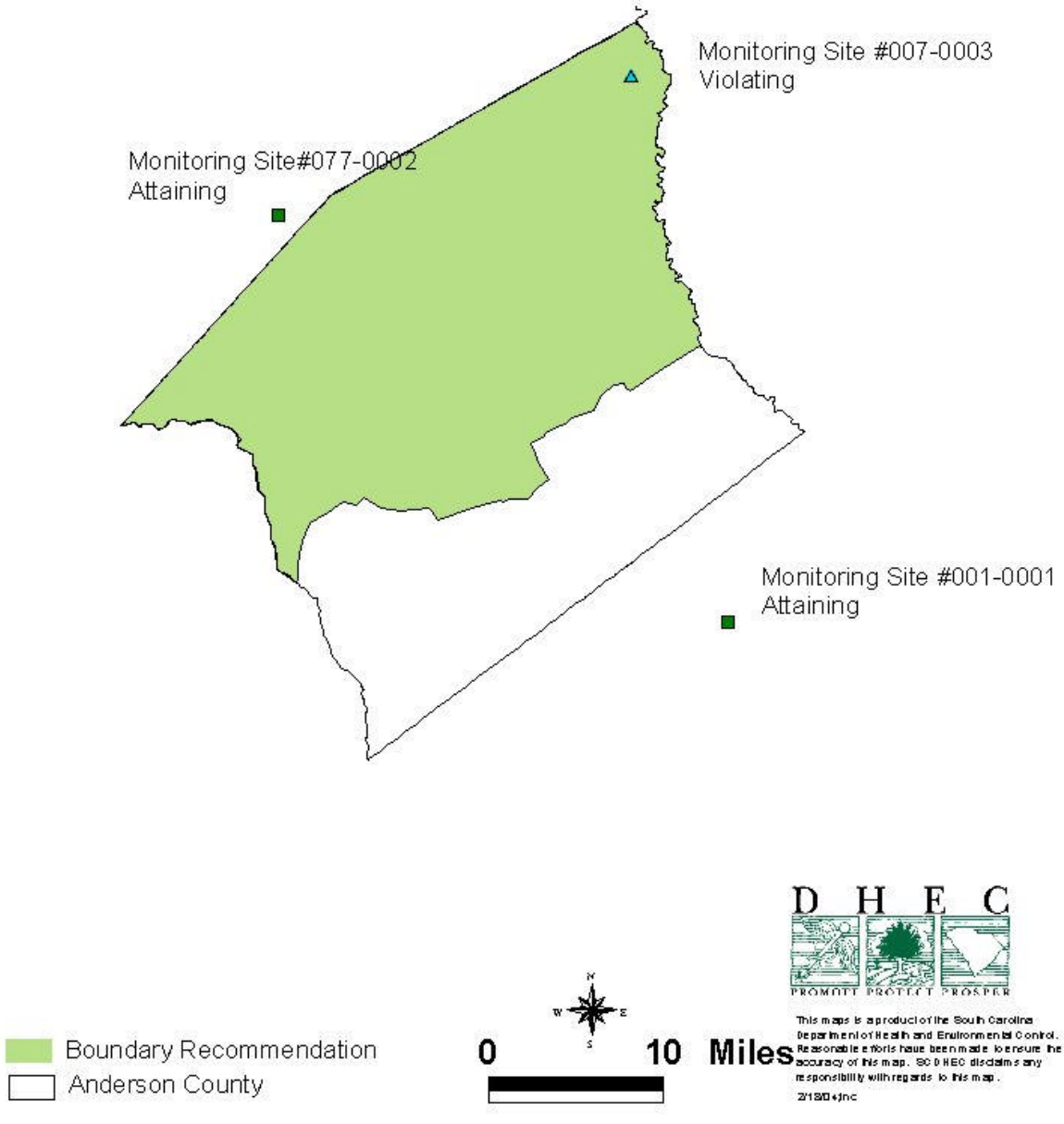
Anderson Nonattainment Area
Boundary Recommendation



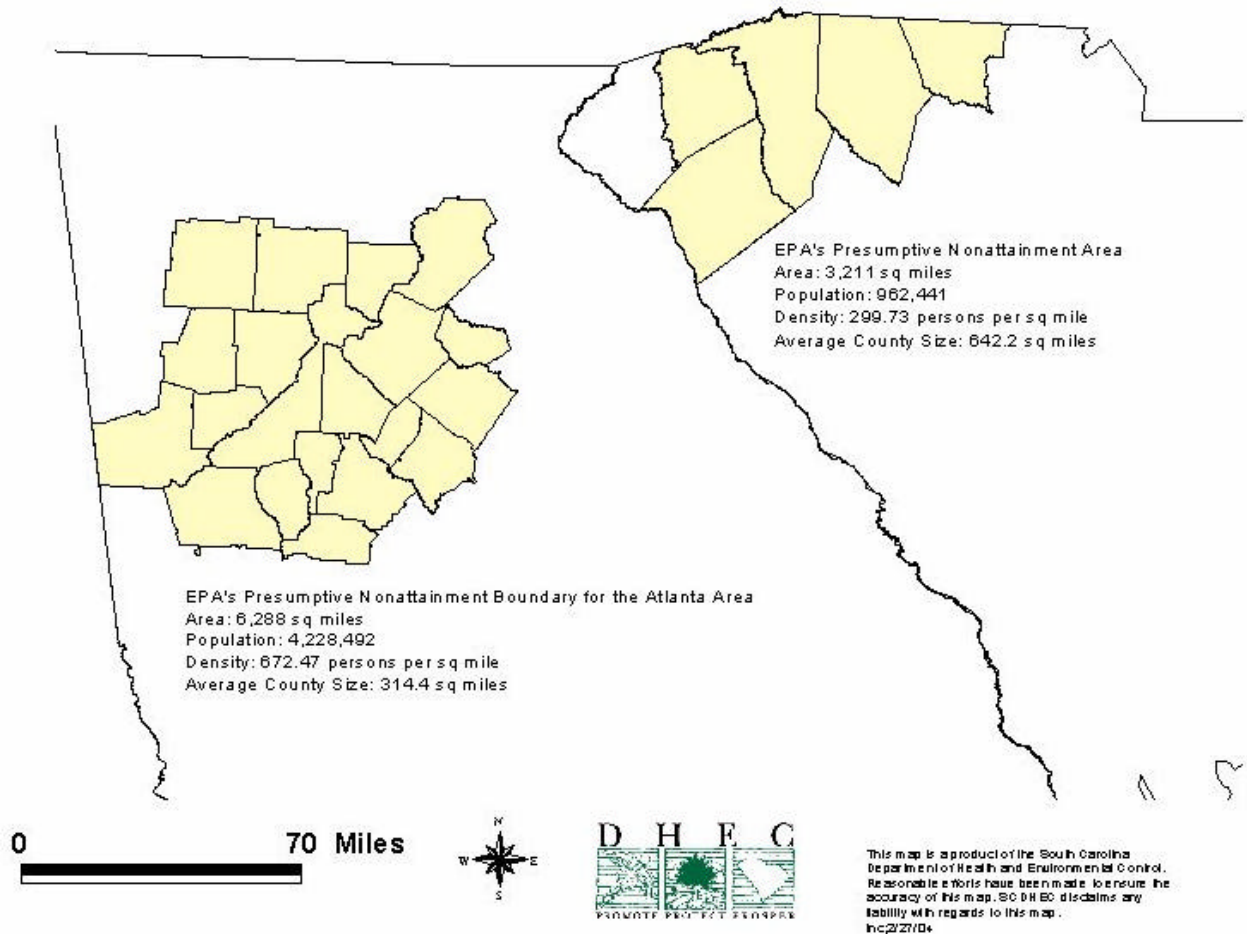
Anderson Nonattainment Area
Boundary Recommendation
Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, and later amended on November 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the Department's recommendations. Specifically, EPA's response indicated that the entire Greenville-Spartanburg-Anderson Metropolitan Statistical Area (MSA), which is based on the 1990 MSA definition, be designated as one nonattainment area. Such a recommendation would include the full counties of Anderson, Cherokee, Greenville, Pickens, and Spartanburg. The Department remains firm in its request that only portions of Anderson, Greenville, and Spartanburg Counties be designated and that their designations be independent of one another. The Department wishes to take this opportunity to again demonstrate why EPA's proposed modifications are inappropriate. The information and data provided below documents, on a technical basis, the Department's reasons for recommending only a **portion** of Anderson County as a **separate** nonattainment area.

Based on EPA presumptive boundary sizes, designation of a partial and separate nonattainment area for the Anderson boundary is appropriate. Figure 1 shows a side-by-side comparison of the recommended Atlanta, GA 8-hour ozone nonattainment area and the Greenville-Spartanburg-Anderson, SC MSA, (EPA's presumptive boundary for the upstate). Disturbing observations can be made, given that EPA has indicated that these will be the 8-hour ozone nonattainment boundaries for the respective areas. The five counties that make up the Greenville-Spartanburg-Anderson MSA average 641.8 square miles per county. In contrast, the Atlanta area includes 20 counties with an average size of 324.5 square miles per county. The comparative land areas and populations demonstrate a severe inequity in setting boundaries based on EPA's presumptive boundaries.

Figure 1

Presumptive Boundary Comparison



Based on 2003 MSA Definitions[1], designation of a partial and separate nonattainment area for the Anderson boundary is appropriate. Anderson County is located in the Upstate Region of South Carolina. Upon analysis of the 2000 Census, including the population dynamics and commuting data, the Office of Management and Budget (OMB) decided to create three separate MSA in the Upstate Region, which indicates that these areas are reasonably detached. The 2003 OMB designations provide justification on a technical basis and helps to substantiate the Department's recommendation of separate nonattainment areas in the Upstate Region.

[1] The definitions for the 2003 MSAs were established by the June 6, 2003, Office of Management and Budget (OMB) Bulletin No. 03-04. This Bulletin establishes revised definitions for the Nation's Metropolitan Statistical Areas and recognizes 49 new Metropolitan Statistical Areas. In addition, the bulletin establishes definitions for two new sets of statistical areas: Micropolitan Statistical Areas and Combined Statistical Areas.

Based on the 2003 MSA definitions, the Upstate Region is divided into three distinct MSAs:

1. Anderson, SC MSA, (Anderson County, SC)
2. Greenville, SC MSA, (Greenville County, SC; Laurens County, SC; Pickens County, SC)
3. Spartanburg, SC MSA, (Spartanburg County, SC)

Two separate Combined Statistical Areas were also designated for the Upstate Region in 2003:

1. Greenville-Anderson-Seneca, SC Combined Statistical Area (Anderson, SC MSA; Greenville, SC MSA; Seneca, SC Micropolitan Statistical Area)
2. Spartanburg-Gaffney-Union, SC Combined Statistical Area (Gaffney, SC Micropolitan Statistical Area; Spartanburg, SC MSA; Union, SC Micropolitan Area)

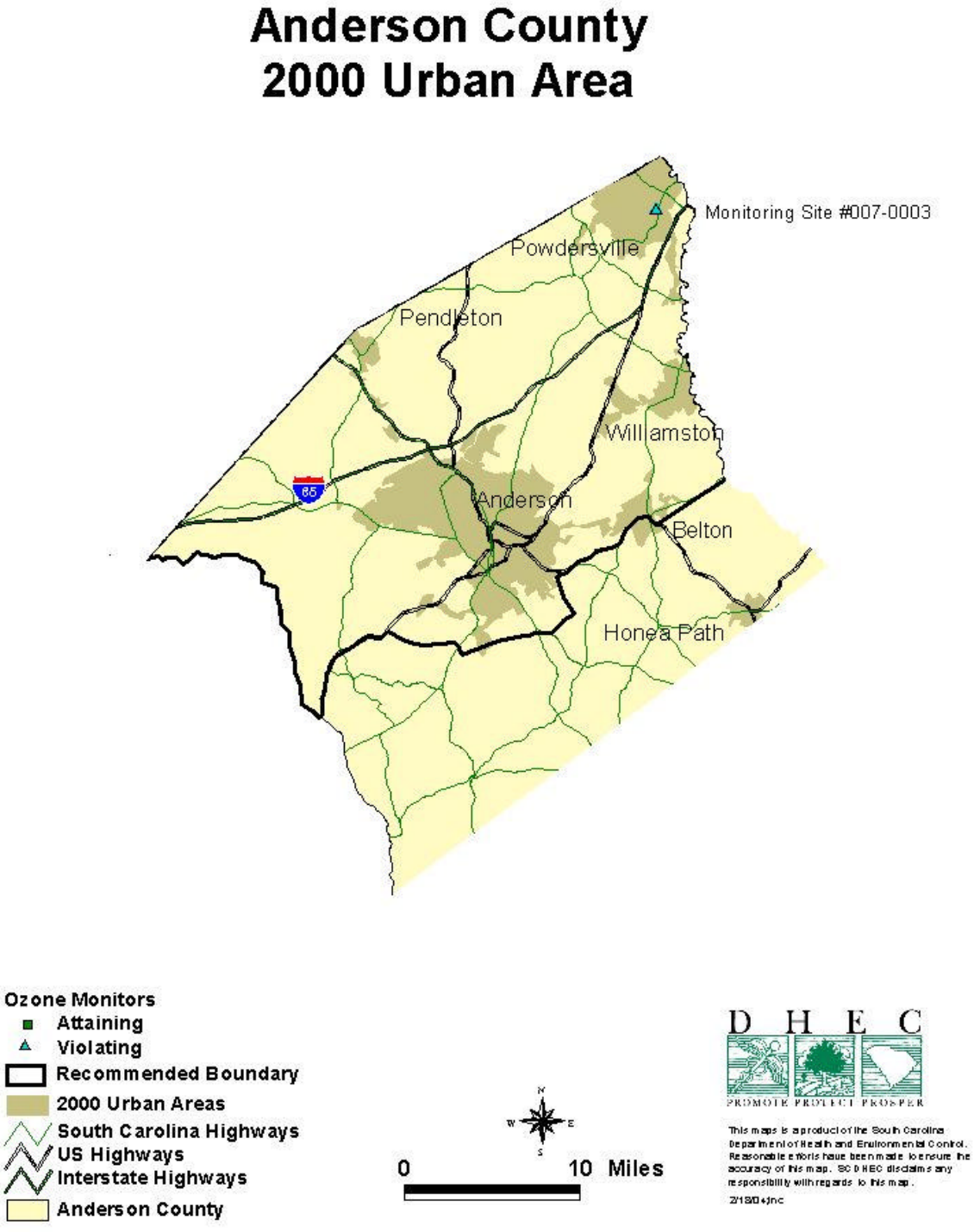
These definitions reflect the Standards for Defining Metropolitan and Micropolitan Statistical Areas that the OMB published on December 27, 2000, in the Federal Register (65 FR 82228 - 82238), and the application of those standards to Census 2000 population and journey-to-work data. The general concept of a Metropolitan Statistical Area or a Micropolitan Statistical Area is that of an area containing a recognized population nucleus and adjacent communities that have a high degree of integrations with the nucleus. For these reasons, the OMB has saw fit to break apart the Greenville-Spartanburg-Anderson MSA.

Furthermore, the Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as **serious** and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the violating monitors in the Upstate would be classified as marginal. The OMB has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. This was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to the public and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Throughout the rest of this summary of the Anderson nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

Based on low population and low population density, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. The recommended boundary captures 84.45 percent of the population and 69.92 percent of the land area, and the boundary includes the most densely populated land areas within the county. In fact, approximately 13.8 percent of Anderson County's land area contains an estimated 95 percent of the county's urban population (see figure 2). Moreover, the recommended area, which covers a large percentage of the land area, captures this "contained" urban population.

Figure 2



Based on low employee percentages and wide distribution of economic sector employees, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. The recommended boundary captures 92.76 percent of the manufacturing employees and 90.81 percent of the manufacturing establishments. Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Based on the point source emissions data, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. The recommended boundary captures 99.9 percent of the total point source NO_x emissions and 98.9 percent of the total point source VOC emissions. (See figures 3 & 4.)

Figure 3: Anderson County
Point Source NO_x Emissions

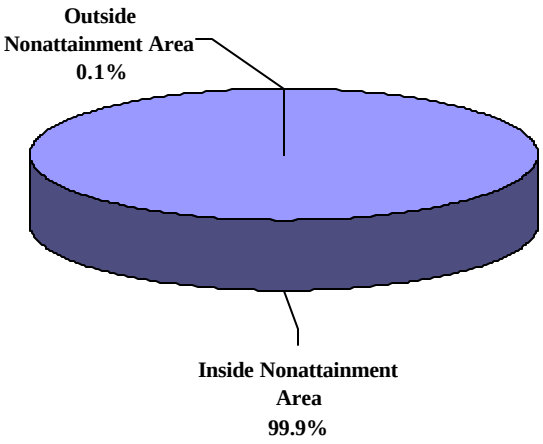
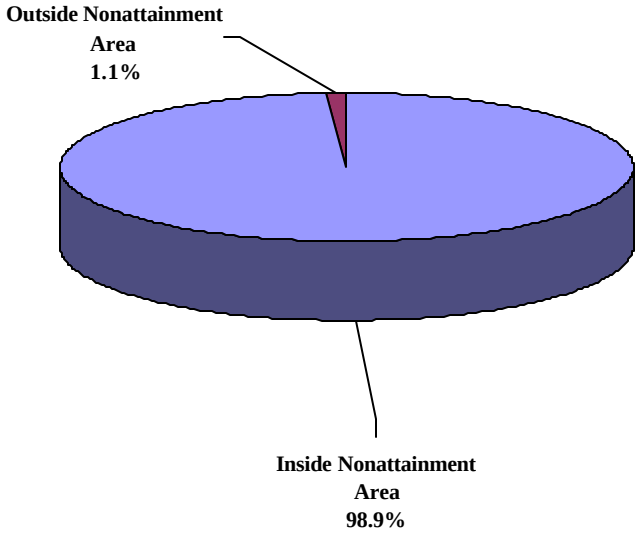


Figure 4: Anderson County
Point Source VOC Emissions



Based on commuter flow, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. According to the U.S. Census Bureau, 81.96 percent of workers in the Greenville-Spartanburg-Anderson MSA, work in the same county they live in. Anderson County accounts for 16.53 percent of the working population in the MSA, workers living in Anderson and commuting to other counties in the MSA account for only 4.48 percent of the entire MSA worker flow.

Table 1: County of Residence for Greenville-Spartanburg-Anderson MSA

County Worked In	Anderson	Cherokee	Greenville	Pickens	Spartanburg	Grand Total
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Out of County Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Based on South Carolina's commitment to "Cleaner Air Sooner," designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. The South Carolina General Assembly passed and our Governor signed a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating

in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. These efforts demonstrate a commitment by all involved to protect and improve air quality for the citizens of South Carolina.

Based on South Carolina's statutory authority to require controls on sources regardless of location, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis. In fact, in a recent permit application from Santee-Cooper (Rainey), the Department required that Selective Catalytic Reduction (SCR) controls be installed on units 1A and 1B. Both units will be operating with SCR controls by April 1, 2005.

Based on state and EPA modeling, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

Based on the 2001-2003 quality assured data, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. While the monitor in Anderson County is violating the 8-hour standard, it is bounded by attaining monitors in Oconee, Pickens, and Abbeville Counties. Furthermore, the Department believes that the Powdersville monitor is most representative of the recommended boundary area. The monitor in Abbeville County is more representative of conditions in southern Anderson County, which the Department is not recommending for nonattainment designation. Anderson County experienced only one exceedance of the ozone standard value (0.085 ppm or higher) in 2003.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including Anderson County, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. South Carolina's citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

Based on the unique transportation and air quality planning programs, designation of a partial and separate nonattainment boundary for the Anderson area is appropriate. The Anderson Area Transportation Study (ANATS) performs transportation planning specific for the urbanized portion of the county. Similarly, the Department has a regional environmental office located in Anderson County that monitors compliance of the regulated sources within Anderson and Oconee Counties.

Conclusion

The twelve factors listed below represent the most compelling reasons why the Department believes designating only a **portion** of Anderson County as a **separate** nonattainment area is appropriate. Additional data to support these factors, as well as other supporting documentation to address EPA's eleven criteria is attached.

1. EPA presumptive boundary sizes.
2. 2003 MSA definitions.
3. Low population and low population density.
4. Low percentage of employees in the recommended area.
5. Low point source emissions in the recommended area.
6. Low MSA commuter flow.
7. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
8. The Department's statutory authority to require controls on sources regardless of location.
9. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
10. Quality assured ozone-monitoring data indicating attainment around portions of the area not recommended.
11. Comprehensive Ozone Forecasting Program.
12. Unique transportation and air quality planning programs.

Supporting Documentation for
Anderson Nonattainment Area
Boundary Recommendation

Throughout the rest of this summary of the Anderson nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

Anderson Nonattainment Area
Boundary Recommendation

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in Anderson County and adjacent counties, the Department utilized the estimated 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, biogenic, and off-road and on-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for Anderson County and surrounding South Carolina counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for Anderson and Adjacent Counties

*** Order of bars corresponds with order of counties in legend.**

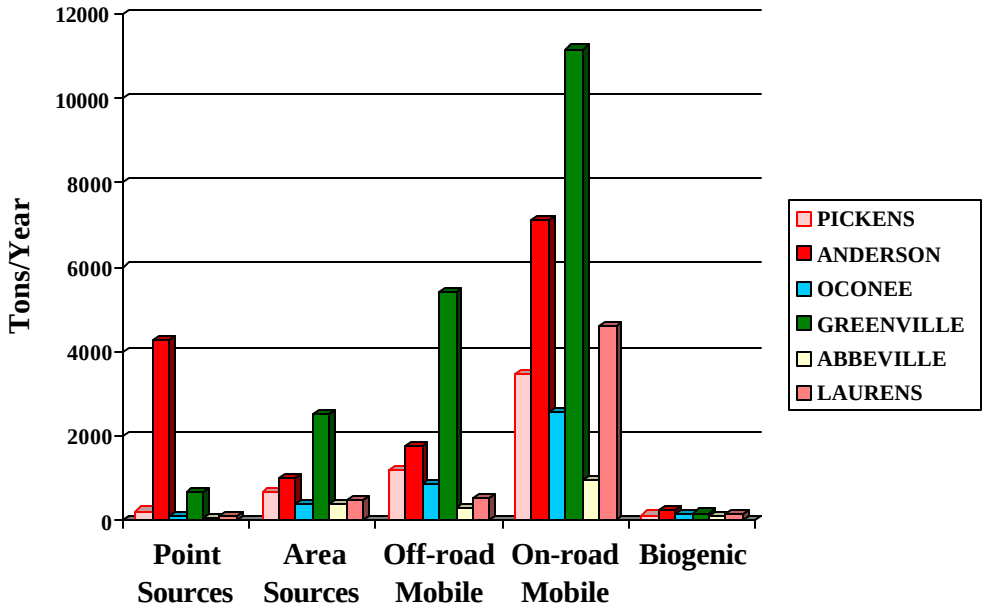
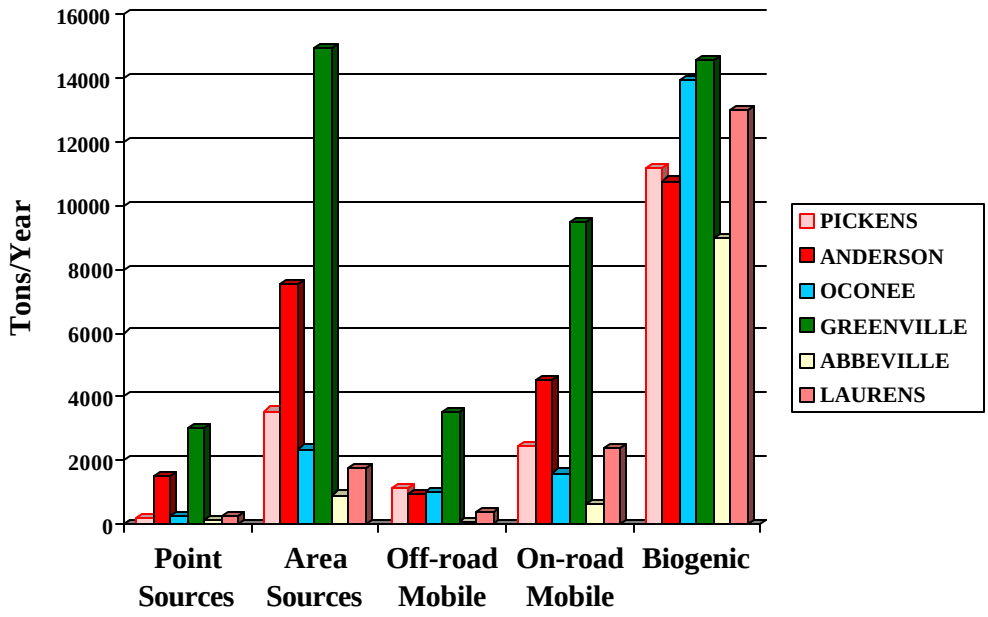


Figure A-2: VOC Sources for Anderson and Adjacent Counties
*** Order of bars corresponds with order of counties in legend.**



The Department currently has one ozone-monitoring site in Anderson County; the monitor indicates nonattainment of the air quality standard. Anderson County is bounded by attaining monitors in Oconee, Pickens, and Abbeville Counties. Additional air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000 Anderson County's population was 165,740, and covering 718 square miles, Anderson County had a population density of 230.8 persons per square mile. The majority of Anderson County's population was urban as 58.3%, or 96,680 persons, resided mostly in urbanized areas and clusters. Using Geographical Information Systems (GIS), the Department estimated the recommended area in Anderson County to be 502.01 square miles. Likewise, the estimated population of the recommended area is 139,961, and the population density is 278.8 persons per square mile.

The recommended area captures 84.45% of the population of Anderson County. Moreover, Figure B-1 shows that the recommended area contains all but the least populated areas in Anderson County. Areas south of the boundary being rural, less densely populated, and somewhat removed from Interstate 85, it is reasonably assumed that the population and population density, as well as the number of businesses, both now and in the future is contained within the boundary.

Figure B -1

Anderson County Population per Square Mile

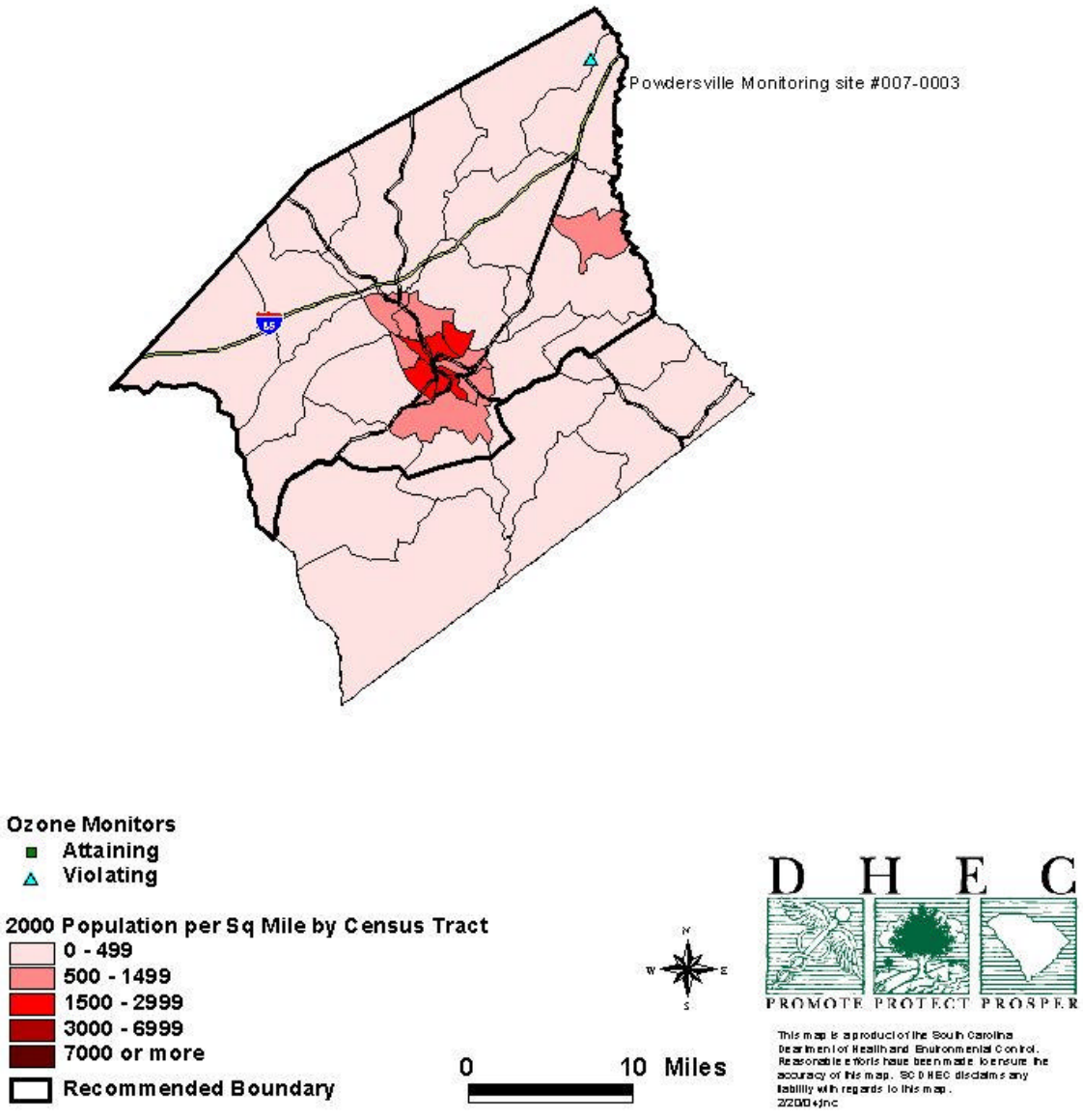


Figure B-2 shows the urban areas for Anderson County. Approximately 13.8% of Anderson County's land area encompasses nearly 95% of the urban population, which is captured within the recommended area.

Figure B-2

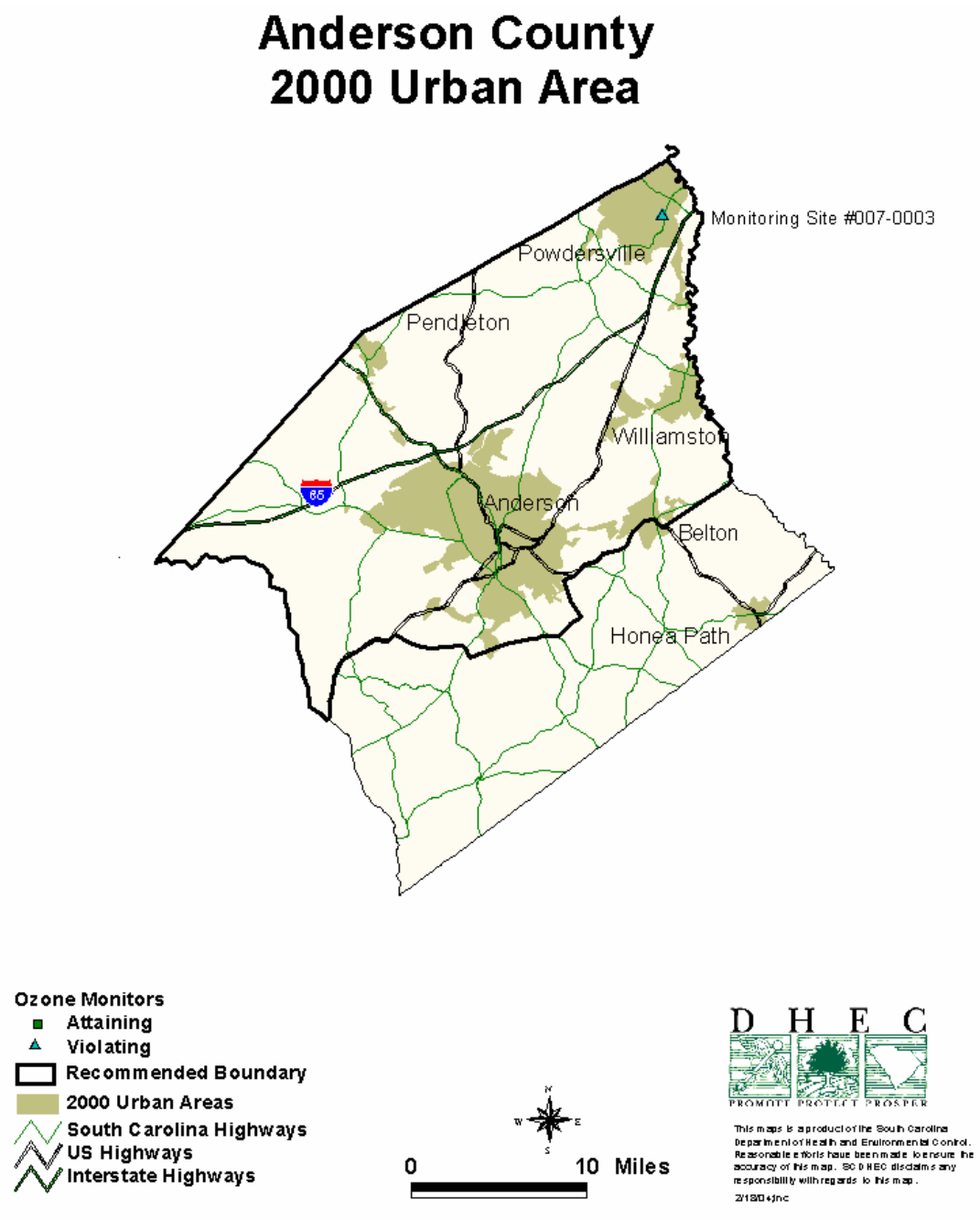


Table B-1 contains the population and land area data for Anderson County and the recommended area for the year 2000.

Table B-1: Population, Land Area, and Urban/Rural Population, 2000			
	Anderson County	**Recommended Area**	**% Captured by Recommended Area**
Population[2]	165,740	139,961	84.45%
Land Area (Square Miles)[1]	718	502.01	69.92%
Persons per Square Mile [1]	230.8	278.8	
Urban Population[3]	96,680		
% Urban Population [2]	58.3%		95.00%[4]
Rural Population [2]	69,060		
% Rural Population [2]	41.7%		

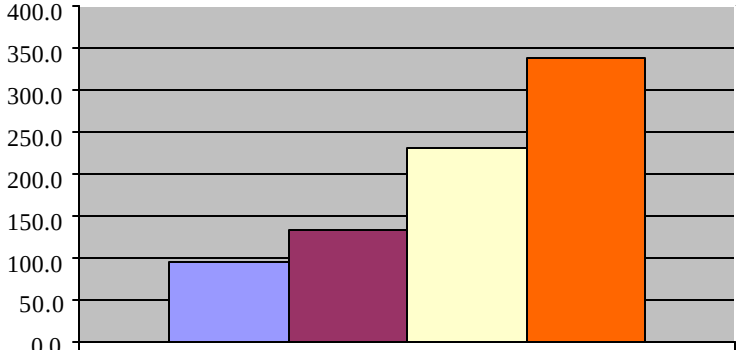
Table B-2 contains the population and land area for Anderson, Greenville, and Spartanburg Counties and the recommended areas for the year 2000. The recommended areas capture 83.04% of the counties' population and 54.32% of the counties' land area. Also, based on the population density and urban area maps for those counties, the recommended area contains the most densely populated areas and the vast majority of the populated areas.

Table B-2 Population, Land Area, and Urban/Rural Population, 2000							
	Population	**Land Area (Square Miles)**	**Persons per Square Mile**	**Urban Population**	**% Urban Population**	**Rural Population**	**% Rural Population**
Greenville County	379,616	790	480.5	315,095	83.00%	64,521	17.00%
Recommended Area	359,875	474.4	758.6				
% Captured by Recommended Area	94.80%	60.05%					
Spartanburg County	253,791	811	313	164,341	64.80%	89,450	35.20%
Recommended Area	163,761	283.8	577.1				
% Captured by Recommended Area	64.53%	34.93%					
Anderson County	165,740	718	230.8	96,680	58.30%	69,060	41.70%
Recommended Area	139,961	502.01	278.8				
% Captured by Recommended Area	84.45%	69.92%					
3 County Total	799,147	2,319	344.61				
3 Recommended Areas Total	663,597	1,259.71	526.79				
% captured by Total 3 recommended Areas	83.04%	54.32%					

[2] Data provided by US Census: 2000. The data for the recommended area was obtained from the SCDOT.
[3] Data provided by SC Office of Research and Statistics.
[4] Estimated

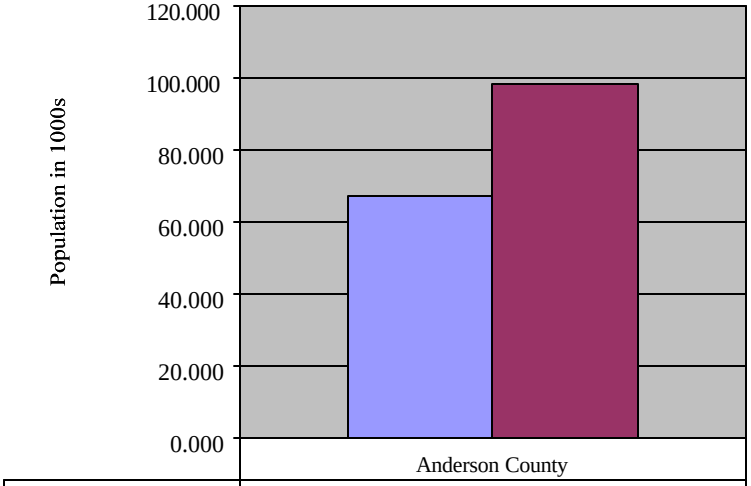
Figures B-3 through B-5 show the population density, the population, and land area, respectively, distribution relative to the full county and the recommended area.

Figure B-3: Population Density, 2000
(Persons per Square Mile)



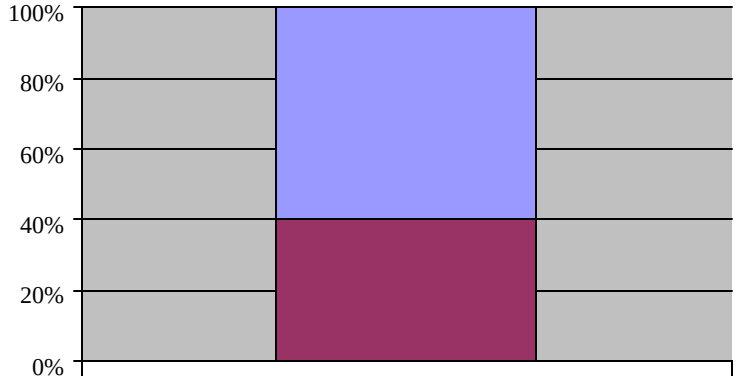
	Anderson County
County Rural Persons per Sq. Mi.	96.2
County Urban Persons per Sq. Mi.	134.6
Total County Persons per Sq. Mi.	230.8
Recommended Area Persons per Sq. Mi.	339.3

Figure B-4:
Population Distribution
Relative to recommended Area Boundaries, 2000



	Anderson County
Outside Recommended Area	67.265
Inside Recommended Area	98.475

Figure B-5: Land Area Distribution
According to Recommended Area, 2000



	Anderson County
Non-Recommended Area Land Area in Sq. Mi.	427.8
Recommended Area Land Area in Sq. Mi.	290.2

Anderson County has various industry and businesses located throughout it. According to a Bureau of Air Quality data file that gives the location of manufacturing facilities and the respective number of employees, manufacturing is the county's largest employment sector as some 22,513 persons are employed at 185 manufacturing establishments throughout the county. Over 92% of the manufacturing employees, or 20,883 employees, and almost 91% of the manufacturing establishments, or 168 establishments, are contained inside of the recommended area. Retail trade is the county's second largest sector of employment as some 9,049 persons work at some 749 retail businesses throughout the county. Anderson County's manufacturing and retail trade data is found in Tables B-3 and B-4.

Table B-3:
Manufacturing Employees and Establishments in Anderson County, 2000[5]

	In Recommended Area Boundary	In County Boundary	Percent in Recommended Area Boundary
Number of Employees	20,883	22,513	92.76%
Number of Establishments	168	185	90.81%

Table B-4: Retail Trade Patterns, 2000[6]

	Number of Employees	Number of Establishments
Anderson County	9,049	749

Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Being the urban area in the county, the Anderson recommended area is assumed to contain the majority - both employees and establishments - of the manufacturing, retail, and other business in the county.

Table B-5 shows both the number of employees and establishments for Anderson County according to the Census 2000 North American Industrial Classification System (NAICS) database and is ranked in order according to the number of employees. The largest employment sector in Anderson County is manufacturing.[7] The second largest is retail trade while the third is health care and social assistance.

It should be noted that the data in Table B-5 differs from data in the previous tables due to the source of the data.

[5] Data from Bureau of Air Quality file entitled "SC Company File1.xls," based on 2001.
[6] Data based on US Census: 2000.
[7] Data provided by US Census: 2000.

Table B-5: MSA Employees per Classification, NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank based on Number of Employees from greatest to least**
Anderson	Manufacturing	18,853	227	1
Anderson	Retail trade	8,588	745	2
Anderson	Health care and social assistance	7,785	312	3
Anderson	Accommodation & food services	5,301	300	4
Anderson	Construction	3,859	454	5
Anderson	Other services (except public administration)	2,859	465	6
Anderson	Admin, support, waste mgt, remediation services	2,707	132	7
Anderson	Wholesale trade	2,390	201	8
Anderson	Finance & insurance	1,368	220	9
Anderson	Professional, scientific & technical services	1,161	235	10
Anderson	Transportation & warehousing	860	75	11
Anderson	Information	566	29	12
Anderson	Arts, entertainment & recreation	523	53	13
Anderson	Educational services	489	25	14
Anderson	Real estate & rental & leasing	433	126	15
Anderson	Utilities	303	14	16
Anderson	Management of companies & enterprises	212	17	17
Anderson	Unclassified establishments	31	28	18
Anderson	Auxiliaries (exc corporate, subsidiary & regional mgt)	20-99	2	*
Anderson	Forestry, fishing, hunting, and agriculture support	20-99	11	*
Anderson	Mining	20-99	3	*
** The number of employees not available or the number of employees was reported as a range.*				

Table B-6 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 7.58% of the employees in the MSA, and 14.90% of those employees worked in Anderson County while 9.90% of those employees worked in Pickens County. The largest employment in the MSA is in manufacturing (23.45%) and retail trade (11.66%); of those two classifications Anderson County employed 17.14% and 15.70%, respectively. In fact, in 2001 Anderson County generally contained the third most employees in each industry code category as seen in Table B-6.

Table B-6: MSA Employees per Classification, NAICS, 2001						
Industry Code Description	**% in MSA**	**Greenville County**	**Spartanburg County**	**Anderson County**	**Pickens County**	**Cherokee County**
Accommodation & food services	7.58%	45.95%	24.77%	14.90%	9.90%	4.47%
Admin, support, waste mgt, remediation services	9.42%	62.51%	27.23%	6.12%	2.77%	1.36%
Arts, entertainment & recreation	0.90%	61.12%	15.60%	12.44%	8.28%	2.57%
Auxiliaries (exc corporate, subsidiary & regional mgt)	0.86%	68.57%	23.95%	*	*	7.47%
Construction	9.38%	67.53%	14.82%	8.76%	5.15%	3.74%
Educational services	1.80%	59.91%	24.18%	5.79%	5.88%	4.24%
Finance & insurance	3.00%	64.43%	18.87%	9.71%	4.74%	2.25%
Forestry, fishing, hunting, and agriculture support	0.03%	*	63.64%	*	36.36%	*
Health care and social assistance	9.61%	42.90%	30.47%	17.26%	6.80%	2.57%
Information	1.83%	71.95%	15.43%	6.59%	4.61%	1.42%
Management of companies & enterprises	3.20%	61.85%	30.98%	1.41%	5.76%	*
Manufacturing	23.45%	37.62%	29.69%	17.14%	8.15%	7.41%
Mining	0.03%	*	100.00%	*	*	*
Other services (except public administration)	4.42%	48.31%	26.12%	13.79%	7.80%	3.98%
Professional, scientific & technical services	3.58%	68.45%	19.94%	6.91%	3.70%	1.01%
Real estate & rental & leasing	1.51%	69.36%	13.65%	6.11%	9.49%	1.38%
Retail trade	11.66%	45.42%	25.74%	15.70%	8.46%	4.67%
Transportation & warehousing	2.65%	61.86%	24.91%	6.91%	0.87%	5.45%
Unclassified establishments	0.04%	79.03%	*	16.67%	*	4.30%
Utilities	0.27%	58.75%	*	23.67%	11.17%	6.41%
Wholesale trade	4.78%	52.72%	27.30%	10.66%	5.23%	4.09%
** The number of employees not available or the number of employees was reported as a range.*						

Again, given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the employees and establishments in the county for each industry code category are contained within the recommended area boundary.

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

The Powdersville monitor located in Anderson County is surrounded by attaining monitors in Pickens, Oconee, and Abbeville Counties. The Department's Division of Air Quality Analysis, which is responsible for monitor siting, and data gathering, believes that while the monitor in Anderson County is violating, it is not representative of the entire county. The attaining monitor in Abbeville County, which is sited in a rural portion of the state in close proximity to Anderson County, is better representative of southern, rural Anderson County than the Powdersville monitor, which is sited closer to an urban setting.

The Anderson County ozone-monitoring station (Powdersville 45-007-0003) is located off Route 81, approximately 300 meters above sea level. The area surrounding the monitoring site is agricultural. According to the South Carolina Department of Transportation (SCDOT), traffic counts for 1993, six hundred (600) vehicles per day accessed the road. The site has been in operation since 1991 and measurement of ozone concentrations runs mid-March through mid-November. The monitoring objective for this site is to measure the maximum ozone concentrations.

The Pickens County ozone-monitoring station (Clemson CMS 45-077-0002) is located off of Hopewell Road, approximately 216 meters above sea level. The surrounding area of the monitoring site is agricultural. According to SC DOT traffic counts for 1993, one hundred (100) vehicles per day accessed the road. The site has been in operation since 1979 and measurement of ozone concentration runs mid-March through mid-November each year. The monitoring objective for this site is for general background.

The Oconee County ozone-monitoring station (Longcreek 45-073-0001) is located at the Round Mountain Fire Tower, approximately 658 meters above sea level. The surrounding area of the monitoring station is forested. According to SC DOT traffic count data for 1993, three (3) vehicles per day access the road near the monitor. The site was established in 1983 and measurement of ozone concentration has continuously run since May of 1989. The monitor objective for this site is to measure ozone concentration for regional transport purposes.

The Abbeville County ozone-monitoring station (Due West 45-001-0001) is located near the Dixie High School football field, approximately 204 meters above sea level. The surrounding area of the monitoring site is agricultural. According to SC DOT traffic count data for 1993, three hundred (300) vehicles per day access the road near the monitor. The site has been in operation since 1991 and measurement of ozone concentration runs mid-March through mid-November. The monitoring objective for Due West site is to measure concentration for general background.

Table C-1 presents the 2001 through 2003 quality assured 8-hour ozone monitoring data for Anderson, Pickens, Oconee, and Abbeville Counties. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the Clemson, Long Creek, and Due West monitors indicate attainment with the 8-hour ozone standard.

Table C-1: Anderson Area Ozone Monitoring Data						
County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2001	2002	2003	
Anderson	45-007-0003	Powdersville	0.088	0.093	0.078	0.086
Pickens	45-077-0002	Clemson CMS	0.088	0.088	0.078	0.084
Oconee	45-073-0001	Longcreek	0.078	0.094	0.077	0.083
Abbeville	45-001-0001	Due West	0.082	0.088	0.077	0.082

Table C-2 contains the previous three years daily maximum ozone concentrations above 0.084 ppm. A period in the box indicates no exceedance occurred on that date.

Table C-2: Anderson County Area Ozone Values				
Date of Exceedance	Powdersville Exceeding Value	Clemson Exceeding Value	Long Creek Exceeding Value	Due West Exceeding Value
05/05/2001	0.092	0.085	.	.
05/05/2001	0.085	0.085	.	.
05/18/2001	.	.	.	0.091
06/18/2001	0.088	0.088	0.085	.
06/20/2001	0.086	.	.	.
06/21/2001	.	0.088	.	.
07/12/2001	0.098	0.097	.	.
07/17/2001	0.086	0.087	.	.
08/23/2001	0.089	.	.	.
09/13/2001	0.088	0.090	.	.
2001 Total Hits	**8**	**7**	**1**	**1**
05/25/2002	0.085	.	.	.
06/10/2002	0.093	0.088	0.094	.
06/11/2002	0.090	.	.	.
06/13/2002	0.093	0.086	.	0.102
06/18/2002	.	.	.	0.085
06/20/2002	0.085	0.088	.	.
06/21/2002	.	0.086	0.086	.
06/30/2002	0.085	.	.	.
07/03/2002	0.095	.	.	.
07/04/2002	0.086	.	.	.
07/05/2002	.	.	.	0.086
07/06/2002	.	.	.	0.088
07/17/2002	.	.	.	0.085
08/01/2002	0.087	0.086	.	.
08/02/2002	0.089	0.088	.	.
08/08/2002	0.089	0.085	.	0.086

Table C-2: Anderson County Area Ozone Values				
Date of Exceedance	**Powdersville Exceeding Value**	**Clemson Exceeding Value**	**Long Creek Exceeding Value**	**Due West Exceeding Value**
08/09/2002	0.086	.	.	.
08/10/2002	0.089	.	.	.
08/11/2002	0.089	.	.	.
08/12/2002	.	0.087	.	.
08/21/2002	0.099	0.090	.	0.086
08/22/2002	0.086	.	.	.
09/04/2002	0.086	.	.	.
09/05/2002	0.103	0.100	0.097	0.088
09/06/2002	0.091	0.093	0.094	.
09/10/2002	.	.	0.094	0.090
09/11/2002	.	.	0.091	0.088
2002 Total Hits	**19**	**11**	**6**	**10**
06/26/2003	.	.	.	0.085
07/17/2003	0.085	.	.	.
2003 Total Hits	**1**	**0**	**0**	**1**

D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in Anderson County and the other four MSA counties based on the 1999 NO_x point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Anderson County has 33 NO_x point sources in operation and 31 of these point sources are located within the nonattainment area. Facilities in Anderson County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Anderson County are located within the proposed boundary. Anderson County accounts for 40.81% of the total MSA NO_x point source emissions. The recommended boundary captures 99.9% of the total point source NO_x emissions.

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Anderson	Duke Energy:Lee	0200-0004	NO2	3,556.57
Anderson	Owens Corning:Anderson	0200-0031	NO2	302.91
Anderson	Milliken:Pendleton	0200-0011	NO2	69.28
Anderson	Isola Laminate Systems Pendleton	0200-0058	NO2	44.74
Anderson	Michelin:Sandy Spring	0200-0018	NO2	22.49
Anderson	Vytech	0200-0050	NO2	17.64
Anderson	Milliken:Cushman	0200-0032	NO2	15.12
Anderson	Hexcel Schwebel Inc	0200-0036	NO2	11.33
Anderson	Anderson Medical Center	0200-0061	NO2	10.73
Anderson	Springs Industries:Wamsutta	0200-0014	NO2	9.83

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Anderson	BASF:Anderson	0200-0005	NO2	9.71
Anderson	Sloan Construction:Anderson	9900-0113	NO2	9.27
Anderson	Blair Mills LP	0200-0034	NO2	6.69
Anderson	Pickens Construction Inc	9900-0041	NO2	5.96
Anderson	LaFrance:Mt Vernon	0200-0009	NO2	5.67
Anderson	Ashmore:#2	9900-0045	NO2	4.83
Anderson	Hydro Aluminum North America	0200-0127	NO2	4.65
Anderson	* Maxxim Medical	0200-0033	NO2	4.28
Anderson	F&R Ashphalt:Plant #2	9900-0107	NO2	4.02
Anderson	Plastic Omnium	0200-0117	NO2	3.32
Anderson	Mount Vernon Mills:Williamston	0200-0045	NO2	2.91
Anderson	Apache Products:Anderson	0200-0048	NO2	2.12
Anderson	Transmontaigne:Belton-SE	0200-0056	NO2	2.02
Anderson	* Chiquola Industrial Products:Chiquola	0200-0047	NO2	1.00
Anderson	Frigidaire:Anderson	0200-0084	NO2	1.00
Anderson	Ryobi Technologies Inc	0200-0043	NO2	0.59
Anderson	Goodman Conveyor	0200-0093	NO2	0.55
Anderson	Taylor Pallets Inc	0200-0153	NO2	0.40
Anderson	Griffin Thermal Products	0200-0147	NO2	0.18
Anderson	Fibertech Corp	0200-0095	NO2	0.13
Anderson	Metromont:Belton	0200-0102	NO2	0.10
Anderson	Clemson University:ARF	0200-0096	NO2	0.01
Anderson	Thomas Concrete:Anderson	9900-0332	NO2	0.01
	1999 Anderson Co. Total			**4,130.06**
	Emissions in Nonattainment Area-Total			**4,124.78**
	Emissions in Nonattainment Area-Percent			**99.9%**
Cherokee	Broad River Energy LLC	0600-0076	NO2	294.18
Cherokee	Milliken:Magnolia	0600-0007	NO2	244.06
Cherokee	Cherokee Cogeneration	0600-0060	NO2	90.61
Cherokee	Linpac Paper	0600-0044	NO2	57.28
Cherokee	Timken Co	0600-0009	NO2	27.69
Cherokee	Nestle Frozen Foods	0600-0033	NO2	25.88
Cherokee	SC Pipeline:Blacksburg	0600-0065	NO2	23.14
Cherokee	Boren Clay Products Blacksburg Plant	0600-0005	NO2	10.83
Cherokee	Industrial Minerals	0600-0039	NO2	3.34
Cherokee	Core Materials Corp	0600-0068	NO2	2.79
Cherokee	Hamrick Industries:Plant 5	0600-0036	NO2	1.74
Cherokee	Springfield LLC:Limestone	0600-0014	NO2	1.62
Cherokee	TNS Mills:Gaffney	0600-0054	NO2	1.55

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source - NO2 (Tons / Year)**
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	NO2	1.43
Cherokee	Hamrick Mills:Musgrove	0600-0062	NO2	1.36
Cherokee	IFCO ICS-South Carolina Inc	0600-0055	NO2	0.94
Cherokee	Milliken Chemical:Cypress	0600-0040	NO2	0.20
	1999 Cherokee Co. Total			**788.64**
Greenville	Bob Jones University	1200-0245	NO2	58.54
Greenville	US Finishing	1200-0009	NO2	48.73
Greenville	Kemet:Mauldin	1200-0104	NO2	46.97
Greenville	GE:Greenville	1200-0094	NO2	46.95
Greenville	Michelin:Greenville	1200-0039	NO2	41.31
Greenville	Carustar:Taylors	1200-0013	NO2	32.86
Greenville	JPS:Slater	1200-0017	NO2	31.55
Greenville	Hitachi Electronic	1200-0203	NO2	30.69
Greenville	Mitsubishi Polyester Film LLC	1200-0026	NO2	29.72
Greenville	Milliken:Gayley Mill	1200-0029	NO2	27.25
Greenville	3M:Film Plant	1200-0073	NO2	24.19
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	NO2	24.03
Greenville	Greenville Hospital System:Energy Plant	1200-0145	NO2	14.05
Greenville	Rexroth:Southchase SE Court	1200-0326	NO2	13.59
Greenville	Specialty Shearing	1200-0123	NO2	10.61
Greenville	Ashmore:#1	9900-0013	NO2	6.97
Greenville	Ethox Chemicals	1200-0171	NO2	6.82
Greenville	Nutricia: Greenville	1200--127	NO2	4.44
Greenville	Dan River:White Horse	1200-0196	NO2	4.16
Greenville	St Francis Hospital	1200-0139	NO2	4.01
Greenville	Columbia Farms:Greenville	1200-0232	NO2	3.20
Greenville	Kemet:Fountain Inn	1200-0147	NO2	3.19
Greenville	Delta Mills:Estes	1200-0016	NO2	3.07
Greenville	King Asphalt:# 3	9900-0283	NO2	2.82
Greenville	Crown Metro:Plant1	1200-0034	NO2	2.78
Greenville	Geschmay Corp	1200-0315	NO2	2.71
Greenville	Milliken:Judson Mill	1200-0028	NO2	2.52
Greenville	Blythe Construction:Plant 4	9900-0169	NO2	2.46
Greenville	Air Products:Piedmont	1200-0075	NO2	2.31
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	NO2	2.22
Greenville	Greenville Finishing	1200-0217	NO2	2.20
Greenville	Reynolds Chemical:Greenville	1200-0247	NO2	2.08
Greenville	Lockheed Martin Aircraft Center	1200-0149	NO2	2.06
Greenville	Milliken:Enterprise Plant	1200-0060	NO2	1.98

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Greenville	Scotts Sierra:Travelers Rest	1200-0033	NO2	1.49
Greenville	Para-Chem Southern Inc	1200-0099	NO2	1.34
Greenville	National Electric Carbon	1200-0121	NO2	1.16
Greenville	Kemet:Greenville	1200-0018	NO2	0.77
Greenville	Panagakos Asphalt Paving	9900-0362	NO2	0.77
Greenville	BellSouth:Greenville-College St	1200-0231	NO2	0.76
Greenville	Stevens Aviation:Donaldson Park	1200-0311	NO2	0.75
Greenville	Holly Oak Chemical	1200-0191	NO2	0.55
Greenville	American Woodworks	1200-0346	NO2	0.52
Greenville	Sherwin Williams:Fountain Inn	1200-0163	NO2	0.31
Greenville	Zupan & Smith:Simpsonville	9900-0158	NO2	0.26
Greenville	Cognis Corporation	1200-0067	NO2	0.20
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	NO2	0.19
Greenville	Excalibur Tool:Poinsett	1200-0277	NO2	0.13
Greenville	RMAX	1200-0345	NO2	0.13
Greenville	Mita South Carolina	1200-0207	NO2	0.09
Greenville	Ernst Winter & Sons	1200-0179	NO2	0.03
Greenville	Gateway Mfg:Plant #2 - Greenville	1200-0317	NO2	0.01
Greenville	Metromont:Paris Mountain	1200-0150	NO2	0.01
	1999 Greenville Co. Total			**552.51**
Pickens	Clemson University	1880-0010	NO2	74.18
Pickens	BASF:Clemson	1880-0007	NO2	73.56
Pickens	Greenwood Mills:Liberty Plants	1880-0005	NO2	16.36
Pickens	Easley Combined Utilities:Utility Street	1880-0051	NO2	7.01
Pickens	Sloan Construction:Liberty	9900-0098	NO2	5.70
Pickens	Alice Manufacturing:Ellison	1880-0019	NO2	3.83
Pickens	Alice Manufacturing:Airal	1880-0018	NO2	3.67
Pickens	Alice Manufacturing:EllJean	1880-0020	NO2	3.63
Pickens	Alice Manufacturing:Foster	1880-0021	NO2	2.10
Pickens	Hollingsworth Saco Lowell	1880-0011	NO2	1.56
Pickens	One World Industries:Pickens	1880-0006	NO2	1.14
Pickens	McKechnie:Highway 93 Plant	1880-0052	NO2	0.65
Pickens	Flexiwall:208 Carolina Drive	1880-0040	NO2	0.02
	1999 Pickens Co. Total			**193.41**
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	NO2	3,881.99
Spartanburg	Kosa: Arteva Specialties	2060-0345	NO2	258.74
Spartanburg	Spartanburg Regional Medical Center	2060-0142	NO2	32.72
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	NO2	28.21

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source - NO2 (Tons / Year)**
Spartanburg	BMW Manufacturing Corp	2060-0230	NO2	27.58
Spartanburg	Michelin: Spartanburg	2060-0065	NO2	23.95
Spartanburg	Springs Industries: Lyman	2060-0018	NO2	22.93
Spartanburg	Kohler Co: Plastics Plant	2060-0071	NO2	21.66
Spartanburg	Blackman Uhler Chemical	2060-0029	NO2	17.85
Spartanburg	Intelicoat Technologies	2060-0182	NO2	7.80
Spartanburg	Exopack LLC	2060-0075	NO2	7.76
Spartanburg	BASF: Spartanburg	2060-0068	NO2	7.51
Spartanburg	Bayer Corp: Wellford	2060-0055	NO2	7.41
Spartanburg	American Fast Print	2060-0026	NO2	7.10
Spartanburg	National Starch & Chemical Company	2060-0085	NO2	7.07
Spartanburg	Milliken Chemical: Dewey	2060-0001	NO2	6.87
Spartanburg	Tietex International Ltd	2060-0147	NO2	6.63
Spartanburg	Saxon Fibers LLC	2060-0039	NO2	6.44
Spartanburg	Sloan Construction: Pacolet	9900-0091	NO2	6.30
Spartanburg	Reeves Brothers: Fairforest	2060-0019	NO2	5.64
Spartanburg	Asphalt Contractors LLC	9900-0152	NO2	4.94
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	NO2	4.61
Spartanburg	Sloan Construction: Lyman	9900-0115	NO2	4.60
Spartanburg	Milliken: Research	2060-0022	NO2	4.34
Spartanburg	Inman Mills: Ramey Plant	2060-0271	NO2	3.87
Spartanburg	F & R Asphalt: Plant #1	9900-0090	NO2	3.34
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	NO2	3.24
Spartanburg	ISG Resources Inc	2060-0025	NO2	3.10
Spartanburg	Mary Black Memorial Hospital	2060-0121	NO2	3.10
Spartanburg	Inman Mills: Saybrook	2060-0042	NO2	2.71
Spartanburg	Goodyear: Spartanburg	2060-0035	NO2	2.33
Spartanburg	Mohawk: Landrum	2060-0012	NO2	2.19
Spartanburg	L:ubrizol Form Control Additives	2060-0069	NO2	2.12
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	NO2	2.04
Spartanburg	Steris-Isomedix Services	2060-0180	NO2	1.78
Spartanburg	Spartanburg Automotive Products	2060-0007	NO2	1.45
Spartanburg	Spartanburg Stainless Products	2060-0348	NO2	1.45
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	NO2	1.40
Spartanburg	Hoke Inc	2060-0175	NO2	1.30
Spartanburg	Bommer Industries: Landrum	2060-0119	NO2	1.22
Spartanburg	Palmetto Vermiculite	2060-0181	NO2	1.22
Spartanburg	King Asphalt: # 4	9900-0352	NO2	1.21
Spartanburg	TNS Mills: Spartanburg	2060-0079	NO2	1.17
Spartanburg	Phelps Dodge	2060-0086	NO2	0.83

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Spartanburg	Asphalt Associates	9900-0023	NO2	0.77
Spartanburg	MEMC Electronic Materials	2060-0070	NO2	0.59
Spartanburg	Appalachian Engineered Hardwood Flooring	2060-0299	NO2	0.47
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	NO2	0.29
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	NO2	0.24
Spartanburg	Donnelley, RR & Sons	2060-0081	NO2	0.13
Spartanburg	Engelhard: Duncan	2060-0266	NO2	0.10
Spartanburg	Mack Molding Co	2060-0061	NO2	0.09
Spartanburg	Piedmont Dielectrics	2060-0108	NO2	0.06
Spartanburg	Eastman Chemical Company	2060-0051	NO2	0.05
Spartanburg	Leigh Fibers Inc	2060-0084	NO2	0.04
Spartanburg	Piedmont Concrete: Duncan	9900-0282	NO2	0.02
Spartanburg	Metromont: Spartanburg I-85	2060-0038	NO2	0.01
	1999 Spartanburg Co. Total			**4,454.58**

Table D-2 lists the VOC point sources that are in operation in Anderson County and the other four MSA counties based on the 1999 VOC point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Anderson County has 34 VOC point sources in operation and 32 of these point sources are located within the nonattainment area. Facilities in Anderson County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Anderson County are located within the proposed boundary. Anderson County accounts for 18.08% of the total MSA VOC point source emissions. The recommended boundary captures 98.9% of the total point source VOC emissions.

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Anderson	Plastic Omnium	0200-0117	VOC	216.89
Anderson	Owens Corning:Anderson	0200-0031	VOC	175.05
Anderson	Vytech	0200-0050	VOC	136.83
Anderson	Michelin:Sandy Spring	0200-0018	VOC	124.50
Anderson	Isola Laminate Systems Pendleton	0200-0058	VOC	113.32
Anderson	Hydro Aluminum North America	0200-0127	VOC	81.37
Anderson	BASF:Anderson	0200-0005	VOC	76.05
Anderson	Milliken:Pendleton	0200-0011	VOC	58.14
Anderson	Apache Products:Anderson	0200-0048	VOC	50.75
Anderson	Goodman Conveyor	0200-0093	VOC	46.95
Anderson	Hexcel Schwebel Inc	0200-0036	VOC	42.89

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Anderson	Transmontaigne:Belton-PD	0200-0057	VOC	40.93
Anderson	Marathon Ashland:Belton	0200-0052	VOC	33.16
Anderson	Ryobi Technologies Inc	0200-0043	VOC	25.86
Anderson	Transmontaigne:Belton-SE	0200-0056	VOC	18.51
Anderson	Duke Energy:Lee	0200-0004	VOC	14.40
Anderson	* Maxxim Medical	0200-0033	VOC	13.87
Anderson	Springs Industries:Wamsutta	0200-0014	VOC	9.20
Anderson	Fibertech Corp	0200-0095	VOC	7.58
Anderson	Griffin Thermal Products	0200-0147	VOC	6.96
Anderson	Rockwell Automation/Dodge	0200-0119	VOC	4.56
Anderson	Blair Mills LP	0200-0034	VOC	3.37
Anderson	Clemson University:ARF	0200-0096	VOC	3.04
Anderson	Milliken:Cushman	0200-0032	VOC	2.73
Anderson	Darby Metal Works	0200-0129	VOC	2.04
Anderson	Frigidaire:Anderson	0200-0084	VOC	1.05
Anderson	Pickens Construction Inc	9900-0041	VOC	0.46
Anderson	* Chiquola Industrial Products:Chiquola	0200-0047	VOC	0.33
Anderson	Anderson Medical Center	0200-0061	VOC	0.29
Anderson	Ashmore:#2	9900-0045	VOC	0.13
Anderson	LaFrance:Mt Vernon	0200-0009	VOC	0.11
Anderson	Mount Vernon Mills:Williamston	0200-0045	VOC	0.05
Anderson	Sloan Construction:Anderson	9900-0113	VOC	0.04
Anderson	F&R Asphalt:Plant #2	9900-0107	VOC	0.02
	1999 Anderson Co. Total			**1,311.43**
	Emissions in Nonattainment Area-Total			**1,297.23**
	Emissions in Nonattainment Area-Percent			**98.92%**
Cherokee	Alcoa Building Products	0600-0016	VOC	145.00
Cherokee	Milliken:Magnolia	0600-0007	VOC	133.60
Cherokee	IFCO ICS-South Caorlina Inc	0600-0055	VOC	55.00
Cherokee	Milliken Chemical:Cypress	0600-0040	VOC	31.69
Cherokee	Hamrick Industries:Plant 5	0600-0036	VOC	13.31
Cherokee	Core Materials Corp	0600-0068	VOC	9.91
Cherokee	Cherokee Cogeneration	0600-0060	VOC	5.48
Cherokee	Sanders Bros Metals	0600-0052	VOC	5.07
Cherokee	Linpac Paper	0600-0044	VOC	4.33
Cherokee	Springfield LLC:Limestone	0600-0014	VOC	3.03
Cherokee	TNS Mills:Gaffney	0600-0054	VOC	1.90
Cherokee	Timken Co	0600-0009	VOC	1.23
Cherokee	Freightliner Custom Chassis	0600-0049	VOC	0.79

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Cherokee	Boren Clay Products-Blacksburg Plant	0600-0005	VOC	0.74
Cherokee	Hamrick Mills:Musgrove	0600-0062	VOC	0.73
Cherokee	Broad River Energy LLC	0600-0076	VOC	0.71
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	VOC	0.66
Cherokee	Nestle Frozen Foods	0600-0033	VOC	0.45
Cherokee	SC Pipeline:Blacksburg	0600-0065	VOC	0.15
Cherokee	Industrial Minerals	0600-0039	VOC	0.03
	1999 Cherokee Co. Total			**413.81**
Greenville	3M:Tape Plant	1200-0148	VOC	641.15
Greenville	Michelin:Greenville	1200-0039	VOC	423.60
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	VOC	407.78
Greenville	Mitsubishi Polyester Film LLC	1200-0026	VOC	224.22
Greenville	US Finishing	1200-0009	VOC	107.03
Greenville	Hitachi Electronic	1200-0203	VOC	97.74
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	VOC	76.92
Greenville	Nutricia:Greenville	1200-0127	VOC	66.37
Greenville	3M:Film Plant	1200-0073	VOC	55.34
Greenville	Kemet:Mauldin	1200-0104	VOC	53.57
Greenville	Kemet:Fountain Inn	1200-0147	VOC	46.19
Greenville	National Electrick Carbon	1200-0121	VOC	40.97
Greenville	Milliken:Gayley Mill	1200-0029	VOC	40.35
Greenville	Bob Jones University	1200-0245	VOC	34.41
Greenville	SC Steel Corp	1200-0362	VOC	32.60
Greenville	Gateway Mfg:Plant #2-Greenville	1200-0317	VOC	26.65
Greenville	JPS:Slater	1200-0017	VOC	26.28
Greenville	Reynolds Chemical:Greenville	1200-0247	VOC	25.23
Greenville	Kemet:Greenville	1200-0018	VOC	22.57
Greenville	GE:Greenville	1200-0094	VOC	22.02
Greenville	Para-Chem Southern Inc	1200-0099	VOC	21.71
Greenville	Lockheed Martin Aircraft Center	1200-0149	VOC	21.01
Greenville	Stevens Aviation:Donaldson Park	1200-0311	VOC	20.07
Greenville	Messer Industries	1200-0269	VOC	19.53
Greenville	Rudco Products Inc	1200-0194	VOC	17.93
Greenville	Milliken:Enterprise Plant	1200-0060	VOC	15.76
Greenville	Excalibur Tool:Poinsett	1200-0277	VOC	14.41
Greenville	Sherwin Williams:Fountain Inn	1200-0163	VOC	12.83
Greenville	RMAX	1200-0345	VOC	9.55
Greenville	Parthenon Marble	1200-0260	VOC	7.12
Greenville	Cognis Corporation	1200-0067	VOC	7.11

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Greenville	American Woodworks	1200-0346	VOC	6.94
Greenville	Crown Metro:Plant #1	1200-0034	VOC	6.03
Greenville	Delta Mills:Estes	1200-0016	VOC	5.74
Greenville	St Francis Hospital	1200-0139	VOC	5.55
Greenville	Woven Electronics	1200-0252	VOC	5.16
Greenville	King Asphalt:# 3	9900-0283	VOC	4.50
Greenville	Dan River:White Horse	1200-0196	VOC	4.12
Greenville	Milliken:Judson Mill	1200-0028	VOC	4.09
Greenville	Air Products:Piedmont	1200-0075	VOC	4.08
Greenville	Greenville Finishing	1200-0217	VOC	2.20
Greenville	National Cabinet Lock	1200-0107	VOC	2.01
Greenville	Geschmay Corp	1200-0315	VOC	1.97
Greenville	Greenville News	1200-0226	VOC	1.35
Greenville	Panagakos Asphalt Paving	9900-0362	VOC	1.19
Greenville	Thermo Kinetics	1200-0313	VOC	1.01
Greenville	Standard Motor Products Inc	1200-0132	VOC	0.88
Greenville	Rexroth:Southchase Court	1200-0326	VOC	0.87
Greenville	Greenville Hospital System:Energy Plant	1200-0145	VOC	0.83
Greenville	Carustar:Taylors	1200-0013	VOC	0.65
Greenville	Ethox Chemicals	1200-0171	VOC	0.52
Greenville	Specialty Shearing	1200-0123	VOC	0.27
Greenville	Ashmore:#1	9900-0013	VOC	0.13
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	VOC	0.12
Greenville	Columbia Farms:Greenville	1200-0232	VOC	0.06
Greenville	Scotts Sierra:Travelers Rest	1200-0033	VOC	0.06
Greenville	Blythe Construction:Plant 4	9900-0169	VOC	0.05
Greenville	BellSouth:Greenville-College St	1200-0231	VOC	0.04
Greenville	Holly Oak Chemical	1200-0191	VOC	0.03
Greenville	Mita South Carolina	1200-0207	VOC	0.01
Greenville	Zupan & Smith:Simpsonville	9900-0158	VOC	0.01
	1999 Greenville Co. Total			**2698.49**
Pickens	McKechnie:Hwy 93 Plant	1880-0052	VOC	42.38
Pickens	BASF:Clemson	1880-0007	VOC	39.87
Pickens	One World Industries:Pickens	1880-0006	VOC	22.71
Pickens	Flexiwall:208 Carolina Drive	1880-0040	VOC	18.58
Pickens	Greenwood Mills:Liberty Plants	1880-0005	VOC	14.12
Pickens	Hollingsworth Saco Lowell	1880-0011	VOC	3.10
Pickens	Alice Manufacturing:Elljean	1880-0020	VOC	2.81
Pickens	Alice Manufacturing:Ellison	1880-0019	VOC	2.43

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Pickens	Alice Manufacturing:Arial	1880-0018	VOC	2.04
Pickens	Alice Manufacturing:Foster	1880-0021	VOC	2.02
Pickens	Clemson University	1880-0010	VOC	0.61
Pickens	Easley Combined Utilities:Utility Street	1880-0051	VOC	0.18
Pickens	Sloan Construction:Liberty	9900-0098	VOC	0.03
	1999 Pickens Co. Total			**150.88**
Spartanburg	Michelin: Spartanburg	2060-0065	VOC	537.00
Spartanburg	National Starch & Chemical Company	2060-0085	VOC	231.43
Spartanburg	Goodyear: Spartanburg	2060-0035	VOC	224.44
Spartanburg	Kohler Co: Plastics Plant	2060-0071	VOC	204.41
Spartanburg	Exopack LLC	2060-0075	VOC	170.71
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	VOC	152.00
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	VOC	144.34
Spartanburg	Donnelley, RR & Sons	2060-0081	VOC	137.49
Spartanburg	Intelicoat Technologies	2060-0182	VOC	126.34
Spartanburg	American Fast Print	2060-0026	VOC	73.35
Spartanburg	Kosa: Arteva Specialties	2060-0345	VOC	72.81
Spartanburg	Mack Molding Co	2060-0061	VOC	62.75
Spartanburg	BMW Manufacturing Corp	2060-0230	VOC	58.05
Spartanburg	Reeves Brothers: Fairforest	2060-0019	VOC	49.99
Spartanburg	Motiva Enterprises LLC	2060-0097	VOC	46.91
Spartanburg	Springs Industries: Lyman	2060-0018	VOC	41.63
Spartanburg	Saxon Fibers LLC	2060-0039	VOC	39.34
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	VOC	33.29
Spartanburg	Dot Packaging-Printpak	2060-0215	VOC	30.49
Spartanburg	Citgo: Spartanburg	2060-0101	VOC	26.60
Spartanburg	Transmontaigne: Spartanburg-PD	2060-0098	VOC	26.41
Spartanburg	Tietex International Ltd	2060-0147	VOC	25.72
Spartanburg	Phillips Pipeline: Spartanburg	2060-0056	VOC	24.81
Spartanburg	Lubrizol Form Control Additives	2060-0069	VOC	22.79
Spartanburg	Milliken Chemical: Dewey	2060-0001	VOC	19.31
Spartanburg	Conocophillips Company	2060-0096	VOC	13.38
Spartanburg	Crown Central Petroleum	2060-0094	VOC	12.65
Spartanburg	Michelin: Duncan	2060-0183	VOC	10.41
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	VOC	9.86
Spartanburg	Color Converting Ind	2060-0199	VOC	7.93
Spartanburg	Bayer Corp: Wellford	2060-0055	VOC	7.35
Spartanburg	Bommer Industries: Landrum	2060-0119	VOC	5.91
Spartanburg	Blackman Uhler Chemical	2060-0029	VOC	3.72

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	Piedmont Dielectrics	2060-0108	VOC	3.02
Spartanburg	Steris-Isomedix Services	2060-0180	VOC	2.68
Spartanburg	Mohawk: Landrum	2060-0012	VOC	2.20
Spartanburg	Cooper Standard Automotive	2060-0088	VOC	2.02
Spartanburg	Inman Mills: Ramey Plant	2060-0271	VOC	2.01
Spartanburg	Spartanburg Regional Medical Center	2060-0142	VOC	2.00
Spartanburg	King Asphalt: # 4 - New	9900-0352	VOC	1.85
Spartanburg	BASF: Spartanburg	2060-0068	VOC	1.35
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	VOC	1.26
Spartanburg	TNS Mills: Spartanburg	2060-0079	VOC	0.94
Spartanburg	Engelhard: Duncan	2060-0266	VOC	0.92
Spartanburg	Inman Mills: Saybrook	2060-0042	VOC	0.64
Spartanburg	Spartanburg Stainless Products	2060-0348	VOC	0.59
Spartanburg	MEMC Electronic Materials	2060-0070	VOC	0.45
Spartanburg	Asphalt Associates	9900-0023	VOC	0.43
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	VOC	0.29
Spartanburg	ISG Resources Inc	2060-0025	VOC	0.17
Spartanburg	Milliken: Research	2060-0022	VOC	0.17
Spartanburg	Mary Black Memorial Hospital	2060-0121	VOC	0.13
Spartanburg	Appalachian Engineered Hardwood Flooring	2060-0299	VOC	0.11
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	VOC	0.08
Spartanburg	Spartanburg Automotive Products	2060-0007	VOC	0.08
Spartanburg	Palmetto Vermiculite	2060-0181	VOC	0.07
Spartanburg	Phelps Dodge	2060-0086	VOC	0.05
Spartanburg	Hoke Inc	2060-0175	VOC	0.03
Spartanburg	Sloan Construction: Pacolet	9900-0091	VOC	0.03
Spartanburg	Asphalt Contractors LLC	9900-0152	VOC	0.02
Spartanburg	F & R Asphalt: Plant #1	9900-0090	VOC	0.02
Spartanburg	Sloan Construction: Lyman	9900-0115	VOC	0.02
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	VOC	0.02
Spartanburg	Eastman Chemical Company	2060-0051	VOC	0.01
	1999 Spartanburg Co. Total			**2,677.28**

Table D-3 lists the NO_x on-road emissions for Anderson County and Table D-4 lists the VOC on-road emissions for Anderson County.

Table D-3: Anderson County On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons / Year)**
Anderson	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,316.00
Anderson	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,283.00
Anderson	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	341.00
Anderson	11-Highway Vehicles	04-Diesels	3,178.00
	1999 Anderson Co. Total		**3,178.00**

Table D-4: Anderson County On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons / Year)**
Anderson	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,521.00
Anderson	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,437.00
Anderson	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	345.00
Anderson	11-Highway Vehicles	04-Diesels	206.00
	1999 Anderson Co. Total		**4,509.00**

E. Traffic and Commuting Patterns

Anderson has a very rural road network, with approximately 75% of the roads in the county classified as rural. Over 72% of Anderson County residents work in Anderson County, and only 12.05% of the entire MSA commuter flow is contained within Anderson County. The boundary captures 100% of the interstate Daily Vehicle Miles Traveled (DVMT).

Estimates of the DVMT were obtained from the SCDOT. SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows the 2000 and 2025 DVMT data for Greenville-Spartanburg-Anderson MSA.

Table E-1:
DVMT for the Greenville-Spartanburg-Anderson MSA

County	2000 DVMT	2025 DVMT	DVMT Change (2000-2025)	Projected % Annual Change
Anderson	5,207,194	8,687,689	3,480,495	2.67
Cherokee	2,063,088	3,303,158	1,240,070	2.40
Greenville	9,421,709	14,705,492	5,283,783	2.24
Pickens	2,224,743	3,613,182	1,388,439	2.49
Spartanburg	8,041,582	13,086,740	5,045,158	2.51
Statewide	**123,805,748**	**199,789,677**	**75,983,929**	**2.45**

Figure E-1 shows the Interstates that are located within the Upstate area. There two interstates (I-85 and I-385). I-85 is the major corridor of travel between Spartanburg and Greenville, SC, and I-385 is the interstate spur between I-26 and Greenville. This figure also shows the 2000 traffic counts for the interstates. The highest traffic occurs near the intersection of I-85 and I-385 and also in Greenville County. The further away from Greenville County the road section is located, the lower the traffic count.

Figure E-1:

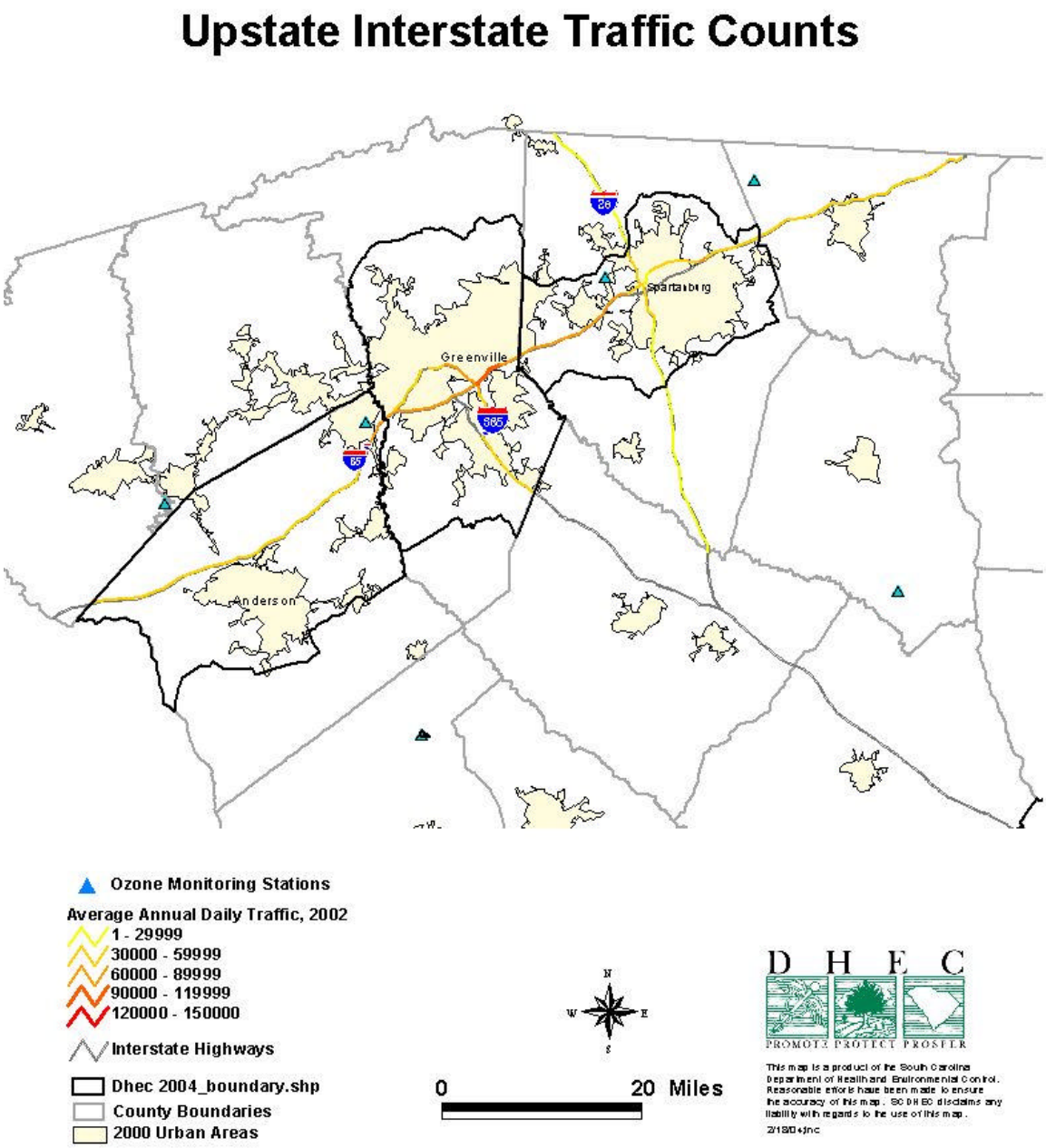


Table E-2 shows the DVMT for each classification of road for 2000, 2007, 2012 and 2025 for the Greenville-Spartanburg-Anderson MSA.

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Anderson County				
Rural Interstate (01)	1,600,864	1,968,809	2,231,627	2,914,954
Rural Principal Arterial (02)	292,648	341,872	377,032	468,448
Rural Minor Arterial (03)	706,739	825,614	910,524	1,131,293
Rural Major Collector (04)	1,030,719	1,204,088	1,327,924	1,649,895
Rural Minor Collector (05)	70,663	82,549	91,039	113,113
Rural Local (09)	306,263	357,777	394,573	490,242
Rural Total	*4,007,896*	*4,780,709*	*5,332,719*	*6,767,945*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	607,982	710,246	783,292	973,211
Urban Minor Arterial (14)	320,296	374,170	412,652	512,704
Urban Collector (15)	193,409	225,941	249,178	309,595
Urban Local (18)	77,612	90,666	99,991	124,235
Urban Total	*1,199,298*	*1,401,023*	*1,545,113*	*1,919,745*
Grand Total DVMT	**5,207,194**	**6,181,733**	**6,877,832**	**8,687,689**
Cherokee County				
Rural Interstate (01)	1,022,864	1,248,380	1,409,462	1,828,277
Rural Principal Arterial (02)	44,911	50,318	53,215	63,677
Rural Minor Arterial (03)	235,062	263,364	278,527	333,281
Rural Major Collector (04)	315,400	353,375	373,721	447,189
Rural Minor Collector (05)	31,875	35,713	37,769	45,194
Rural Local (09)	187,725	210,327	222,437	266,164
Rural Total	*1,837,837*	*2,161,478*	*2,375,132*	*2,983,782*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	-	-	-	-
Urban Minor Arterial (14)	97,669	109,429	115,729	138,479
Urban Collector (15)	67,539	75,671	80,028	95,760
Urban Local (18)	60,043	67,272	71,145	85,131
Urban Total	*225,251*	*252,372*	*266,902*	*319,371*
Grand Total DVMT	**2,063,088**	**2,413,849**	**2,642,034**	**3,303,152**
Greenville County				
Rural Interstate (01)	605,987	755,682	862,607	1,140,612
Rural Principal Arterial (02)	470,166	534,064	568,524	691,096
Rural Minor Arterial (03)	543,348	617,191	657,015	798,665
Rural Major Collector (04)	930,573	1,057,042	1,125,247	1,367,847
Rural Minor Collector (05)	50,942	57,865	61,599	74,880

Table E-2: DVMT Data for the Greenville -Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Rural Local (09)	309,140	351,154	373,812	454,404
Rural Total	*2,910,155*	*3,372,998*	*3,648,804*	*4,527,504*
Urban Interstate (11)	1,604,349	1,985,303	2,257,413	2,964,899
Urban Freeway/Expressway (12)	46,581	52,912	56,326	68,469
Urban Principal Arterial (13)	1,743,223	1,980,136	2,107,902	2,562,360
Urban Minor Arterial (14)	1,797,160	2,041,403	2,173,123	2,641,641
Urban Collector (15)	1,036,576	1,177,451	1,253,426	1,523,660
Urban Local (18)	283,665	322,217	343,008	416,959
Urban Total	*6,511,554*	*7,559,421*	*8,191,197*	*10,177,988*
Grand Total DVMT	**9,421,709**	**10,932,419**	**11,840,001**	**14,705,492**
Pickens County				
Rural Interstate (01)	-	-	-	-
Rural Principal Arterial (02)	303,647	358,369	388,825	493,150
Rural Minor Arterial (03)	449,827	530,892	576,011	730,559
Rural Major Collector (04)	465,085	548,900	595,549	755,340
Rural Minor Collector (05)	46,606	55,006	59,680	75,693
Rural Local (09)	214,650	253,333	274,863	348,610
Rural Total	*1,479,815*	*1,746,499*	*1,894,928*	*2,403,353*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	44,814	52,890	57,385	72,782
Urban Principal Arterial (13)	286,329	337,930	366,649	465,024
Urban Minor Arterial (14)	255,655	301,728	327,370	415,207
Urban Collector (15)	106,750	125,988	136,695	173,371
Urban Local (18)	51,380	60,639	65,793	83,445
Urban Total	*744,928*	*879,174*	*953,892*	*1,209,829*
Grand Total DVMT	**2,224,743**	**2,625,674**	**2,848,820**	**3,613,182**
Spartanburg County				
Rural Interstate (01)	2,395,210	3,044,958	3,509,064	4,715,740
Rural Principal Arterial (02)	137,290	152,821	160,853	188,254
Rural Minor Arterial (03)	984,884	1,096,301	1,153,919	1,350,484
Rural Major Collector (04)	1,194,093	1,329,176	1,399,034	1,637,353
Rural Minor Collector (05)	177,077	197,109	207,468	242,809
Rural Local (09)	264,722	294,669	310,155	362,989
Rural Total	*5,153,275*	*6,115,034*	*6,740,494*	*8,497,628*
Urban Interstate (11)	524,281	754,792	919,442	1,347,534
Urban Freeway/Expressway (12)	162,742	181,152	190,673	223,154
Urban Principal Arterial (13)	871,282	969,847	1,020,819	1,194,711
Urban Minor Arterial (14)	657,734	732,141	770,620	901,892
Urban Collector (15)	565,477	629,448	662,530	775,389
Urban Local (18)	106,791	118,872	125,119	146,433
Urban Total	*2,888,307*	*3,386,253*	*3,689,204*	*4,589,111*

Table E-2: DVMT Data for the Greenville -Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Grand Total DVMT	**8,041,582**	**9,501,287**	**10,429,698**	**13,086,740**
Statewide				
Rural Interstate (01)	23,146,274	28,309,862	31,998,139	41,587,660
Rural Principal Arterial (02)	12,905,947	14,916,454	16,175,569	20,131,432
Rural Minor Arterial (03)	17,145,253	19,735,411	21,341,306	26,491,890
Rural Major Collector (04)	15,569,699	17,893,702	19,330,816	23,911,717
Rural Minor Collector (05)	2,061,800	2,372,015	2,565,610	3,178,012
Rural Local (09)	7,634,920	8,763,106	9,471,020	11,703,697
Rural Total	*78,463,892*	*91,990,550*	*100,882,461*	*127,004,409*
Urban Interstate (11)	9,470,591	12,063,075	13,914,850	18,729,464
Urban Freeway/Expressway (12)	2,039,115	2,311,200	2,483,836	2,991,347
Urban Principal Arterial (13)	14,308,881	16,393,798	17,631,864	21,720,541
Urban Minor Arterial (14)	11,057,992	12,630,175	13,565,185	16,623,891
Urban Collector (15)	5,611,026	6,401,102	6,857,898	8,403,840
Urban Local (18)	2,854,251	3,267,188	3,511,242	4,316,185
Urban Total	*45,341,855*	*53,066,538*	*57,964,874*	*72,785,268*
Grand Total DVMT	**123,805,748**	**145,057,088**	**158,847,335**	**199,789,677**

Tables E-3[8] and E-4 present the 2000 worker flow data from each of the counties and the percent commute for the MSA. Some counties that are listed on this table are not being considered for boundary recommendations, and are being included on this chart to account for all workers in each county. The above tables show that there is very little commuting outside of the MSA within the state of South Carolina.

Table E-3: Where People Living in the Greenville -Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	591	0	47	26	0	664
Aiken	0	6	54	39	20	119
Anderson	52,133	31	3,367	3,648	480	59,659
Barnwell	8	0	7	0	0	15
Beaufort	0	0	33	9	16	58
Berkeley	35	30	0	9	15	89
Charleston	59	52	104	100	70	385
Cherokee	61	16,052	203	63	2,029	18,408
Chester	5	17	11	0	27	60
Colleton	0	0	12	8	25	45
Darlington	0	4	6	11	8	29

8 Data provided from US Census: 2000

Table E-3: Where People Living in the Greenville -Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Dorchester	0	20	29	11	0	60
Edgefield	0	0	0	3	0	3
Fairfield	0	0	0	0	33	33
Florence	0	8	27	0	0	35
Georgetown	8	0	0	0	8	16
Greenville	13,766	431	161,906	15,095	14,586	205,784
Greenwood	520	18	381	64	226	1,209
Hampton	7	0	0	8	0	15
Horry	42	0	14	5	31	92
Kershaw	0	6	0	7	0	13
Lancaster	24	25	36	6	20	111
Laurens	268	26	1,613	112	703	2,722
Lee	0	0	18	0	0	18
Lexington	40	12	127	21	23	223
Marion	0	0	14	6	0	20
McCormick	2	0	6	0	0	8
Newberry	12	0	58	20	22	112
Oconee	1,274	11	396	2,331	112	4,124
Orangeburg	3	0	0	0	6	9
Pickens	4,300	16	2,566	28,951	198	36,031
Richland	88	8	193	110	71	470
Saluda	3	0	6	0	0	9
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Sumter	0	0	22	0	7	29
Union	40	141	130	37	522	870
York	38	274	73	33	130	548
Grand Total	74,591	21,125	182,664	51,517	114,884	444,781

Table E-4: Where People Living in the Greenville -Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	0.13%	0.00%	0.01%	0.01%	0.00%	0.15%
Aiken	0.00%	0.00%	0.01%	0.01%	0.00%	0.03%
Anderson	11.72%	0.01%	0.76%	0.82%	0.11%	13.41%
Barnwell	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Beaufort	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Berkeley	0.01%	0.01%	0.00%	0.00%	0.00%	0.02%
Charleston	0.01%	0.01%	0.02%	0.02%	0.02%	0.09%
Cherokee	0.01%	3.61%	0.05%	0.01%	0.46%	4.14%

Table E-4: Where People Living in the Greenville-Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Chester	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Colleton	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Darlington	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Dorchester	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Edgefield	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fairfield	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Florence	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Georgetown	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Greenville	3.10%	0.10%	36.40%	3.39%	3.28%	46.27%
Greenwood	0.12%	0.00%	0.09%	0.01%	0.05%	0.27%
Hampton	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Horry	0.01%	0.00%	0.00%	0.00%	0.01%	0.02%
Kershaw	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lancaster	0.01%	0.01%	0.01%	0.00%	0.00%	0.02%
Laurens	0.06%	0.01%	0.36%	0.03%	0.16%	0.61%
Lee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lexington	0.01%	0.00%	0.03%	0.00%	0.01%	0.05%
Marion	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
McCormick	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Newberry	0.00%	0.00%	0.01%	0.00%	0.00%	0.03%
Oconee	0.29%	0.00%	0.09%	0.52%	0.03%	0.93%
Orangeburg	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pickens	0.97%	0.00%	0.58%	6.51%	0.04%	8.10%
Richland	0.02%	0.00%	0.04%	0.02%	0.02%	0.11%
Saluda	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Spartanburg	0.28%	0.89%	2.52%	0.18%	21.47%	25.34%
Sumter	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Union	0.01%	0.03%	0.03%	0.01%	0.12%	0.20%
York	0.01%	0.06%	0.02%	0.01%	0.03%	0.12%
Grand Total	16.77%	4.75%	41.07%	11.58%	25.83%	100.00%

Table E-5 shows that within Greenville-Spartanburg-Anderson MSA, 81.96% of all people work in the same county they live in. There are 71,524 (or 16.53%) workers that live in Anderson County and work in the Greenville-Spartanburg-Anderson MSA. There are 59,659 (or 13.79%) people that work in Anderson County. This results in a net decrease of 11,865 workers in the county. Table E-6 also shows that when all commuting in the MSA is taken into account, only 4.48% of the intercounty flow comes from Anderson County.

Table E-5: County of Residence for the Greenville-Spartanburg-Anderson MSA						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	52,133	31	3,367	3,648	480	59,659
Cherokee	61	16,052	203	63	2,029	18,408
Greenville	13,766	431	161,906	15,095	14,586	205,784
Pickens	4,300	16	2,566	28,951	198	36,031
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Grand Total	71,524	20,467	179,247	48,541	112,789	432,568

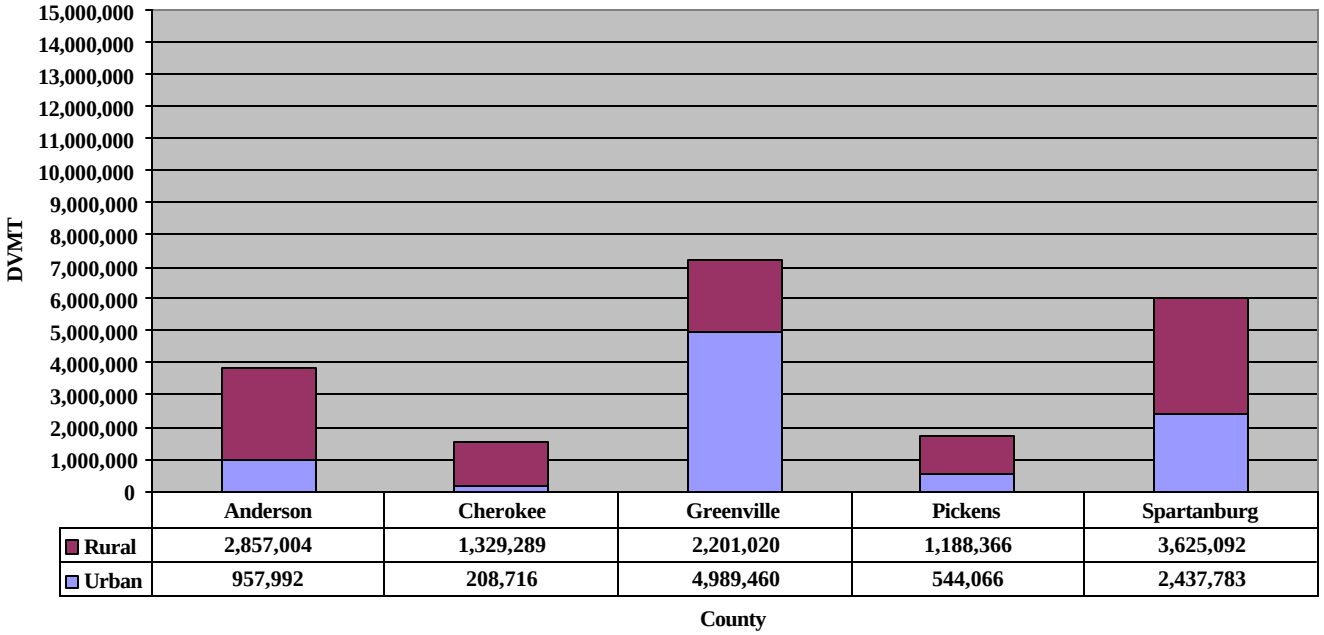
Table E-6: County of Residence for the Greenville-Spartanburg-Anderson MSA (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Intercounty Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Table E-7 shows the mobile source emissions in Anderson County in relation to the other counties in the MSA. Anderson County has significantly lower onroad NO_x and onroad VOC emissions than either Greenville or Spartanburg County.

Table E-7: Percent Mobile Source NO_x and VOC Emissions in the Greenville-Spartanburg-Anderson MSA					
County	**NO_x tons / day**	**Percent NO_x**	**County**	**VOC tons / day**	**Percent VOC**
Anderson	19.11	19.85%	Anderson	11.82	18.52%
Cherokee	7.33	7.61%	Cherokee	3.87	6.06%
Greenville	28.87	29.99%	Greenville	22.39	35.07%
Pickens	9.33	9.69%	Pickens	6.00	9.41%
Spartanburg	31.64	32.87%	Spartanburg	19.76	30.95%
Grand Total	96.28	100.00%	Grand Total	63.84	100.00%

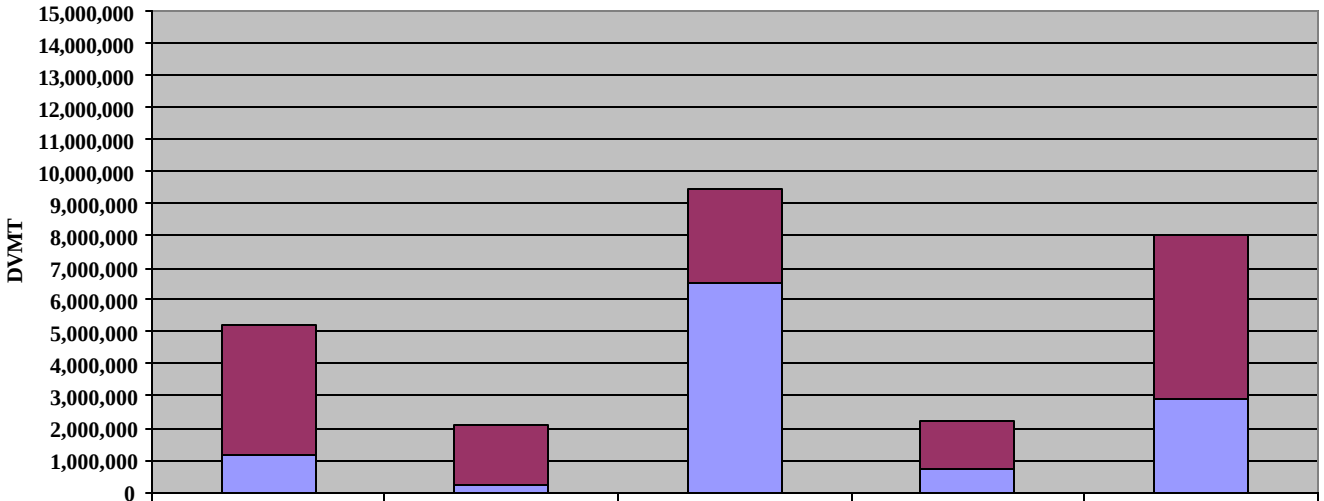
Figures E-2 through E-6 shows the urban and rural DVMT for the Greenville-Spartanburg-Anderson MSA. While the DVMT increases in Anderson County by 78.3% from 1990-2025, the character of the miles traveled changes very little. For example, in 1990, the DVMT is 74.9% rural and 25.1% urban, while in 2025, the DVMT is projected to be 77.9% rural and 22.1% urban.

Figure E-2:
1990 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	2,857,004	1,329,289	2,201,020	1,188,366	3,625,092
Urban	957,992	208,716	4,989,460	544,066	2,437,783

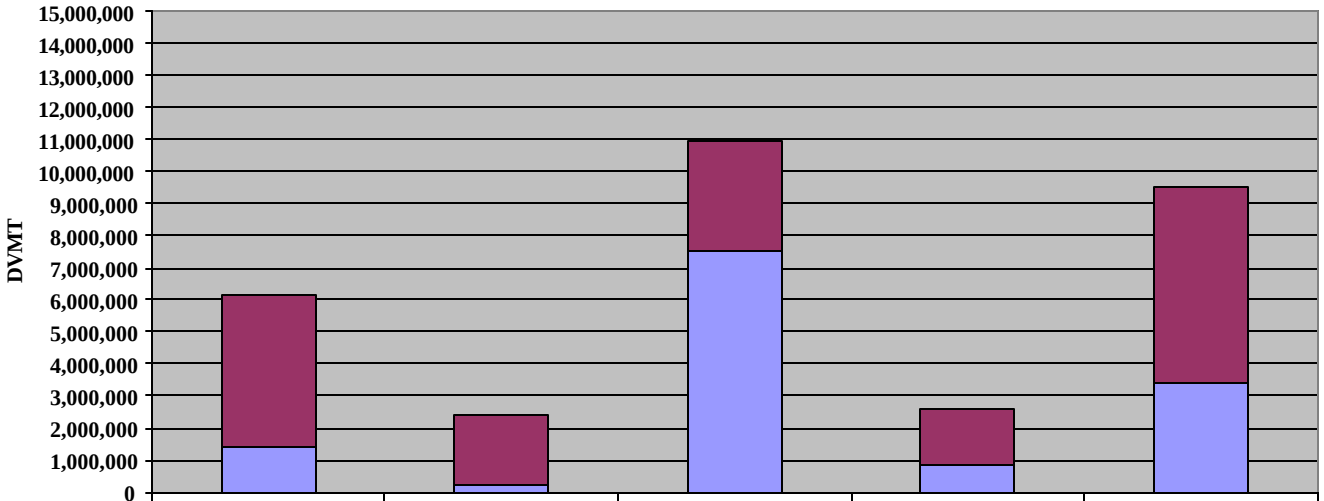
Figure E-3:
2000 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	4,007,896	1,837,837	2,910,155	1,479,815	5,153,275
Urban	1,199,298	225,251	6,511,554	744,928	2,888,307

County

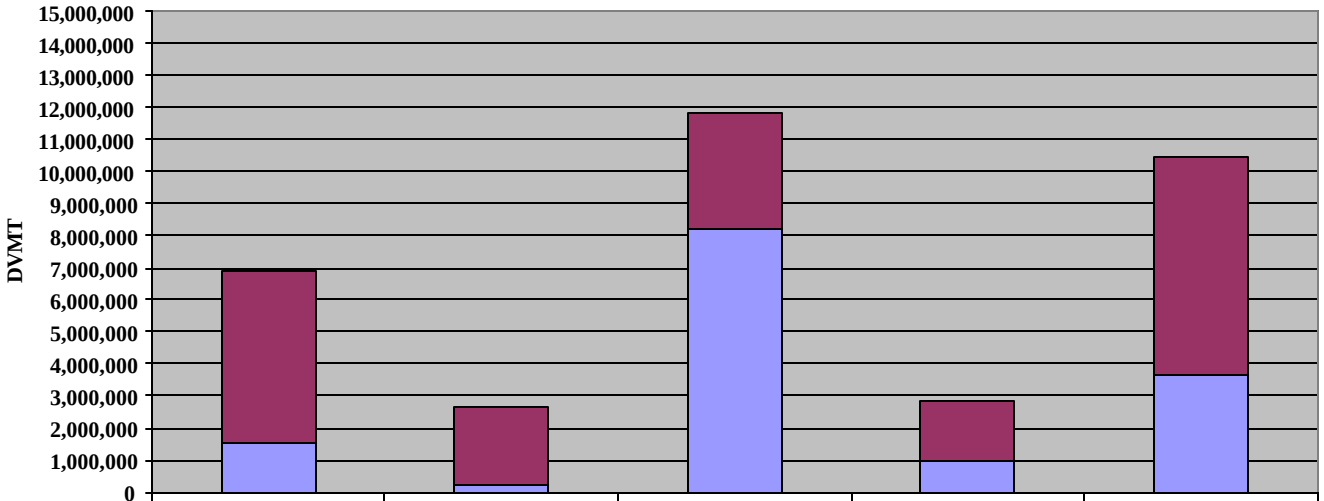
Figure E-4:
2007 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	4,780,709	2,161,478	3,372,998	1,749,499	6,115,034
Urban	1,401,023	252,372	7,559,421	879,174	3,386,253

County

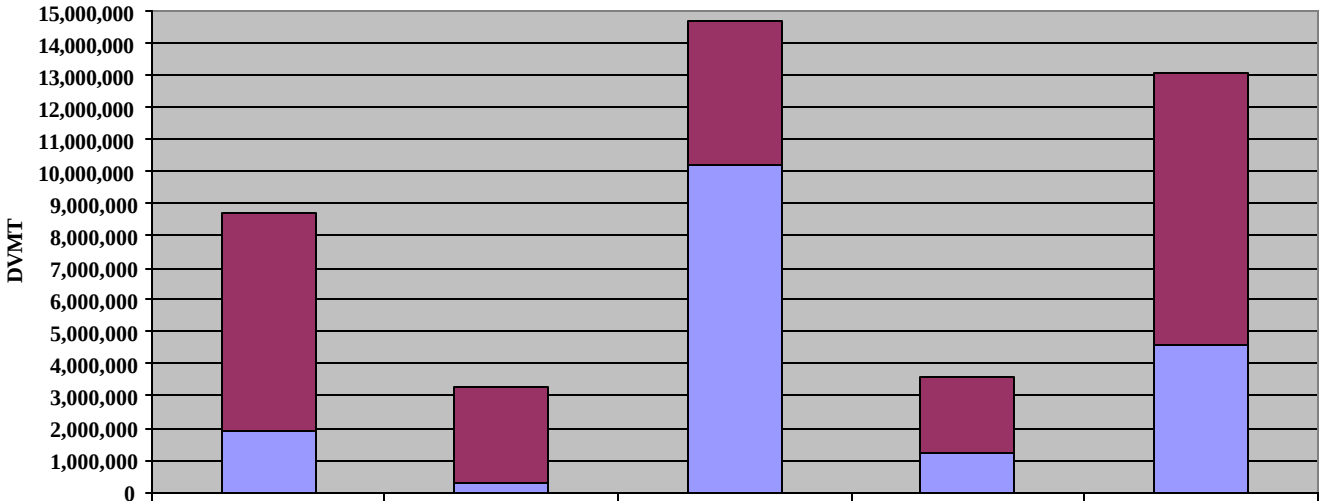
Figure E-5:
2012 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	5,332,719	2,375,132	3,648,804	1,894,928	6,740,494
Urban	1,545,113	266,902	8,191,197	953,892	3,689,204

County

Figure E-6:
2025 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT

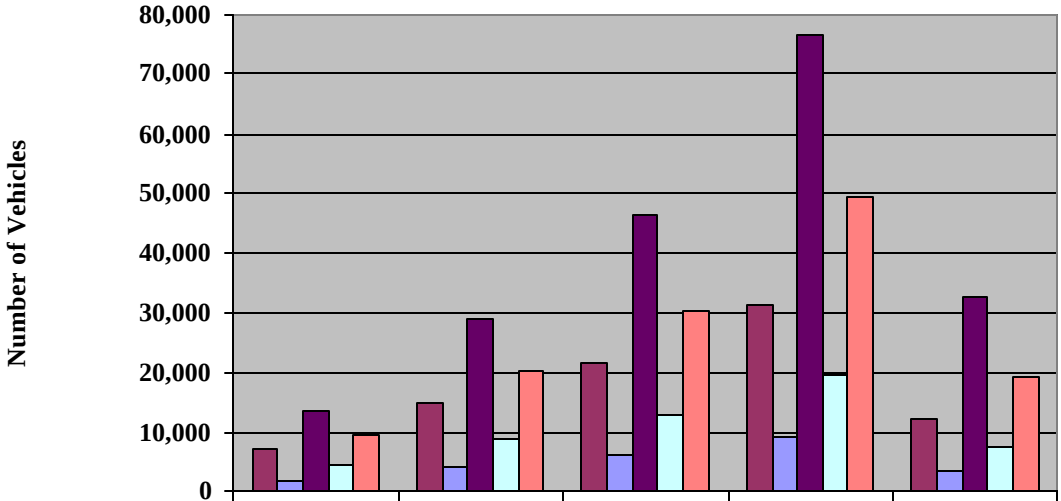


	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	6,767,945	2,983,782	4,527,504	2,403,353	8,497,628
Urban	1,919,745	319,371	10,177,988	1,209,829	4,589,111

County

Figure E-7[9] presents the motor vehicle registration data for the Greenville-Spartanburg-Anderson MSA. Only a small portion of the vehicles are pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991, the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 models.

Figure E-7:
2000 Motor Vehicle Data: Greenville-Spartanburg-Anderson MSA



	<1979	1980-1986	1987-1990	1991-1995	1996-2001
Anderson	7,121	14,896	21,425	31,432	12,024
Cherokee	1,863	4,265	6,049	9,255	3,512
Greenville	13,423	28,947	46,387	76,720	32,652
Pickens	4,495	8,745	12,989	19,573	7,447
Spartanburg	9,461	20,262	30,312	49,393	19,183

This data reflects 2000 registration figures, and many of the older vehicles have probably been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Refueling Vapor Recovery (ORVR) systems, will help to offset any potential impacts from the increased emissions from mobile sources in this area.

F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for Anderson County. There is no data readily available for predicting growth inside of the recommended area. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only

[9] Data provided from SC Department of Public Safety, Division of Motor Vehicles

assumed that current economic factors will remain stable or that some economic growth will occur. It is reasonable to expect the majority of that growth to be located inside, or at least near, the recommended area.

Table F-1: Historical and Projected Population and Population Density per County	
	Anderson County
Population, 1990[10]	145,177
Population, 2000[11]	165,740
Projected Population, 2020[12]	191,100
County Growth Rate, 2000 - 2020	15.30%

Anderson County's growth rate from 2000 to 2020 is 15.30 %. Assuming the county growth is equally distributed throughout the county, the projected population of recommended area for the year 2020 is 113,542 (98,475 in 2000 X 15.30% growth). However, equal distribution of growth is unlikely since the southern part of the county is rural and does not contain the densely populated areas, and probably no industries either. With some degree of certainty, the future growth in Anderson County will be in the city of Anderson and in those areas north to I-85, particularly in the recommended area, which contains the urban center.

Additionally, since the boundary includes the majority of Anderson County and already captures the area's urban population, it is reasonable to conclude that the boundary at least approximates, if not contains, the expected population growth, and hence the economic growth, for the area in the coming years.

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in

[10] Data provided by the US Census: 2000.
[11] Data provided by the US Census: 2000.
[12] Data provided by the EPA.

the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

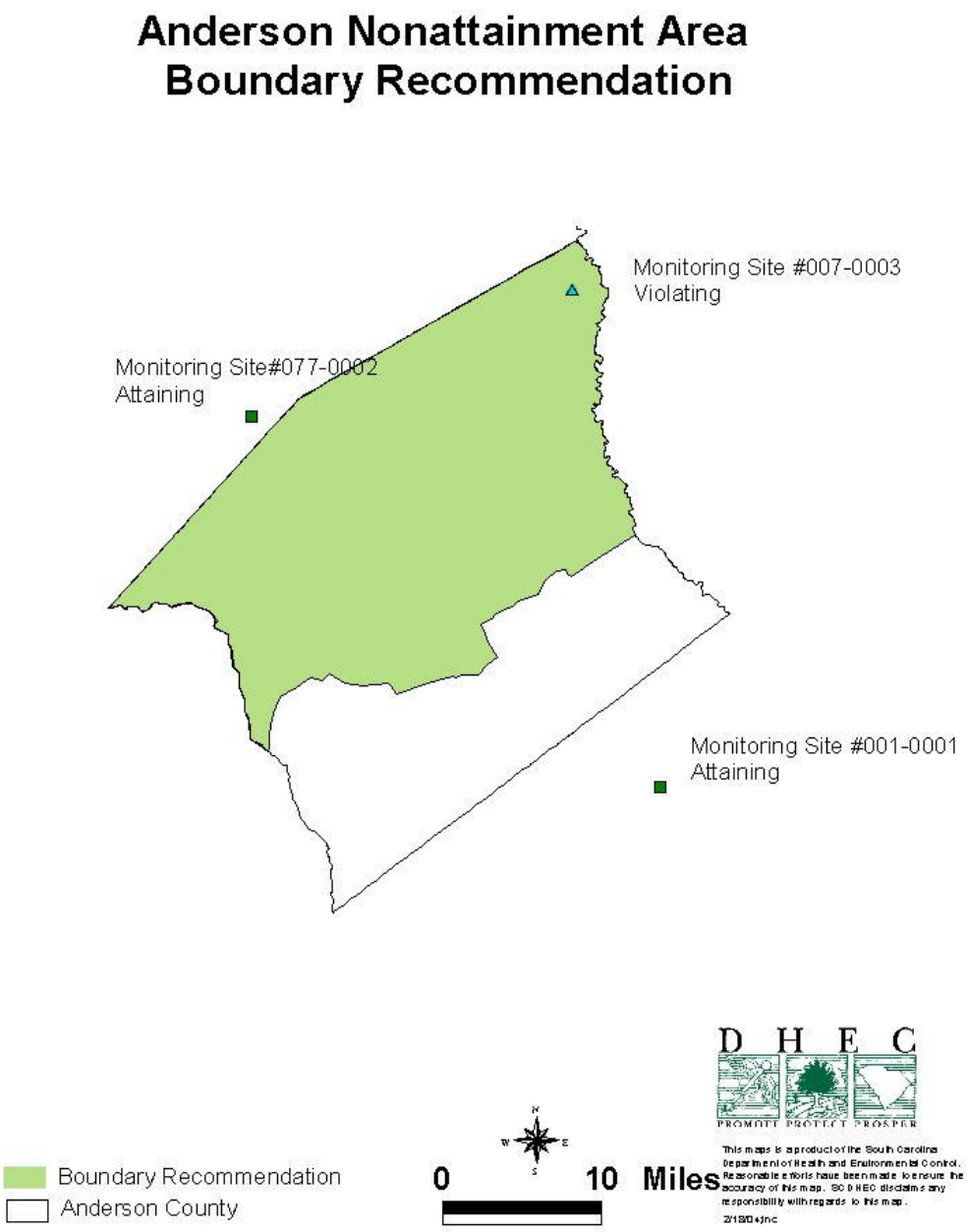
The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. Anderson County is located in the Piedmont Area. The line of demarcation runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional Boundaries

Figure I-1 shows the Department's recommended Anderson nonattainment area boundary.

Figure I-1



Starts at the intersection of the Anderson/Greenville County line and the Saluda River.
Follows the Saluda River south to SC 247.
Follows SC 247 southwest to Belton Highway (US 76 / 178).
Follows Belton Hwy (US76/178) east to Shirley Store Road (S-627).
Follows Shirley Store Road (S-627) southeast for 0.6 miles to Neals Creek.
Follows Neals Creek south for 1.4 miles to Hart Road.
Follows Hart Road southwest for 0.3 miles to Broadway Lake Road.
Follows Broadway Lake Road east for 0.4 miles to Robertson Road (S-488).
Follows Robertson Road (S-488) southwest for 0.3 miles to Scott Road (S-435).
Follows Scott Road (S-435) southwest for 1.6 miles to SC 185.
Follows SC 185 northwest for 1.0 mile to SC 28.
Follows SC 28 south for 0.3 miles to Middleton Road (S-108).
Follows Middleton Road (S-108) southwest for 0.6 miles to Nesbit Creek.
Follows Nesbit Creek west for 1.5 miles to Hall Road.
Follows Hall Road southeast for 0.7 miles to Middleton Road (S-108).
Follows Middleton Road (S-108) west for 0.4 miles to Thompson Road.
Follows Thompson Road west for 0.9 miles to Flat Rock Road (S-49).
Follows Flat Rock Road (S-49) northwest for 1.1 miles to Hayes Road.
Follows Hayes Road west and north for 1.3 miles to SC81.
Follows SC 81 west for 0.5 miles to Chris de Lane (S-434).
Follows Chris de Lane (S-434) west for 1.2 miles to Unnamed Creek.
Follows Unnamed Creek southwest and west for 2.5 miles to Mountain Creek Church Road (S-104)
Follows Mountain Creek Church Road (S-104) southwest for 0.3 miles to S-157.
Follows S-157 west and south for 1.4 miles to S-158.
Follows S-158 northwest for 1.2 miles to US 29.
Follows US 29 to the Savannah River (South Carolina / Georgia state line).
Follows the Savannah River (South Carolina / Georgia state line) northwest to the Anderson County / Oconee County line.
Follows the Anderson County / Oconee County line northeast to the juncture with the Greenville County line.

J. Level of Control of Emission Sources

Local Controls

In December 2002, Anderson County entered into an Early Action Compact (EAC) with the Department and EPA, Region 4. Each of the Upstate Counties (Anderson, Greenville, and Spartanburg) recognizes the value and importance of the health of the citizens and the related need for clean air; however, each recognizes that individual county planning is the quickest way to achieve results. Through its participation with the EAC, Anderson County is exploring countywide local control strategies to be implemented no later than April 2005. These strategies include designating an ozone action coordinator; encouraging the use of hybrid vehicles and alternative fuels; evaluating the use of high occupancy vehicle lanes; implementing open burning restrictions; and supporting Department statewide efforts. A complete listing of the emission reduction strategies for Anderson County was included in their December 2003 Progress Report and will be updated in March 2004.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department

must submit, for EPA approval, state implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed R.61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NO_x)* on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NO_x from these sources.

As part of the Early Action Compact (EAC) process another regulation that the Department is revising in an effort to reduce NO_x emissions statewide is R. 61-62.2, *Prohibition of Open Burning*. The most significant revisions to this regulation are as follows: deleting the exception for the burning of household trash, modifiying the exception for the burning of construction waste, and revising the exception for fires set for the purpose of firefighter training. The burning of household trash and construction waste presents health and environmental concerns for many communities. Elimination of the burning of household trash will result in a statewide reduction of 2,379 tons per year of NO_x and 11,896 tons per year VOC. While the revisions to the burning of construction waste and fires set for the purpose of firefighter training are more difficult to quantify, these revisions will decrease NO_x and VOC emissions from these activities.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing "fail-safe" provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina's forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard and yet are still willing to plan and work with other areas to implement controls to ensure early attainment

of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the EAC, EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. We have implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts,

distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a

federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995. In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's Title V permit program. EPA's review of South Carolina's program found that it was operating at a very high level of proficiency.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers, and power plants are modified or added. In areas with unhealthy air, NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

South Carolina has a SIP approved NSR program with its own NSR rules. Therefore, South Carolina has full authority to issue both major and minor NSR permits. Because there are no nonattainment areas in South Carolina at present, the only applicable major NSR permitting regulations are the Prevention of Significant Deterioration (PSD) regulations.

In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's NSR program. The EPA determined that South Carolina has a thorough and well-organized process for permitting sources and a good comprehension of regulatory requirements and policies.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998)*. The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan. [13]

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies

[13] South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management

use alternative fuels when operating alternative fuel vehicles.

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile. [14]

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road. [12]

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be

[14] U.S. EPA Office of Transportation and Air Quality

required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

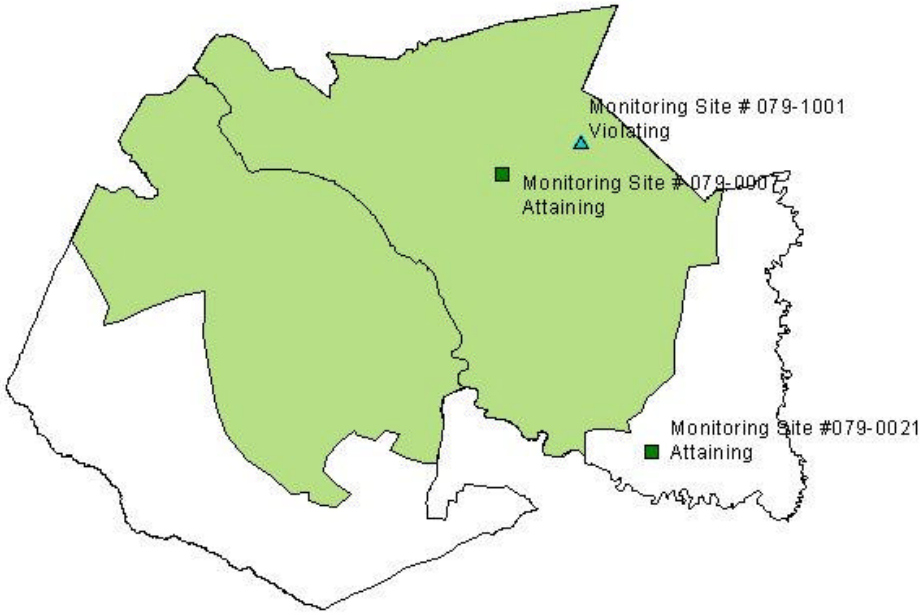
The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of 156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.

Columbia Nonattainment Area
Boundary Recommendation



Boundary Recommendation

Richland and Lexington Counties

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This maps is a product of the South Carolina Department of Health and Environmental Control. Reasonable efforts have been made to ensure the accuracy of this map. SCDHEC disclaims any responsibility with regards to this map.

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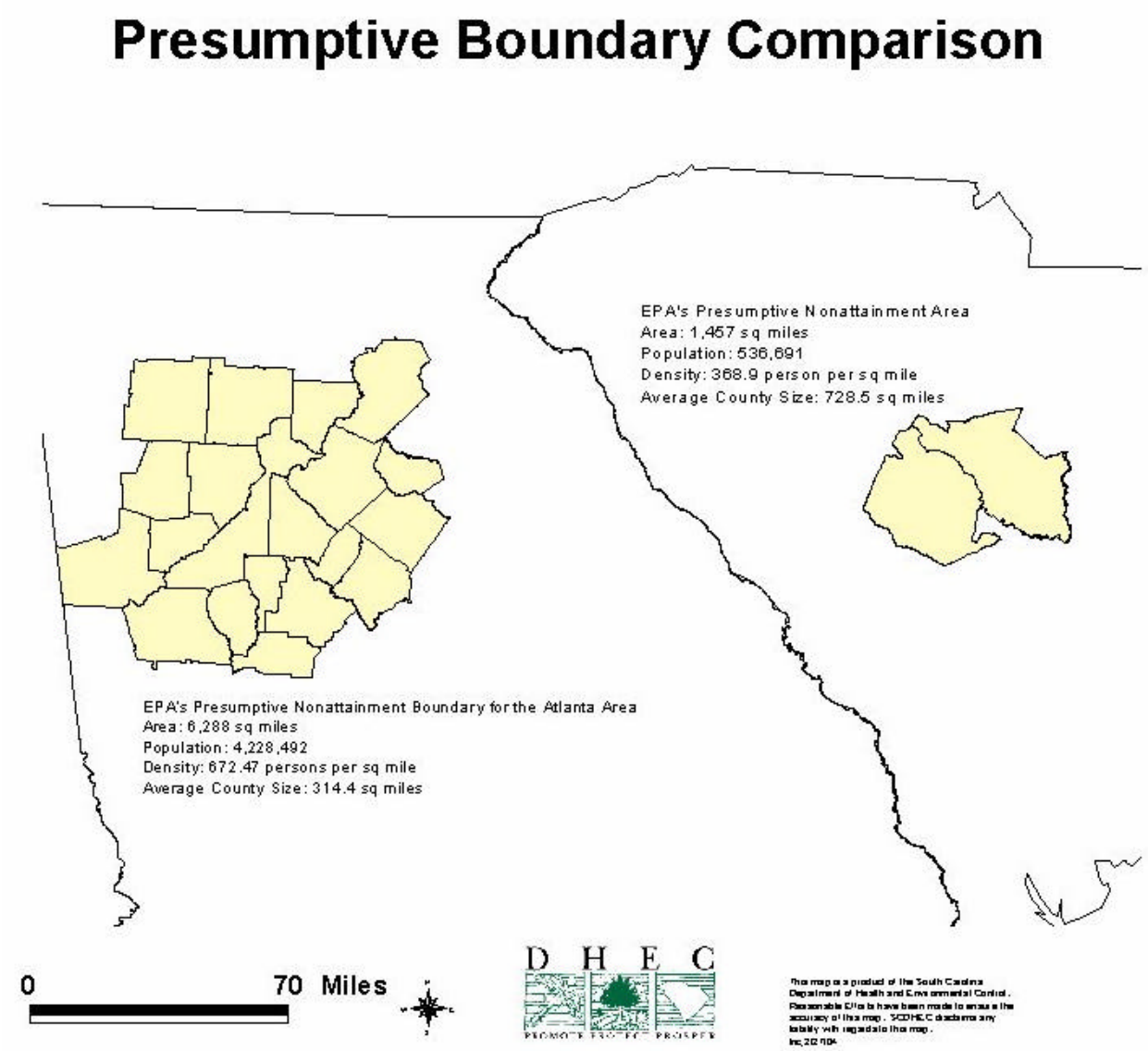
Columbia Nonattainment Area
Boundary Recommendation
Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, and later amended on November 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the State's recommendations. Specifically, EPA's response indicated that the entire Columbia Metropolitan Statistical Area (MSA), which is based on the 1990 MSA definition, would be designated as the nonattainment area. Such a recommendation would include the full counties of Lexington and Richland. The Department remains firm in its request that only combined portions of the two counties be designated. The Department wishes to take this opportunity to demonstrate why EPA's proposed modifications are inappropriate. The information and data provided below documents, on a technical basis, the Department's reasons for recommending the **combined portions** of Lexington and Richland Counties as a nonattainment area.

Throughout the rest of this summary of the recommended Columbia nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Richland and Lexington Counties (Columbia MSA).

Based on EPA presumptive boundary sizes, designation of a partial and separate nonattainment area for the Anderson boundary is appropriate. Figure 1 shows a side-by-side comparison of the recommended Atlanta, GA 8-hour ozone nonattainment area and the Columbia, SC MSA, (EPA's presumptive boundary for the midlands). Disturbing observations can be made, given that EPA has indicated that these will be the 8-hour ozone nonattainment boundaries for the respective areas. The two counties that make up the Columbia MSA average 728.5 square miles per county. In contrast, the Atlanta area includes 20 counties with an average size of 324.5 square miles per county. The comparative land areas and populations demonstrate a severe inequity in setting boundaries based on EPA's presumptive boundaries.

Figure 1



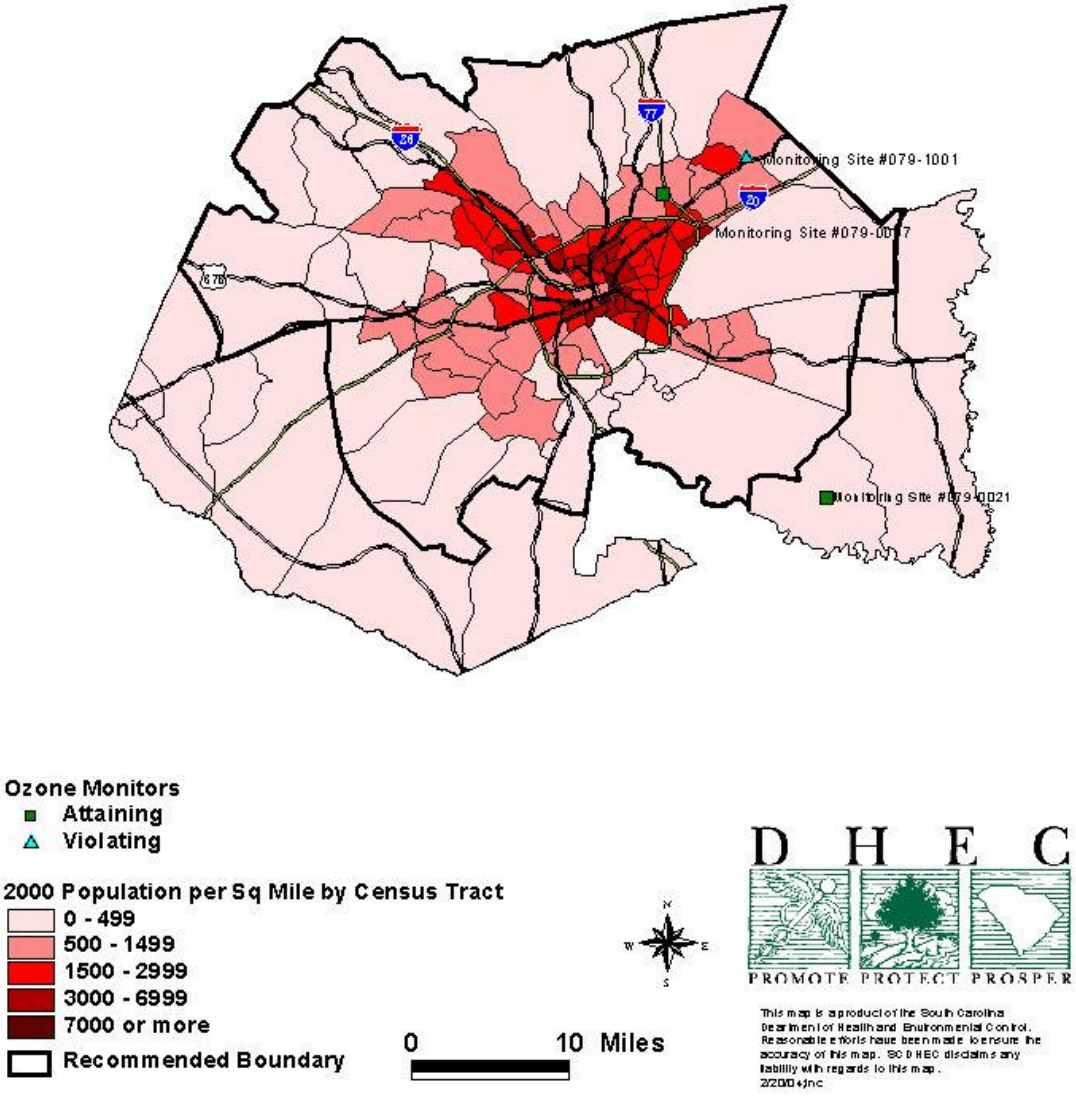
Based on the Clean Air Act, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. The Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as **serious** and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the violating monitors in the Columbia Area would be classified as marginal. The Office of Management and Budget (OMB) has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. This was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to the public and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its

presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Based on low population and low population density in the rural areas of Richland and Lexington Counties, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. In 2000, the Columbia MSA had a population of 536,691, within a land area encompassing 1,455 square miles. The recommended Columbia nonattainment area boundary captures 92.14% of the population, or 494,518 people, within a land area measuring 995.8 square miles. The recommended nonattainment area has a population density of 496.6 persons per square mile (see figure 2). The portions of Richland and Lexington Counties not captured within the boundary are rural in nature, with a population density of only 91.84 persons per square mile.

Figure 2

Richland and Lexington Counties
Population per Square Mile



Based on employee percentages and distribution of economic sector employees, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. The recommended boundary captures 91.04 percent of the manufacturing employees and 92.53 percent of the manufacturing establishments. Given that the vast majority of the manufacturing and retail trade establishments and employees in the Columbia MSA are located in the recommended area and that the MSA, particularly the recommended area, is predominantly urban, it is reasonably assumed that the majority of the employees and establishments in the county for other industrial categories are contained within the recommended area boundary.

Based on the 2001-2003 quality assured data, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. There are three monitors in Richland County, two of which are captured within the boundary. One of these monitors currently indicates nonattainment of the 8-hour ozone standard. The other has only two years of data. The third monitor indicates attainment with the standard and is not included in the recommended boundary. Also, between 2000 and 2002, the Department operated an ozone monitor in Eastern Aiken County (West of Columbia) to assess conditions between Aiken and Columbia, South Carolina. This monitor was located approximately 20 miles from the Lexington County line. This monitor indicated attainment of the ozone standard and further supports the recommendation of the proposed boundary. The three monitors in Richland County only accounted for two exceedances of the ozone standard value (0.085 ppm or higher) in 2003. By designating all of Richland and Lexington Counties as nonattainment, the citizens would be told that their air quality does not meet the standard when the monitoring data confirms that it does.

Based on the point source emissions captured in the area and recommended controls on those outside, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. The Lexington County portion of the recommended Columbia nonattainment area accounts for 99.7 percent of the NO_x point source emissions and 97.9 percent of the VOC point source emissions, respectively. The Richland County portion of the recommended Columbia nonattainment area accounts for 2.0 percent of the NO_x point source emissions and 84.9 percent of the VOC point source emissions, respectively (See figures 3 - 6).

There are two significant nitrogen oxides (NO_x) sources in Richland County, SCE&G: Wateree and International Paper: Eastover, which are outside of the proposed boundary. SCE&G: Wateree has installed Selective Catalytic Reduction (SCR) emission control devices to significantly reduce their NO_s emissions from 38.4 tons per day to 12.94 tons per day, resulting in a 66% daily reduction, during the ozone season. International Paper: Eastover, the second largest NO_x source in Richland County, is subject to the State's federally approved NO_x SIP Call Plan. The Department has the necessary authority to require additional controls, if further reductions are appropriate, to attain the National Ambient Air Quality Standards (NAAQS) in the recommended Columbia nonattainment area. The Richland County ozone monitoring station (Congaree Bluff 45-079-0021) is located in a rural area between International Paper: Eastover and the recommended Columbia nonattainment area. The monitor is not within the recommended Columbia nonattainment area. The Congaree Bluff ozone monitor indicates attainment of the NAAQS.

Figure 3: Lexington County Point Source NO_x Emissions

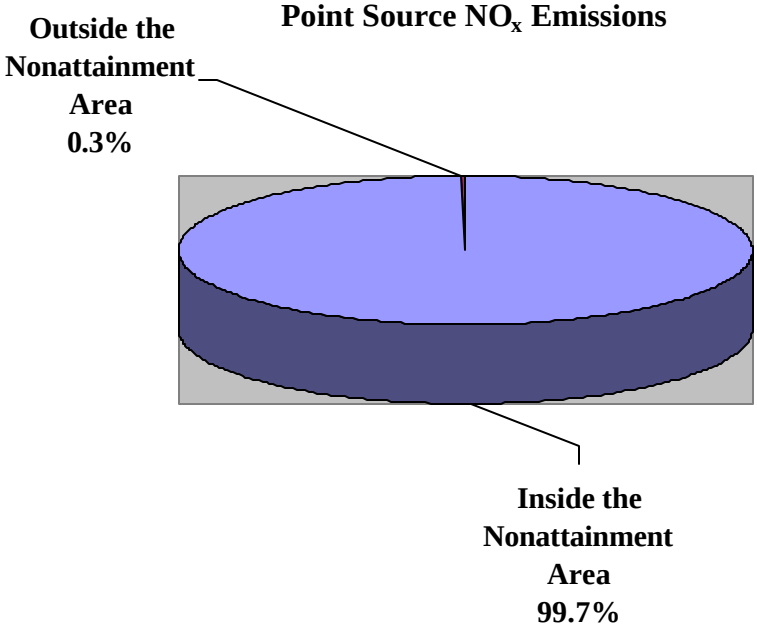


Figure 4: Lexington County Point Source VOC Emissions

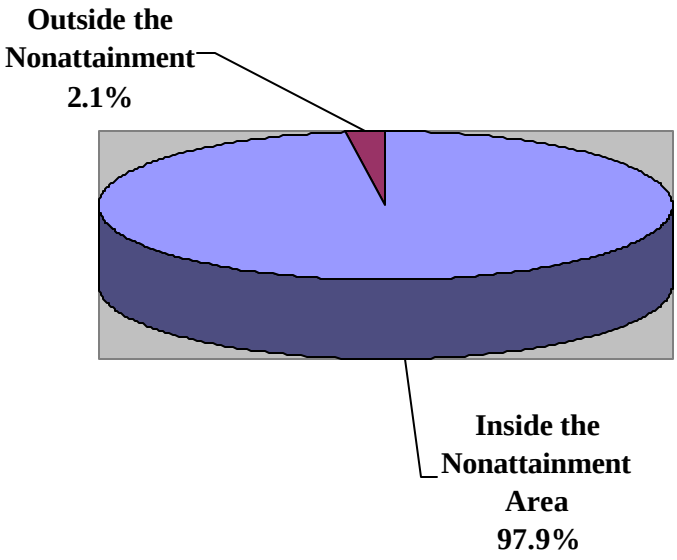


Figure 5: Richland County Point Source NO_x Emissions

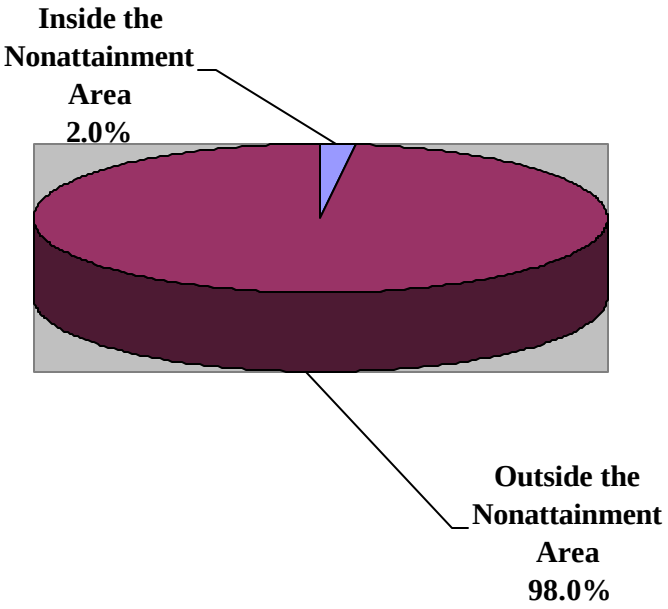
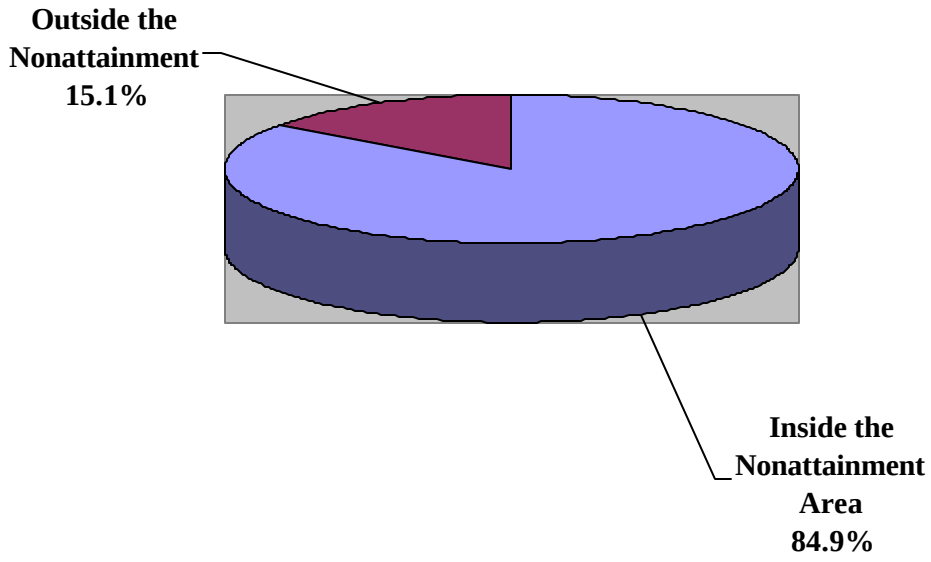


Figure 6: Richland County Point Source VOC Emissions



Based on the high Daily Vehicle Miles Traveled (DVMT) captured in the recommended area, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. The proposed boundary captures 91% of the daily vehicle miles traveled in the two counties and it is estimated that in 2025 the boundary will capture 93%.

Based on commuter flow, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. According to the U.S. Census Bureau 71.68 percent of workers in the Columbia MSA, work in the same county they live in. Lexington County accounts for 41.10 percent of the working population in the MSA, workers living in Lexington and commuting to other counties in the State account for only 17.61 percent of the entire worker flow. Richland County accounts for 58.89 percent of the working population in the MSA, workers living in Richland and commuting to other counties in the State account for only 7.51 percent of the entire worker flow.

Table 1:
County of Residence for the Columbia MSA

County Worked In	Lexington	Richland	Grand Total
Lexington	23.49%	7.51%	31.00%
Richland	17.61%	51.38%	69.00%
Grand Total	41.10%	58.89%	100.00%
Out of County Flow	17.61%	7.51%	

Based on South Carolina's commitment to "Cleaner Air Sooner," designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. The South Carolina General Assembly passed, and our Governor signed, a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. These efforts demonstrate a commitment by all involved to protect and improve air quality for the citizens of South Carolina.

Based on South Carolina's statutory authority to require controls on sources regardless of location, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

Based on state and EPA modeling, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including Richland and Lexington Counties, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate. South Carolina's citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

Based on the unique transportation and air quality planning programs, designation of combined partial counties for the recommended Columbia nonattainment area is appropriate The Columbia Area Transportation Study (COATS) performs transportation planning specific for the urbanized portions of Lexington and Richland Counties. Similarly, the Department has a regional environmental office located in Richland County that monitors compliance of the regulated sources within Lexington, Richland, Newberry, and Fairfield Counties.

Conclusion

The thirteen factors listed below represent the most compelling reasons why the Department believes designating only **combined portions** of Lexington and Richland Counties as the nonattainment boundary for the Columbia area is appropriate. Additional data to support these factors, as well as other supporting documentation to address EPA's eleven criteria is attached.

1. EPA presumptive boundary sizes.
2. Clean Air Act allows for area.
3. Low population and low population density in none recommended areas.
4. Low percentage of employees in the recommended area.
5. Quality assured ozone-monitoring data.
6. Point source emissions in recommended area.
7. High amount of DVMT in recommended area.
8. Low MSA commuter flow.
9. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
10. The Department's statutory authority to require controls on sources regardless of location.
11. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
12. Comprehensive Ozone Forecasting Program.
13. Unique transportation and air quality planning programs.

Supporting Documentation for
Columbia Nonattainment Area
Boundary Recommendation

Throughout the rest of this summary of the recommended Columbia nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Richland and Lexington Counties (Columbia MSA).

Columbia Nonattainment Area
Boundary Recommendation

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in Lexington and Richland Counties and the adjacent counties, the Department utilized the estimated 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, biogenic, and off-road and on-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for Lexington County, Richland County, and the surrounding South Carolina counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for Lexington, Richland and Adjacent Counties

*** Order of bars corresponds with order of counties in legend.**

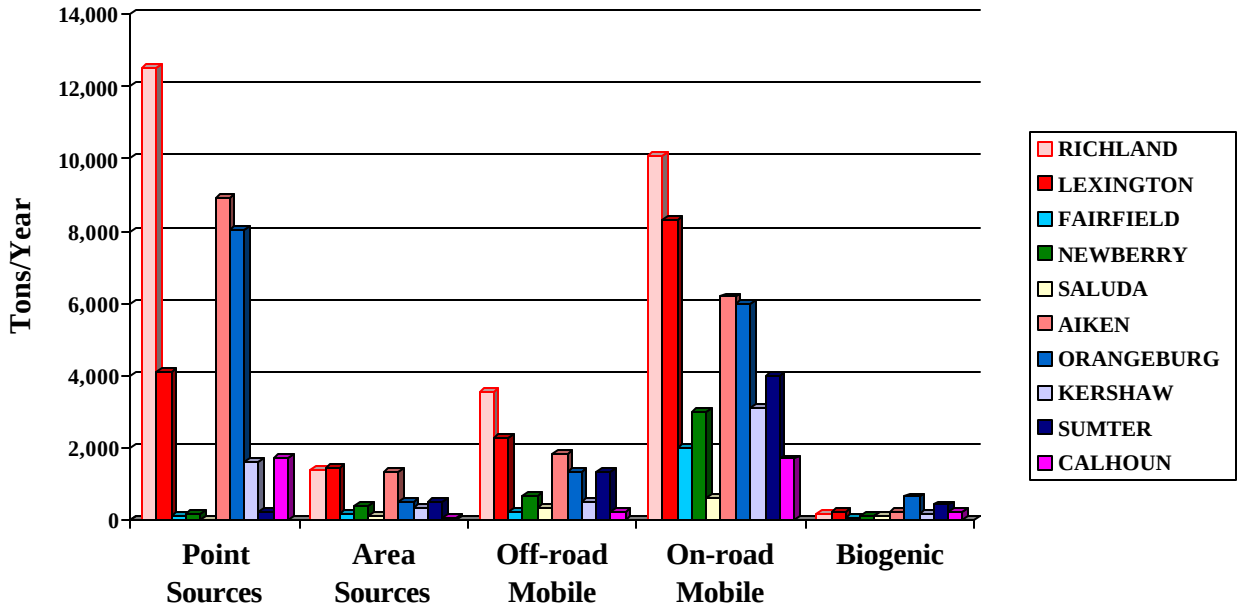
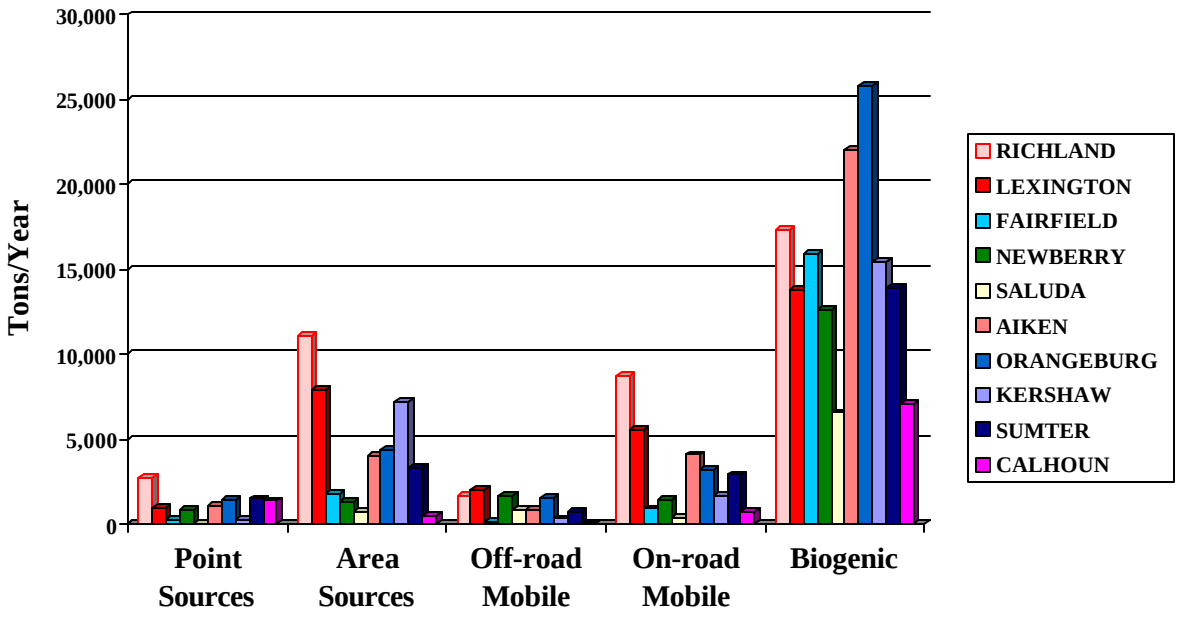


Figure A-2: VOC Sources for Lexington, Richland and Adjacent Countie
*** Order of bars corresponds with order of counties in legend.**



The Department currently has three ozone-monitoring sites in Richland County; two of the monitors indicate attainment of the standard, however, one monitor indicates nonattainment of the air quality standard. Lexington County is bounded to the West by an attaining monitor in Aiken County. Additional air quality information is provided in Section C.

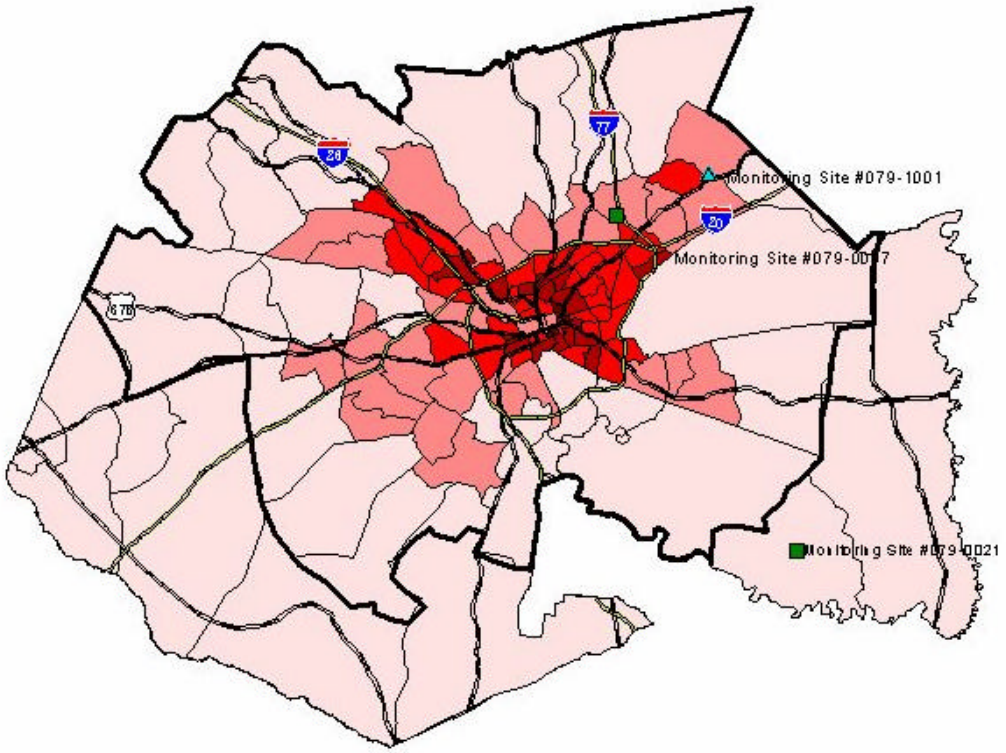
B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000, the Columbia MSA (Richland County and Lexington County) had a population of 536,691, within a land area encompassing 1,455 square miles, the population density of the entire MSA was 368.86 persons per square mile. The recommended Columbia nonattainment area boundary captures 92.14% of the population, or 494,518 people, within a land area encompassing 995.8 square miles. The recommended nonattainment area has a population density of 496.6 persons per square mile. The portions of Richland and Lexington Counties not captured within the boundary are rural in nature, with a population density of only 91.84 persons per square mile.

Moreover, Figure B-1 shows that the recommended area contains all but the least populated areas in Richland and Lexington Counties.

Figure B -1

Richland and Lexington Counties
Population per Square Mile



Ozone Monitors
- Attaining
- Violating

2000 Population per Sq Mile by Census Tract
- 0 - 499
- 500 - 1499
- 1500 - 2999
- 3000 - 6999
- 7000 or more
- Recommended Boundary

0 10 Miles

D H E C
PROMOTE PROTECT PROSPER

This map is a product of the South Carolina Department of Health and Environmental Control. Reasonable efforts have been made to ensure the accuracy of this map. SCDHEC disclaims any liability with regards to this map.
2/2004jnc

Figure B-2 shows the urban areas for the Columbia MSA. Approximately 17.98% of the MSA land area encompasses 99% of the urban population, which is captured with in the recommended area.

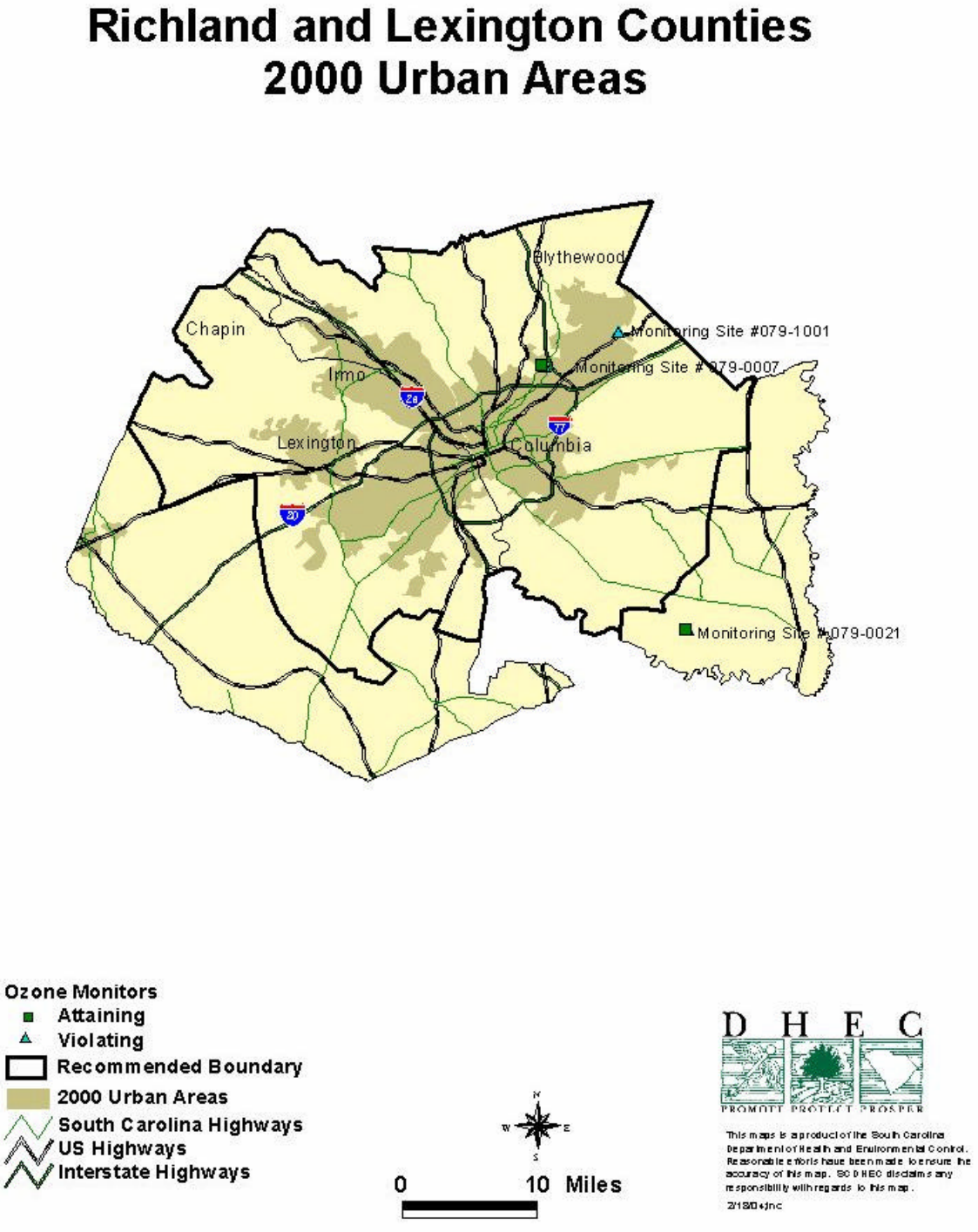
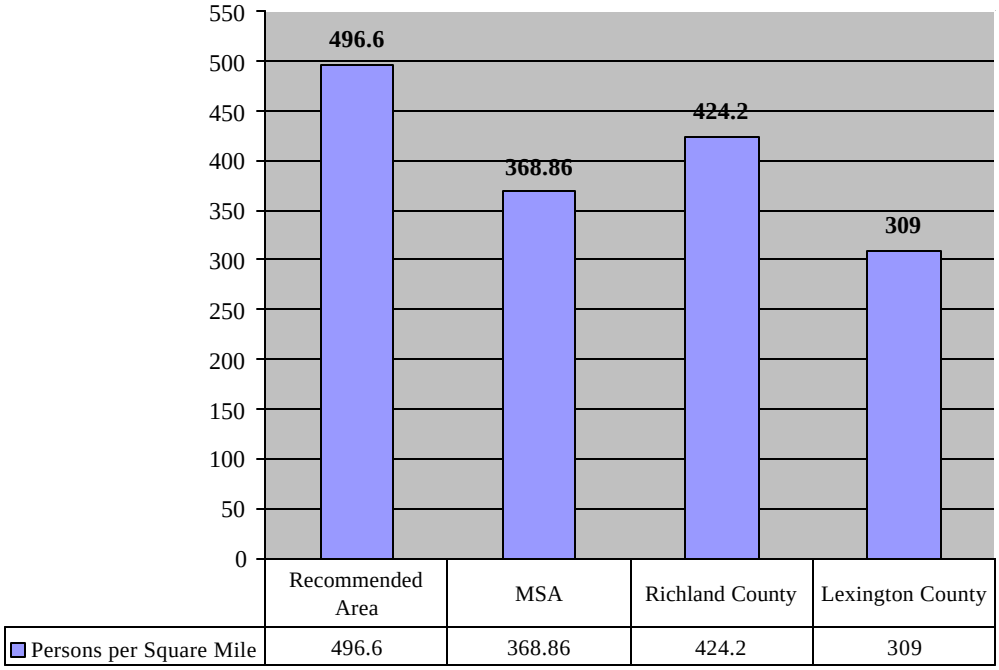


Table B-1 compares the population and land area data for the Columbia MSA to the recommended area.

Table B-1: Population, Land Area, and Urban/Rural Population, 2000						
	MSA	**Richland County**	**Lexington County**	**Recommended Area**	**Richland County Portion**	**Lexington County Portion**
Population[1]	536,691	320,677	216,014	494,518	313,253	181,265
Land Area (Square Miles)[1]	1455	756	699	995.8	581.2	414.6
Persons per Square Mile[1]	368.86	424.2	309.0	496.6	539.0	437.2
Urban Population[2]	422,689	279,512	143,177			
% Urban Population[2]	78.79%	87.2%	66.3%	99[3]%	100%	98%
Rural Population[2]	114,002	41,165	72,837			
% Rural Population[2]	21.21%	12.8%	33.7%			

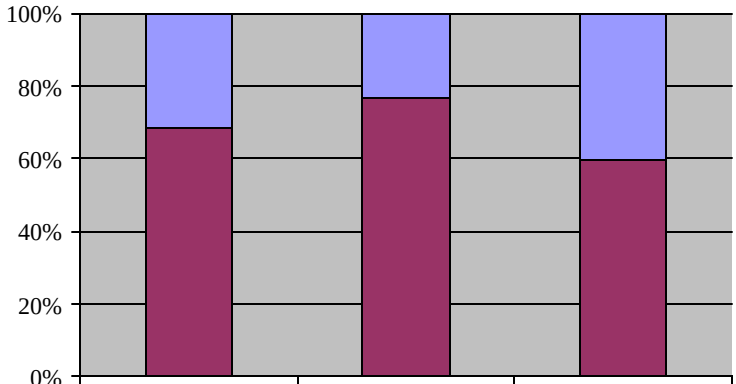
Figures B-3 and B-4 show the population density distribution, and land area distribution, respectively, for Lexington and Richland Counties relative to the recommended Columbia nonattainment area.

Figure B-3: Population Density, 2000
(Persons per Square Mile)



[1] Data provided by the US Census: 2000. Data for the recommended area was obtained from the SCDOT.
[2] Data provided by the SC Office of Research and Statistics.
[3] Estimated.

Figure B-4: Land Area Distribution according to Recommended Area Boundary, 2000



	MSA	Richland County	Lexington County
Non-Recommended Area Land Area in Sq. Mi.	459.2	174.8	284.4
Recommended Area Land Area in Sq. Mi.	995.8	581.2	414.6

The recommended Columbia nonattainment area contains a large majority of the economic development in Lexington and Richland Counties as seen in Tables B-2 through B-4. It is estimated that Richland and Lexington Counties have over 98% and 86% of its manufacturing establishments located inside the recommended area boundary, respectively. About 29,322 people work in manufacturing in the two-county area, and 26,696 of those people, or about 91.04%, work inside the recommended area boundary. The concentrated urban area also supports retail trade. The number of employees working in retail in the counties combined equals 34,192 at some 2,384 retail trade establishments throughout the two counties. It is reasonable to assume that the boundary contains the majority of the retail business, particularly since the metropolitan areas of Lexington and Richland County are captured and those areas assumedly compose an elevated extent of the retail employees and trade.

Table B-2:
Total Number of Manufacturing Employees, 2000[4]

	In Recommended Area Boundary	In County Boundary	Percent in Recommended Area Boundary
Lexington	10,817	12,587	85.94%
Richland	15,879	16,735	94.88%
Total	**26,696**	**29,322**	**91.04%**

[4] Data from Bureau of Air Quality "SC Company File1.xls," based on 2001.

Table B-3: Total Number of Manufacturing Establishments, 2000 [3]			
	In Recommended Area Boundary	**In County Boundary**	**Percent in Recommended Area Boundary**
Lexington	154	179	86.03%
Richland	205	209	98.09%
Total	**359**	**388**	**92.53%**

Table B-4: Retail Trade Patterns, 2000[5]		
	Number of Employees	**Number of Establishments**
Lexington County	11,354	843
Richland County	22,838	1,541
Total	**34,192**	**2,384**

Tables B-5 and B-6 show both the number of employees and establishments for Richland and Lexington Counties according to the Census 2000 North American Industry Classification System (NAICS) database and are ranked in order according to the number of employees. The largest employment sector in Richland County is Health Care and Social Assistance.[6] The second largest is Administration, Support, Waste Management, Remediation Services, and the third is Retail Trade. The largest employment sector in Lexington County is Retail Trade.[7] The second largest is Manufacturing, and the third is Accommodation and Food Services.

Table B-5: Employees per Classification (Richland County) NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank Based on Number of Employees from greatest to least**
Richland	Health Care & Social Assistance	24807	945	1
Richland	Administration, Support, Waste Management, & Remediation Services	23867	494	2
Richland	Retail Trade	22920	1583	3
Richland	Finance & Insurance	18573	795	4
Richland	Accommodation & Food Services	15482	714	5
Richland	Professional, Scientific & Technical Services	15171	1127	6
Richland	Manufacturing	14192	261	7

[5] Data provided by US Census: 2000.
[6] Data provided by US Census: 2000.
[7] Data provided by US Census: 2000.

Table B-5: Employees per Classification (Richland County) NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank Based on Number of Employees from greatest to least**
Richland	Other Services (Except Public Administration)	8468	1033	8
Richland	Construction	8072	628	9
Richland	Wholesale Trade	7615	555	10
Richland	Transportation & Warehousing	6078	119	11
Richland	Educational Services	4588	110	12
Richland	Information	4322	147	13
Richland	Real Estate & Rental & Leasing	2793	412	14
Richland	Management Of Companies & Enterprises	2251	62	15
Richland	Arts, Entertainment & Recreation	1613	102	16
Richland	Auxiliaries (Exc Corporate, Subsidiary & Regional Mgt)	480	23	17
Richland	Forestry, Fishing, Hunting, & Agriculture Support	106	20	18
Richland	Unclassified Establishments	20-99	95	*
Richland	Mining	100-249	5	*
Richland	Utilities	1000-2499	35	*
** The number of employees not available or the number of employees was reported as a range.*				

Table B-6: Employees per Classification (Lexington County) NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank Based on Number of Employees from greatest to least**
Lexington	Retail Trade	11,107	841	1
Lexington	Manufacturing	9,240	224	2
Lexington	Accommodation & Food Services	7,540	330	3
Lexington	Health Care & Social Assistance	6,970	340	4
Lexington	Construction	6,134	790	5
Lexington	Wholesale Trade	5,234	315	6
Lexington	Admin, Support, Waste Mgt, Remediation Services	5,046	271	7
Lexington	Other Services (Except Public Administration)	4,322	583	8
Lexington	Transportation & Warehousing	2,870	156	9
Lexington	Finance & Insurance	2,362	277	10

Table B-6: Employees per Classification (Lexington County) NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank Based on Number of Employees from greatest to least**
Lexington	Professional, Scientific & Technical Services	2,279	388	11
Lexington	Real Estate & Rental & Leasing	1,140	166	12
Lexington	Management Of Companies & Enterprises	1,069	29	13
Lexington	Information	660	48	14
Lexington	Arts, Entertainment & Recreation	502	61	15
Lexington	Utilities	430	20	16
Lexington	Educational Services	230	38	17
Lexington	Mining	163	6	18
Lexington	Auxiliaries (Except Corporate, Subsidiary & Regional Mgt)	97	9	19
Lexington	Unclassified Establishments	87	47	20
Lexington	Forestry, Fishing, Hunting, & Agriculture Support	78	13	21
** The number of employees not available or the number of employees was reported as a range.*				

The data in Tables B-7 and B-8 was taken from the Census 2000 and is based on the NAICS Industry Code Description for the year 2001. Table B-7 contains the number of employees and establishments for both Richland and Lexington Counties. The table also shows the percentage of employees and establishments each county contributes as a part of the MSA. Given that the vast majority of the manufacturing and retail trade establishments and employees in the Columbia MSA are located in the recommended area (Tables B-2 through B-4) and that the MSA, particularly the recommended area, is predominantly urban, it is reasonably assumed that the majority of the employees and establishments in the county for each industry code category are contained within the recommended area boundary.

Table B-7: Number of Employees and Establishments per County					
Area	**Total Employees**	**% Employees**	**Total Establishments**	**% Establishments**	**% Land Area Captured by Recommended Area**
Lexington	67,560	27.14%	4,952	34.83%	59.31%
Richland	181,398	72.86%	9,265	65.17%	76.88%
MSA	248,958		14,217		

Table B-8 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 9.17% of the employees in the MSA, and 67.25% of those employees worked in Richland

County while 32.75% of those employees worked in Lexington County. The largest employment in the MSA is in Retail Trade (13.56%), of that classification Richland County employed 67.36% and Lexington County employed 32.64%. The second largest employment in the MSA is in Health Care & Social Assistance (12.66%), of that classification, Richland County employed 78.07% and Lexington County employed 21.93%. Manufacturing, the fourth largest employment classification, employed 9.34% of the MSA employees, and 60.57% were employed in Richland County while 39.43% were employed in Lexington County. In fact, in 2001 Richland County comprised the majority of employees in all but four industry code categories as seen in Table B-8.

Table B-8:
MSA Employees per Classification, NAICS, 2001

Industry Code Description	% in MSA	Richland County	Lexington County
Accommodation & food services	9.17%	67.25%	32.75%
Admin, support, waste mgt, remediation services	11.52%	82.55%	17.45%
Arts, entertainment & recreation	0.84%	76.26%	31.12%
Auxiliaries (except corporate, subsidiary & regional mgt)	0.23%	83.19%	16.81%
Construction	5.66%	56.82%	43.18%
Educational services	1.92%	95.23%	5.01%
Finance & insurance	8.34%	88.72%	12.72%
Forestry, fishing, hunting, and agriculture support	0.07%	57.61%	73.58%
Health care and social assistance	12.66%	78.07%	21.93%
Information	1.99%	86.75%	13.25%
Management of companies & enterprises	1.32%	67.80%	32.20%
Manufacturing	9.34%	60.57%	39.43%
Mining	0.06%	*	100.00%
Other services (except public administration)	5.10%	66.21%	33.79%
Professional, scientific & technical services	6.95%	86.94%	13.06%
Real estate & rental & leasing	1.57%	71.01%	28.99%
Retail trade	13.56%	67.36%	32.64%
Transportation & warehousing	3.57%	67.93%	32.07%
Unclassified establishments	0.03%	*	100.00%
Utilities	0.17%	*	100.00%
Wholesale trade	5.12%	59.27%	40.73%

** The number of employees not available or the number of employees was reported as a range.*

Again, given that the vast majority of the manufacturing and retail trade establishments and employees in the Columbia MSA are located in the recommended area (Tables B-2 through B-4) and that the MSA, particularly the recommended area, is predominantly urban, it is reasonably assumed that the majority of the employees and establishments in the counties for each industry code category are contained within the recommended area boundary.

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

There are currently three ozone monitors in Richland County. Data from all three of the monitors and

a nearby monitor in Aiken County were used for this boundary determination. Lexington County does not have an ozone monitoring station.

The first Richland County ozone monitoring station (Parklane 45-079-0007) is located within the recommended Columbia nonattainment area. It is in a suburban area across a four-lane street from residential zoning. The site was established in 1980 and is approximately 110 meters above sea level. It is near to State Park Health Center and located in a field between Parklane Road and Counts Road, behind the SC Archives and History complex. The surrounding area has business parks, small businesses, housing, and apartment complexes. Parklane Road is heavily congested during business hours. This is due to its proximity of the intersections with Farrow Road (SC 555), Two Notch Road (US 1), and the SC-277 / I-77 interchange. The monitoring objective for Parklane site is to measure maximum ozone concentrations.

The second Richland County ozone monitoring station (Congaree Bluff 45-079-0021) has replaced the Congaree Swamp (45-079-1006) station. Congaree Bluff is located in a rural area off of South Cedar Creek Road within the Congaree Swamp National Monument. The Congaree Swamp National Monument is located within the Cedar Creek flood plain. The area surrounding the monitoring station is forest, and is approximately 100 meters within the Congaree Swamp National Monument boundary. This monitoring site is approximately 34 meters above sea level and has been relocated to this less frequently flooded area to ensure reliable access to the site. The monitoring objective for Congaree Bluff site is to measure ozone concentrations for general background. The monitor is not within the recommended Columbia nonattainment area.

The third Richland County ozone monitoring station (Sandhill #2 45-079-1002) was located within the recommended Columbia nonattainment area. It was in a rural setting on agricultural land. In early 2002, Sandhill #2 was replaced with the Sandhill Experiment Station (45-079-1001) air monitor. It was moved approximately 715 meters from the old site and it is 134 meters above sea level. The surrounding area was recently developed for residential use with elementary and middle schools built within the community. The main roads that lead to the site are US 1 and Clemson Road. The area has recently become rather populated and Clemson Road has expanded from a two-lane road to a four-lane road. An overpass over US 1 was constructed to gain easier access to US 1 and I-20. The monitoring objective for Sandhill Experiment Station is to measure ozone concentrations for upwind background. EPA considers the ozone data recorded at both locations to be a continuous calculation of ozone levels in that area, thus they calculated the 2003 design value, using the 2001 value from Sandhill #2 with the 2002-2003 values from the Sandhill Experiment Station.

The Aiken County ozone monitoring station (Jackson Middle School 45-003-0003) is located off Highway 125, approximately 91 meters above sea level. The surrounding area of the monitoring site is residential. According to SCDOT, traffic counts for 1993 show 3,000 vehicles per day accessed the road. The site has been is operation since 1985 and measurement of ozone concentration runs mid-March through mid-November. The monitoring objective for this site is to measure ozone concentrations for source oriented emissions.

The Aiken County ozone monitoring station (Wagener DOT 45-003-0004) was a short-term special study monitor to determine the gradient difference between Richland and Aiken Counties. The Wagener DOT ozone monitoring site was located in Northern Aiken County approximately 20 miles from the Lexington County line. The monitor was established in August 2000 and ran until November 2002. It was surrounded by agricultural land and sat approximately 138 meters above sea level. The monitoring objective for this site was to measure ozone concentrations for general/background. The monitor was attaining the 8-hour ozone standard and justifies the Department's recommendation of designating partial Lexington County.

Table C-1 presents the 2001 through 2003 8-hour ozone monitoring data for Richland and Aiken Counties. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the Parklane, Congaree Bluff, and Jackson Middle School monitors indicate attainment with the 8-hour ozone standard.

Table C-1:
Columbia Nonattainment Area Ozone Monitoring Data

County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2001	2002	2003	
Richland	45-079-0007	Parklane - State Park Health Ctr	0.082	0.084	0.075	0.080
Richland	45-079-0021	Congaree Bluff	0.076	0.082	0.074	0.077
Richland	45-079-1002	Sandhill #2 (relocated in 2002)	0.091			.089
Richland	45-079-1001	Sandhills Experiment Station		0.093	0.083	
Aiken	45-003-0003	Jackson Middle School	0.081	0.092	0.069	0.080
Aiken	45-003-0004	Wagener DOT (removed in 2003)	0.079	0.089		N/A

Table C-2 contains the previous three years daily maximum ozone concentrations above 0.084 ppm for Parklane, Congaree Bluff, Sandhills Experimental Station, Sandhill #2, Jackson Middle School, and Wagener DOT. A period indicates that no exceedance occurred on the same day at that location.

Table C-2:
2001-2003 Daily Maximum 8-hour Average ppm for York and Surrounding Monitors

Date of Exceedance	Parklane Exceeding Value	Congaree Bluff Exceeding Value	Sandhills Experimental Station Exceeding Value	Sandhill #2 Exceeding Value	Jackson Middle School Exceeding Value	Wagener DOT Exceeding Value
05/01/2001	.	.	.	0.087	.	.
05/05/2001	.	.	.	0.093	.	.
05/06/2001	.	.	.	0.092	.	.
05/16/2001	0.086	0.092	.	0.089	.	.
05/17/2001	.	.	.	.	.	0.089
05/31/2001	.	.	.	.	0.104	0.085
07/17/2001	0.009	.	.	0.091	.	.
07/19/2001	.	.	.	.	0.091	.
08/23/2001	0.091	.	.	0.097	.	.
09/18/2001	.	.	.	0.085	.	.
2001 Total Hits	**3**	**1**	**0**	**7**	**2**	**2**
05/25/2002	.	.	0.089	.	.	
06/03/2002	.	.	0.094	.	.	0.089

Table C-2: 2001-2003 Daily Maximum 8-hour Average ppm for York and Surrounding Monitors						
Date of Exceedance	**Parklane Exceeding Value**	**Congaree Bluff Exceeding Value**	**Sandhills Experimental Station Exceeding Value**	**Sandhill #2 Exceeding Value**	**Jackson Middle School Exceeding Value**	**Wagener DOT Exceeding Value**
06/04/2002	.	.	0.086	.	.	
06/10/2002	.	.	0.088	.	.	0.089
06/11/2002	0.087	.	0.094	.	.	0.089
06/12/2002	.	.	0.088	.	.	
06/13/2002	0.093	.	0.104	.	0.095	0.099
07/02/2002	.	.	0.089	.	.	
07/03/2002	.	.	0.092	.	.	
07/04/2002	.	.	0.090	.	.	
07/05/2002	.	0.087	0.089	.	0.093	
07/06/2002	.	.	0.085	.	.	
07/08/2002	.	.	0.089	.	.	0.085
07/16/2002	.	.	0.085	.	.	
07/17/2002	.	0.094	0.093	.	0.093	0.091
07/18/2002	.	.	0.090	.	.	
08/02/2002	.	.	0.087	.	.	
09/11/2002	0.086	0.086	.	.	0.092	0.092
2002 Total Hits	**3**	**3**	**17**	**0**	**4**	**7**
04/13/2003	.	.	0.089	.	.	.
06/25/2003	0.093	.	.	.	.	.
2003 Total Hits	**1**	**0**	**1**	**0**	**0**	**0**

Figure C-1 shows the back trajectories for 2001-2003 on high ozone days (greater than or equal to 0.085 ppm) for the Sandhill monitor. The majority of the winds on these days came from either the North or South. Very few of the back trajectories pass through the portion of Lexington County that is not included in the recommended Columbia nonattainment area.

Figure C-1:

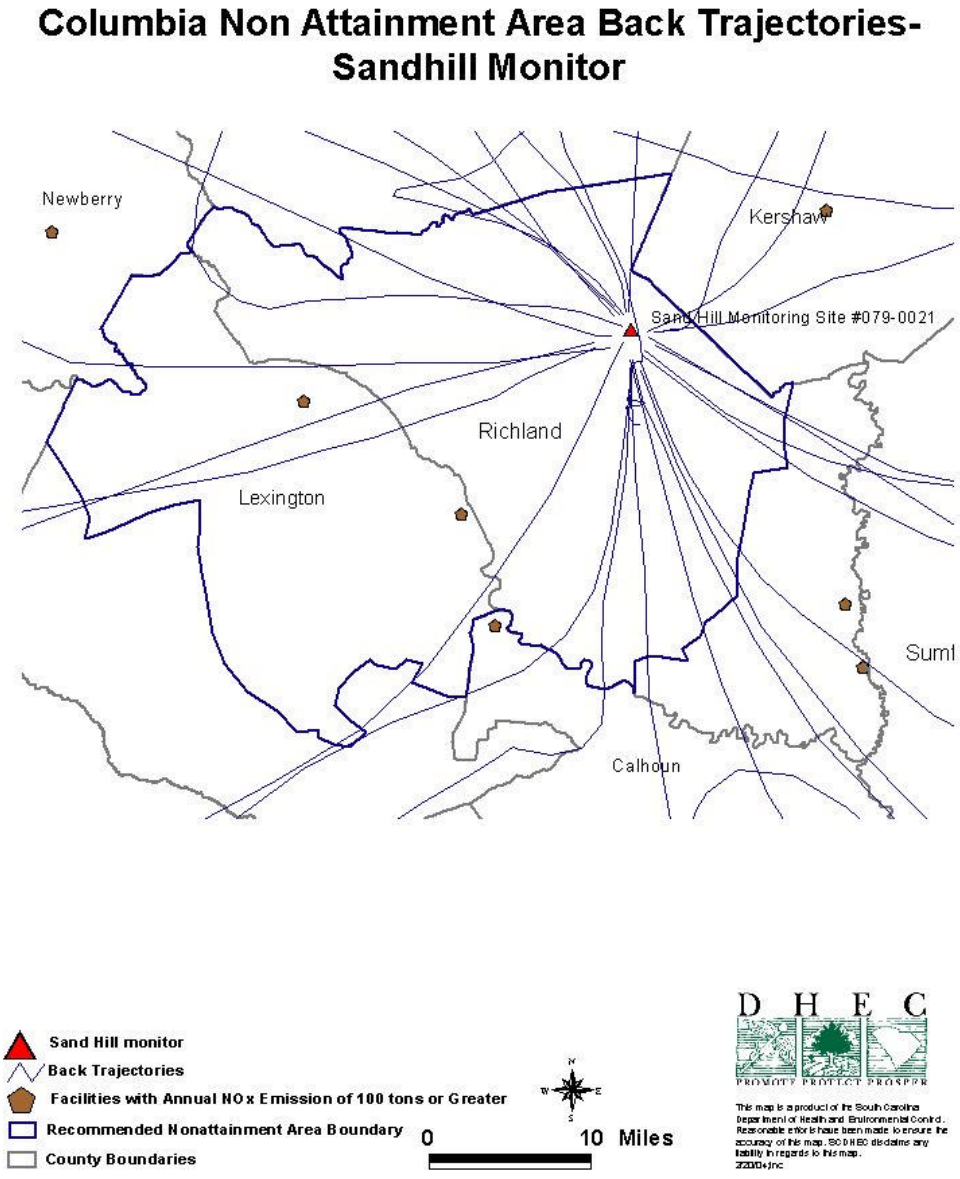


Figure C-2 shows the back trajectories for 2001-2003 on high ozone days (greater than or equal to 0.085 ppm) for the Parklane monitor. The majority of the winds on these days came from either the North or West. Very few of the back trajectories pass through the portions of Richland and Lexington Counties that are not included in the recommended Columbia nonattainment area.

Figure C-2:

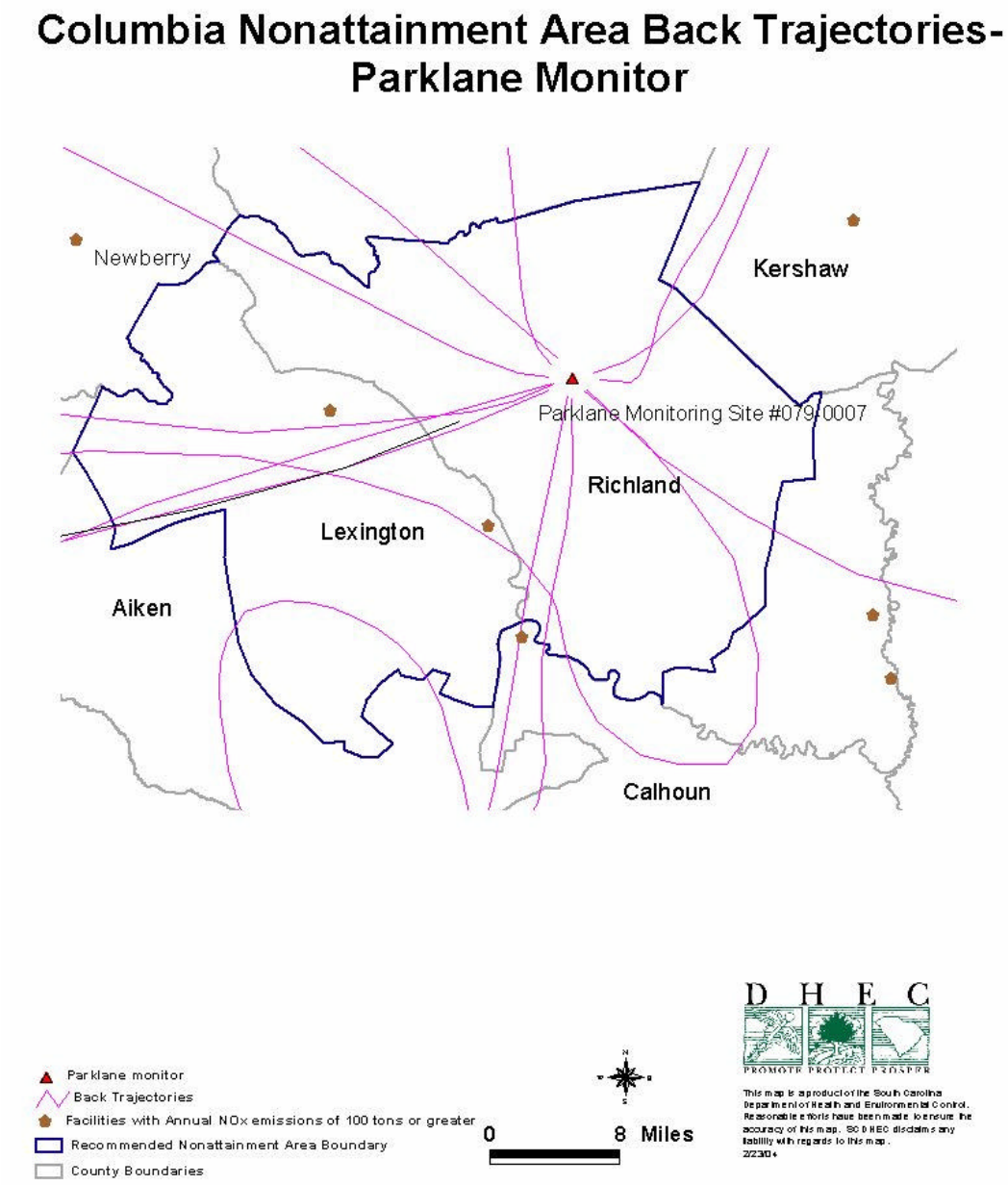
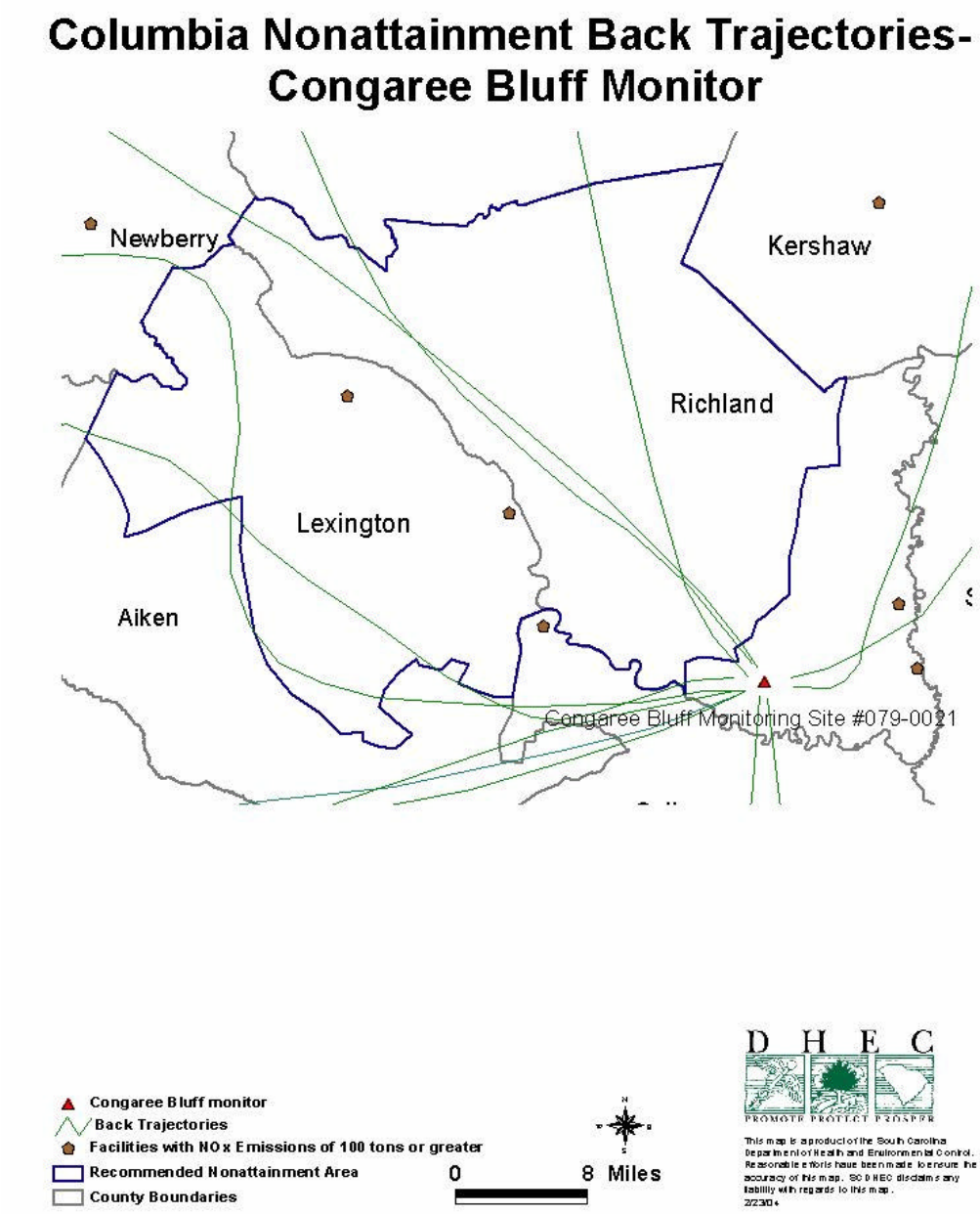


Figure C-3 shows the back trajectories for the four highest ozone values each year between 2001-2003 for the Congaree Bluff monitor. The majority of the winds on these days came from either the North or West. Very few of the back trajectories pass through the portions of Richland and Lexington Counties that are not included in the recommended Columbia nonattainment area.

Figure C-3:



D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in Lexington and Richland Counties based on the 1999 NO_x point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Lexington County has 20 NO_x point sources in operation and 17 of these point sources are located within the proposed nonattainment area. Richland County has 32 NO_x point sources in operation and 29 of these point sources are located within the proposed nonattainment area. Facilities in Lexington and Richland Counties that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Lexington and Richland Counties are located within the proposed boundary. Lexington County accounts for 24.44% of the total MSA NO_x point source emissions, while Richland County accounts for 75.53%.

Table D-1:
MSA Point Source NO2 Emissions

County	Plant Name	Permit Number	Pollutant	Point Source-NO2 (Tons / Year)
Lexington	SCE&G:McMeekin	1560-0003	NO2	3,825.87
Lexington	SMI Steel SC	1560-0087	NO2	127.04
Lexington	Honeywell:Columbia	1560-0016	NO2	60.84
Lexington	Michelin:Lexington US5	1560-0042	NO2	44.41
Lexington	Boral Bricks:Lexington	1560-0006	NO2	15.10
Lexington	Lexington Medical Center:West Columbia	1560-0055	NO2	12.93
Lexington	* Martin, JB	1560-0095	NO2	10.89
Lexington	Corley & Sons Sawmill	1560-0068	NO2	7.35
Lexington	BC Components	1560-0054	NO2	6.71
Lexington	Rea Construction:Plant 51	9900-0083	NO2	4.93
Lexington	US Silica	1560-0005	NO2	4.30
Lexington	Fosterdixiana:Quarry	1560-0038	NO2	3.02
Lexington	Sloan Construction:#16	9900-0060	NO2	2.93
Lexington	Columbia Farms:Sunset Blvd	1560-0121	NO2	2.34
Lexington	Safety Kleen:Lexington	1560-0039	NO2	2.19
Lexington	* Lanier Construction:Gaston Asphalt	9900-0035	NO2	1.20
Lexington	TCM Mfg USA Inc	1560-0086	NO2	0.85
Lexington	Columbia Silica Sand	1560-0037	NO2	0.52
Lexington	* Nucor Building Systems	1560-0109	NO2	0.32
Lexington	KMS Inc	1560-0073	NO2	0.30
	1999 Lexington Co. Total			**4,134.04**
	Emissions in Nonattainment Area-Total			**4,121.63**
	Emissions in Nonattainment Area-Percent			**99.7%**
Richland	* SCE&G:Wateree	1900-0013	NO2	10,368.25
Richland	* International Paper:Eastover	1900-0046	NO2	2,123.94
Richland	Richtex Brick:Columbia	1900-0010	NO2	73.95
Richland	USC:Columbia Campus Energy Facility	1900-0143	NO2	33.76
Richland	Central Products Co DBA IPG Group	1900-0033	NO2	29.02

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Richland	US Army: Ft Jackson	1900-0016	NO2	22.31
Richland	* Richland Landfill	1900-0148	NO2	13.40
Richland	SC DMH:Bull St	1900-0055	NO2	12.22
Richland	Carolina Ceramics	1900-0007	NO2	10.35
Richland	Palmetto Richland Memorial Hospital	1900-0062	NO2	10.14
Richland	US VA Hospital:Columbia	1900-0023	NO2	9.76
Richland	Consolidated Systems	1900-0040	NO2	9.44
Richland	Sloan Construction:# 7	9900-0055	NO2	8.22
Richland	Rea Construction:Plant 52	9900-0081	NO2	5.44
Richland	SCE&G:Coit	1900-0132	NO2	5.37
Richland	Casco Impregnated Papers	1900-0093	NO2	5.05
Richland	American Italian Pasta Co	1900-0130	NO2	3.90
Richland	Jackson, CR:Asphalt	9900-0036	NO2	3.83
Richland	Shakespeare:Columbia	1900-0036	NO2	2.87
Richland	SC General Services:Energy Facility	1900-0162	NO2	2.36
Richland	SC General Services:Columbia Mills	1900-0161	NO2	1.80
Richland	SC General Services:Haynes	1900-0109	NO2	1.24
Richland	FN Manufacturing	1900-0052	NO2	1.02
Richland	Hueck Foils LLC	1900-0146	NO2	0.61
Richland	Colprovia Asphalt #1	9900-0025	NO2	0.51
Richland	Palmetto Baptist Medical Center:Columbia	1900-0044	NO2	0.51
Richland	SC General Services:Sims/Aycock	1900-0104	NO2	0.43
Richland	Plasti-Line Columbia	1900-0169	NO2	0.33
Richland	American Spiralweld Pipe	1900-0179	NO2	0.14
Richland	Tyler Inc	1900-0133	NO2	0.07
Richland	Circle Environmental:Columbia	1900-0164	NO2	0.05
Richland	SC State Farmers Market	1900-0103	NO2	0.04
	1999 Richland Co. Total			**12,760.33**
	Emissions in Nonattainment Area-Total			**254.74**
	Emissions in Nonattainment Area-Percent			**2.0%**

Table D-2 lists the VOC point sources that are in operation in Richland and Lexington Counties based on the 1999 VOC point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Lexington County has 26 VOC point sources in operation and 24 of these point sources are located within the proposed nonattainment area. Richland County has 33 VOC point sources in operation and 30 are located within the proposed nonattainment area. Facilities in Lexington and Richland Counties that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Lexington and Richland Counties are located within the proposed boundary. Lexington County accounts for 25.38% of the total MSA VOC point source emissions, while Richland County accounts for 74.61%.

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Lexington	Michelin:Lexington US5	1560-0042	VOC	418.72
Lexington	SMI Joist:Cayce	1560-0116	VOC	163.99
Lexington	Honeywell:Columbia	1560-0016	VOC	93.23
Lexington	Michelin:Lexington US7	1560-0113	VOC	66.71
Lexington	SMI Steel SC	1560-0087	VOC	58.71
Lexington	Kline Iron & Steel:Cayce	1560-0102	VOC	24.67
Lexington	Sea Hunt Boat	1560-0117	VOC	23.66
Lexington	KMS Inc	1560-0073	VOC	21.64
Lexington	* Nucor Building Systems	1560-0109	VOC	20.12
Lexington	SCE&G:McMeekin	1560-0003	VOC	19.48
Lexington	TCM MFG USA Inc	1560-0086	VOC	17.33
Lexington	Safety Kleen:Lexington	1560-0039	VOC	13.15
Lexington	Eagle Aviation Inc	1560-0082	VOC	9.12
Lexington	BC Components	1560-0054	VOC	8.87
Lexington	Icon Identity Solutions	1560-0131	VOC	6.58
Lexington	Corley & Sons Sawmill	1560-0068	VOC	6.14
Lexington	Boral Bricks:Lexington	1560-0006	VOC	2.33
Lexington	Lexington Medical Center:West Columbia	1560-0055	VOC	0.23
Lexington	US Silica	1560-0005	VOC	0.23
Lexington	* Martin, JB	1560-0095	VOC	0.18
Lexington	Columbia Farms:Sunset Blvd	1560-0121	VOC	0.12
Lexington	Rea Construction:Plant 51	9900-0083	VOC	0.06
Lexington	Fosterdixana:Quarry	1560-0038	VOC	0.05
Lexington	Lanier Construction:Gaston Asphalt	9900-0035	VOC	0.03
Lexington	Sloan Construction:#16	9900-0060	VOC	0.03
Lexington	Columbia Silica Sand	1560-0037	VOC	0.01
	1999 Lexington Co. Total			**975.39**
	Emissions in Nonattainment Area-Total			**955.06**
	Emissions in Nonattainment Area-Percent			**97.9%**
Richland	Central Products Co DBA IPG Group	1900-0033	VOC	2,075.48
Richland	* International Paper:Eastover	1900-0046	VOC	374.92
Richland	SMI Joist:Eastover	1900-0150	VOC	156.95
Richland	* SCE&G:Wateree	1900-0013	VOC	53.46
Richland	Plasti-Line Columbia	1900-0169	VOC	39.81
Richland	Consolidated Systems	1900-0040	VOC	39.04
Richland	Casco Impregnated Papers	1900-0093	VOC	30.88
Richland	Kline Iron & Steel:Columbia	1900-0038	VOC	23.47

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Richland	FN Manufacturing	1900-0052	VOC	19.31
Richland	Dimas North America	1900-0082	VOC	10.51
Richland	Shakespeare:Columbia	1900-0036	VOC	8.84
Richland	Hueck Foils LLC	1900-0146	VOC	7.38
Richland	Tyler Inc	1900-0133	VOC	6.88
Richland	American Spiralweld Pipe	1900-0179	VOC	4.70
Richland	US Army:Ft Jackson	1900-0016	VOC	4.56
Richland	Richtex Brick:Columbia	1900-0010	VOC	4.10
Richland	* Richland Landfill	1900-0148	VOC	3.79
Richland	Carolina Ceramics	1900-0007	VOC	0.71
Richland	US VA Hospital:Columbia	1900-0023	VOC	0.71
Richland	USC:Columbia Campus Energy Facility	1900-0143	VOC	0.67
Richland	SC DMH:Bull St	1900-0055	VOC	0.24
Richland	Palmetto Richland Memorial Hospital	1900-0062	VOC	0.20
Richland	SC General Services:Energy Facility	1900-0162	VOC	0.13
Richland	SC General Services:Columbia Mills	1900-0161	VOC	0.10
Richland	Jackson, CR:Asphalt	9900-0036	VOC	0.09
Richland	SC General Services:Haynes	1900-0109	VOC	0.07
Richland	American Italian Pasta Co	1900-0130	VOC	0.07
Richland	Sloan Construction:# 7	9900-0055	VOC	0.06
Richland	Palmetto Baptist Medical Center:Columbia	1900-0044	VOC	0.03
Richland	Rea Construction:Plant 52	9900-0081	VOC	0.03
Richland	SC General Services:Sims/Aycock	1900-0104	VOC	0.02
Richland	Colprovia Asphalt #1	9900-0025	VOC	0.01
Richland	SCE&G:Coit	1900-0132	VOC	0.01
	1999 Richland Co. Total			**2,867.23**
	Emissions in Nonattainment Area-Total			**2,435.06**
	Emissions in Nonattainment Area-Percent			**84.9%**

Table D-3 lists the NO_x on-road emissions for Lexington and Richland Counties and Table D-4 lists the VOC on-road emissions.

Table D-3: Lexington And Richland Counties On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons Per Year)**
Lexington	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,818.00
Lexington	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,554.00
Lexington	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	409.00

Table D-3: Lexington And Richland Counties On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons Per Year)**
Lexington	11-Highway Vehicles	04-Diesels	3,518.00
	1999 Lexington Co. Total		**8,299.00**
Richland	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	3,776.00
Richland	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,077.00
Richland	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	530.00
Richland	11-Highway Vehicles	04-Diesels	3,712.00
	1999 Richland Co. Total		**10,095.00**

Table D-4: Lexington And Richland Counties On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons Per Year)**
Lexington	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	3,155.00
Lexington	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,788.00
Lexington	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	422.00
Lexington	11-Highway Vehicles	04-Diesels	230.00
	1999 Lexington Co. Total		**5,595.00**
Richland	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	5,003.00
Richland	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,793.00
Richland	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	648.00
Richland	11-Highway Vehicles	04-Diesels	290.00
	1999 Richland Co. Total		**8,734.00**

E. Traffic and Commuting Patterns

Estimates of the Daily Vehicle Miles Traveled (DVMT) were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows the 2000 and 2025 DVMT data for Richland and Lexington Counties and the recommended Columbia nonattainment area. Table E-1 also shows that the proposed boundary captured approximately 91% of the DVMT in 2000, and is projected to capture approximately 93% of the DVMT in 2025.

Table E-1: DVMT for Columbia Nonattainment Area			
County	**2000 Daily VMT**	**2025 Daily VMT**	**Daily VMT Change (2000-2025)**
Lexington	6,973,149	11,535,014	4,561,865
Richland	8,940,822	14,147,703	5,206,881
County Total	15,913,971	25,682,717	9,768,746
Columbia Nonattainment Total[8]	14,613,688	23,925,840	9,312,152
% VMT Captured inside Nonattainment Area	91.83	93.16	

Figure E-1 shows the Interstates that are located within the recommended Columbia nonattainment area. There are three interstates (I-20, I-26 and I-77). I-20 is the major corridor of travel between Aiken and Columbia, South Carolina; I-26 is the major corridor of travel between Spartanburg and Charleston, South Carolina; and I-77 originates in Columbia, South Carolina and is the major travel corridor to Rock Hill, South Carolina. Additionally, there are seven other major routes of travel through Lexington and Richland Counties. They include US Highways 601, 1, 76, 378, 176, 321 and 21. There are also numerous State and secondary roads that connect the larger towns. This figure also shows the 2000 traffic counts for the interstates. The highest traffic occurs near the intersection of I-26 and I-20, which is located within the proposed boundary. The areas of Richland and Lexington Counties that are not included in the recommended Columbia nonattainment area had minimal traffic counts in 2000.

[8] Columbia Nonattainment Area Totals based on MPO figures and may reflect an overestimation of the total percent captured by the boundary.

Figure E-4

Table E-2[9] presents the breakdown by road classifications of DVMT traveled in the recommended Columbia nonattainment area from 2000 and projected through 2025.

Table E-2:
DVMT Data for Recommended Columbia Nonattainment Area

	2000	Projected 2007	Projected 2012	Projected 2025
Richland County				
Rural Interstate (01)	725,336	754,205	774,826	828,441
Rural Principal Arterial (02)	420,790	456,077	474,425	539,783
Rural Minor Arterial (03)	443,596	480,795	500,137	569,038
Rural Major Collector (04)	536,401	581,383	604,772	688,088
Rural Minor Collector (05)	40,569	43,971	45,740	52,041
Rural Local (09)	170,943	185,278	192,732	219,283
Rural Total	2,337,634	2,501,709	2,592,633	2,896,673
Urban Interstate (11)	2,774,170	3,772,385	4,485,395	6,339,223
Urban Freeway/Expressway (12)	288,218	312,388	324,955	369,722
Urban Principal Arterial (13)	1,266,937	1,373,181	1,428,424	1,625,207
Urban Minor Arterial (14)	1,378,322	1,493,906	1,554,006	1,768,090

[9] Data provided by SCDOT

Table E-2: DVMT Data for Recommended Columbia Nonattainment Area				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Urban Collector (15)	591,700	641,320	667,120	759,024
Urban Local (18)	303,842	329,322	342,570	389,764
Urban Total	6,603,188	7,922,501	8,802,471	11,251,030
Grand Total DVMT	8,940,822	10,424,210	11,395,103	14,147,703
Lexington County				
Rural Interstate (01)	1,337,570	1,775,666	2,088,591	2,902,198
Rural Principal Arterial (02)	523,763	611,649	655,699	819,296
Rural Minor Arterial (03)	694,399	810,917	869,318	1,086,213
Rural Major Collector (04)	747,862	873,351	936,248	1,169,842
Rural Minor Collector (05)	73,744	86,118	92,320	115,354
Rural Local (09)	388,566	453,767	486,446	607,814
Rural Total	3,765,903	4,611,467	5,128,623	6,700,716
Urban Interstate (11)	1,277,794	1,428,535	1,536,207	1,816,154
Urban Freeway/Expressway (12)	38,982	45,523	48,802	60,978
Urban Principal Arterial (13)	627,562	732,865	785,645	981,663
Urban Minor Arterial (14)	651,297	760,582	815,358	1,018,790
Urban Collector (15)	338,872	395,733	424,234	530,080
Urban Local (18)	272,740	318,505	341,443	426,633
Urban Total	3,207,246	3,681,743	3,951,689	4,834,298
Grand Total DVMT	**6,973,149**	**8,293,210**	**9,080,311**	**11,535,014**

Tables E-3[10] and E-4 present the 2000 worker flow data from each of the counties. Some counties that are listed on this table are not being considered for boundary recommendations, and are being included on this chart to account for all workers in each county. This table shows that approximately 54% of workers that live in Lexington County work inside the county. Approximately 88% of the workers that work outside the county commute to Richland County. This table also shows that approximately 83% of workers that live in Richland County work inside the county. Approximately 70% of the workers that work outside the county commute to Lexington County.

Table E-3: Where People Living in the Columbia MSA Work			
County Worked In	**County of Residence**		
	Lexington	**Richland**	**Grand Total**
Abbeville	0	15	15
Aiken	613	118	731
Allendale	30	7	37
Anderson	15	10	25
Bamberg	60	55	115
Barnwell	32	9	41

[10] Data provided from US Census: 2000

Table E-3: Where People Living in the Columbia MSA Work			
County Worked In	**County of Residence**		
	Lexington	**Richland**	**Grand Total**
Beaufort	69	72	141
Berkeley	62	36	98
Calhoun	233	121	354
Charleston	264	187	451
Cherokee	6	40	46
Chester	35	36	71
Chesterfield	0	36	36
Clarendon	11	27	38
Colleton	25	6	31
Darlington	31	74	105
Dillon	0	7	7
Dorchester	14	26	40
Edgefield	75	5	80
Fairfield	535	1,447	1,982
Florence	145	107	252
Georgetown	7	11	18
Greenville	131	220	351
Greenwood	98	65	163
Hampton	1	7	8
Horry	83	75	158
Kershaw	258	911	1,169
Lancaster	178	412	590
Laurens	42	37	79
Lee	8	81	89
Lexington	58,998	18,860	77,858
Marion	0	17	17
Marlboro	0	9	9
Newberry	606	694	1,300
Oconee	31	107	138
Orangeburg	520	411	931
Pickens	15	20	35
Richland	44,237	129,047	173,284
Saluda	218	43	261
Spartanburg	27	118	145
Sumter	200	546	746
Union	8	6	14
Williamsburg	6	10	16
York	146	119	265
Grand Total	108,073	154,267	262,340

Table E-4: Where People Living in the Columbia MSA Work			
County Worked In	**County of Residence**		
	Lexington	**Richland**	**Grand Total**
Abbeville	0.00%	0.01%	0.01%
Aiken	0.23%	0.04%	0.28%
Allendale	0.01%	0.00%	0.01%
Anderson	0.01%	0.00%	0.01%
Bamberg	0.02%	0.02%	0.04%
Barnwell	0.01%	0.00%	0.02%
Beaufort	0.03%	0.03%	0.05%
Berkeley	0.02%	0.01%	0.04%
Calhoun	0.09%	0.05%	0.13%
Charleston	0.10%	0.07%	0.17%
Cherokee	0.00%	0.02%	0.02%
Chester	0.01%	0.01%	0.03%
Chesterfield	0.00%	0.01%	0.01%
Clarendon	0.00%	0.01%	0.01%
Colleton	0.01%	0.00%	0.01%
Darlington	0.01%	0.03%	0.04%
Dillon	0.00%	0.00%	0.00%
Dorchester	0.01%	0.01%	0.02%
Edgefield	0.03%	0.00%	0.03%
Fairfield	0.20%	0.55%	0.76%
Florence	0.06%	0.04%	0.10%
Georgetown	0.00%	0.00%	0.01%
Greenville	0.05%	0.08%	0.13%
Greenwood	0.04%	0.02%	0.06%
Hampton	0.00%	0.00%	0.00%
Horry	0.03%	0.03%	0.06%
Kershaw	0.10%	0.35%	0.45%
Lancaster	0.07%	0.16%	0.22%
Laurens	0.02%	0.01%	0.03%
Lee	0.00%	0.03%	0.03%
Lexington	22.49%	7.19%	29.68%
Marion	0.00%	0.01%	0.01%
Marlboro	0.00%	0.00%	0.00%
Newberry	0.23%	0.26%	0.50%
Oconee	0.01%	0.04%	0.05%
Orangeburg	0.20%	0.16%	0.35%
Pickens	0.01%	0.01%	0.01%
Richland	16.86%	49.19%	66.05%
Saluda	0.08%	0.02%	0.10%
Spartanburg	0.01%	0.04%	0.06%
Sumter	0.08%	0.21%	0.28%
Union	0.00%	0.00%	0.01%
Williamsburg	0.00%	0.00%	0.01%
York	0.06%	0.05%	0.10%
Grand Total	41.20%	58.80%	100.00%

Table E-5 presents the mobile source emissions for the Columbia MSA. Lexington County accounts for 44.88% and 40.41% of the mobile source NO_x and VOC, respectively. Richland County accounts for 55.12% and 59.59% of the mobile source NO_x and VOC, respectively. Even though both of these counties have high mobile source NO_x and VOC emissions, Federal engine and fuel standards will offset the impact of these emissions.

Table E-5:
Percent Mobile Source NO_x and VOC Emissions in the Columbia MSA

County	NO_x tons / day	Percent NO_x	County	VOC tons / day	Percent VOC
Lexington	22.53	44.88%	Lexington	14.47	40.41%
Richland	27.67	55.12%	Richland	21.34	59.59%
Grand Total	50.20	100.00%	Grand Total	35.81	100.00%

Figures E-2 through E-6 show the urban and rural DVMT for the Columbia MSA. While Lexington County DVMT increases 129% from 1990-2025, the character of the miles traveled changes very little. For example, in 1990, the DVMT is 52.0% rural and 48.0% urban, while in 2025; the DVMT is projected to be 58.1% rural and 41.9% rural. While Richland County DVMT increases 110% from 1990-2025, the character of the miles traveled changes very little. For example, in 1990, the DVMT is 29.1% rural and 70.9% urban, while in 2025; the DVMT is projected to be 20.5% rural and 79.5% rural.

Figure E-2:
1990 Columbia MSA Urban vs. Rural DVMT

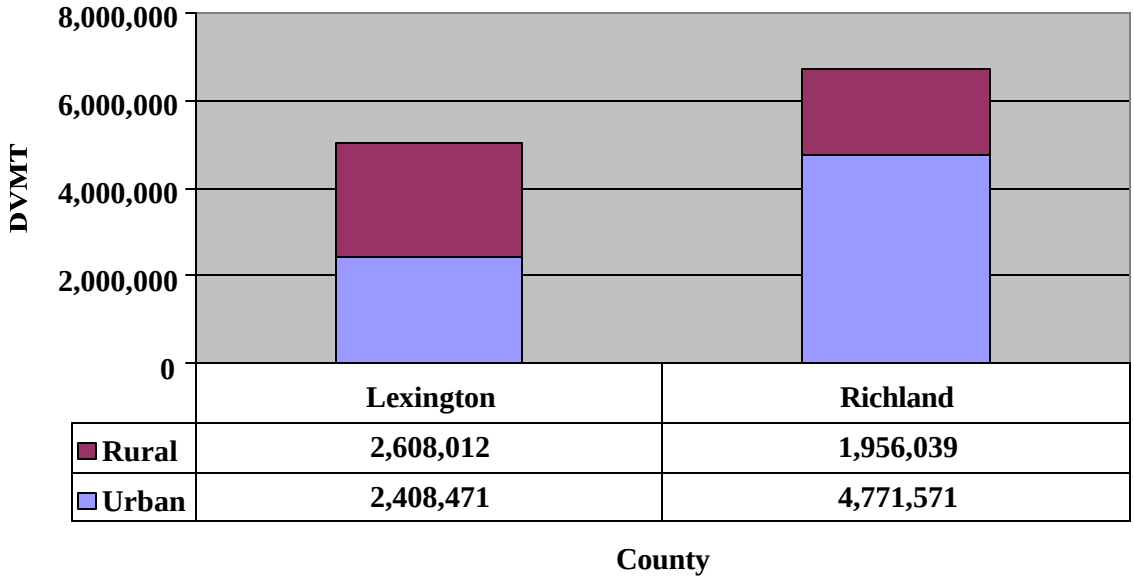


Figure E-3:
2000 Columbia MSA Urban vs. Rural DVMT

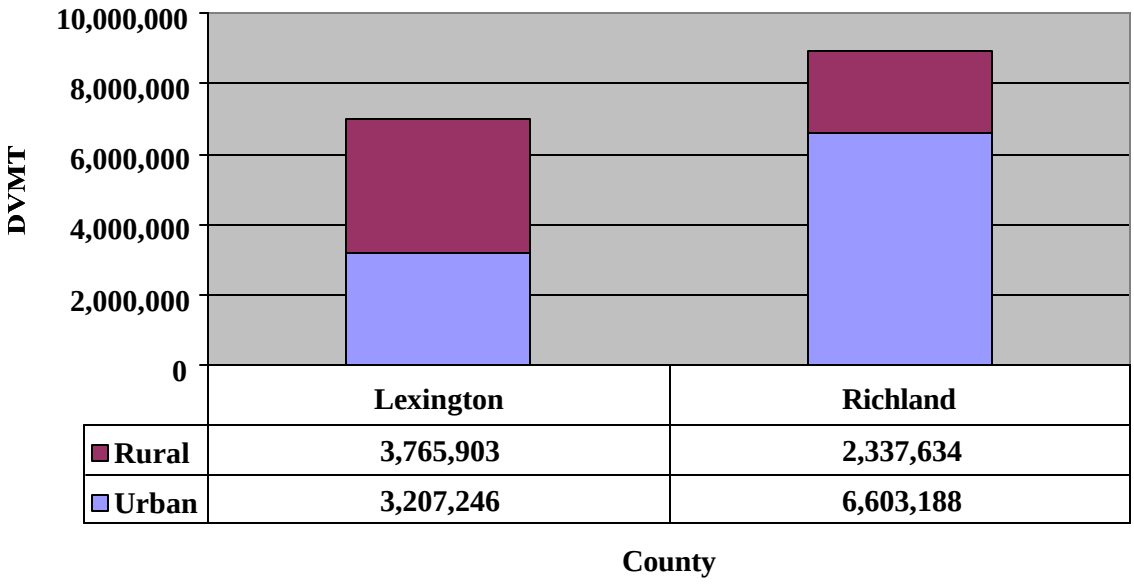


Figure E-4:
2007 Columbia MSA Urban vs. Rural DVMT

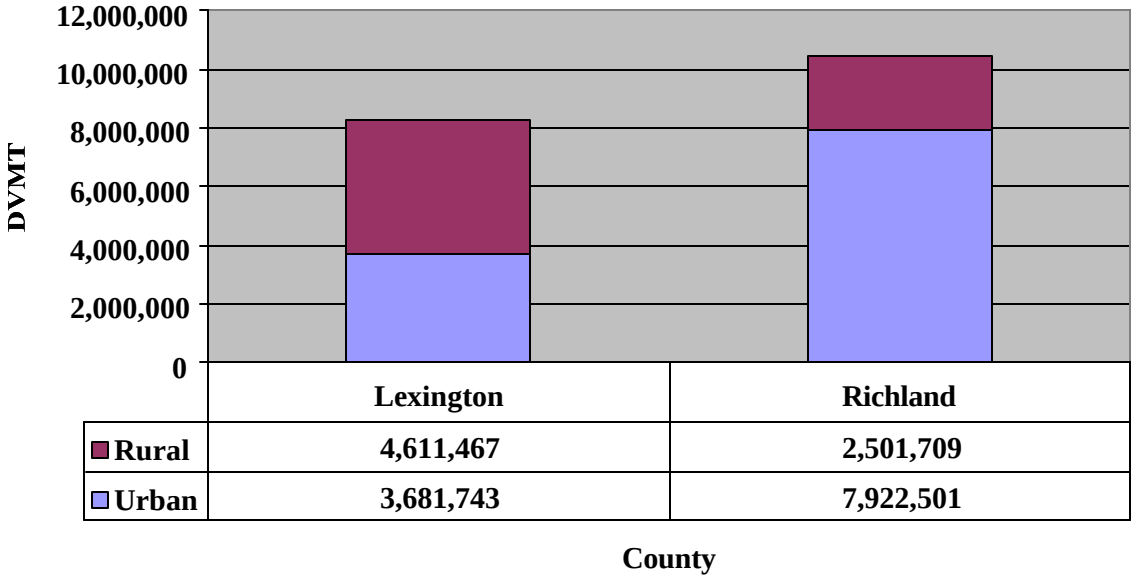
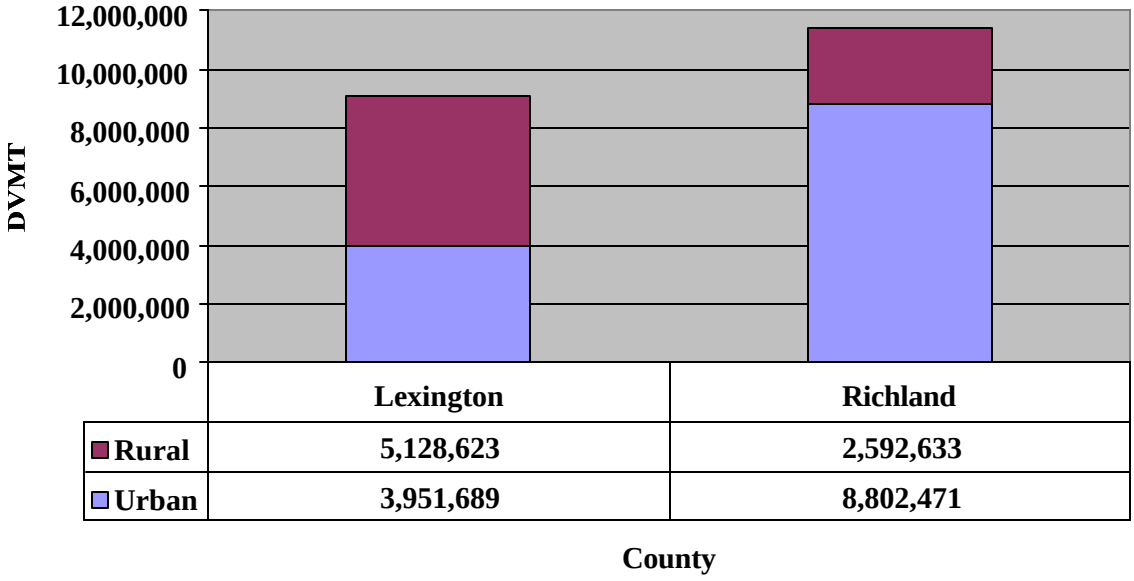


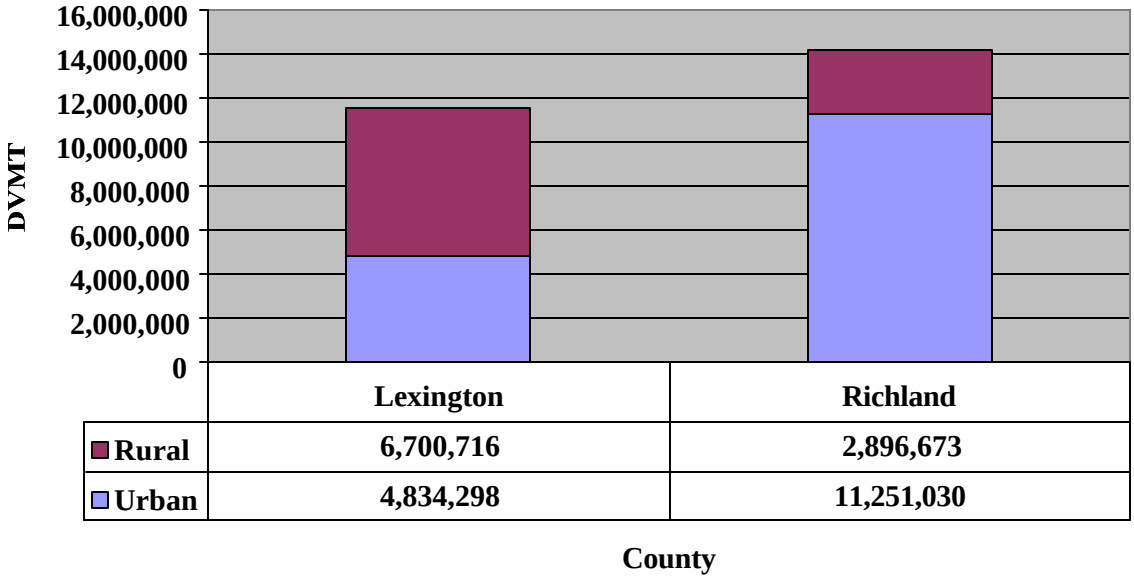
Figure E-5:
2012 Columbia MSA Urban vs. Rural DVMT



	Lexington	Richland
Rural	5,128,623	2,592,633
Urban	3,951,689	8,802,471

County

Figure E-6:
2025 Columbia MSA Urban vs. Rural DVMT

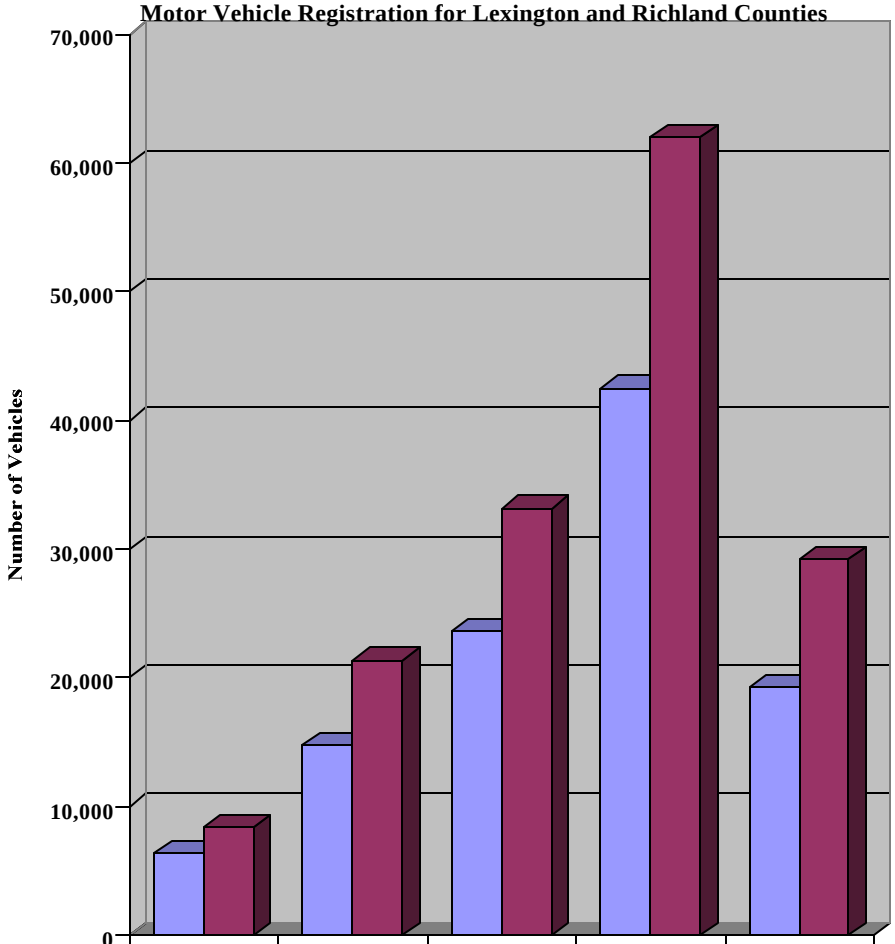


	Lexington	Richland
Rural	6,700,716	2,896,673
Urban	4,834,298	11,251,030

County

Figure E-7[11] presents the motor vehicle registration data for Lexington and Richland Counties. Only a small portion of the vehicles are pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 models.

Figure E-7:
Motor Vehicle Registration for Lexington and Richland Counties



	<1979	1980-1986	1987-1990	1991-1995	1996-2001
Lexington	6,320	14,779	23,616	42,499	19,291
Richland	8,338	21,373	33,144	62,005	29,203

Model Year

[11] Data provided from South Carolina Department of Public Safety: Division of Motor Vehicles

Since this data reflects 2000 registration figures, many of the older vehicles have probably been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Refueling Vapor Recovery (ORVR) systems, will help to offset any potential impacts from the increased emissions from mobile sources in this area.

F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for the recommended Columbia nonattainment area. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur. It is reasonable to expect the majority of that growth to be located inside, or at least near, the recommended Columbia nonattainment area.

Table F-1:
Historical and Projected Population and Population Density per County

	Richland County	Lexington County
Population, 1990[12]	286,321	167,526
Population, 2000 [13]	320,677	216,014
Projected Population, 2020[14]	373,370	291,600
County Growth Rate, 2000 - 2020	16.41%	34.99%

Based on the projected population for 2020, the county growth rate for Rich1and and Lexington Counties is 16.41% and 34.99%, respectively. Assuming county growth is equally distributed throughout the county, the projected population of the recommended area for the year 2020 is 609,348 (the summation of Richland County's growth rate times its recommended area population, Lexington County's growth rate times its recommended area population, and the recommended area population). However, equal distribution of growth is unlikely, due in part to the distribution of the urban and rural populations in the counties. With some degree of certainty, the future growth in Richland and Lexington Counties will be contained in the recommended area.

Additionally, since the boundary captures the area's urban population, land area, and the majority of the businesses, it is reasonable to conclude that the boundary at least approximates, if not contains, the expected population growth, and hence the economic growth, for the area in the coming years.

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is

[12] Data provided by US Census: 2000.
[13] Data provided by US Census: 2000.
[14] Data provided by US Census: 2000.

indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

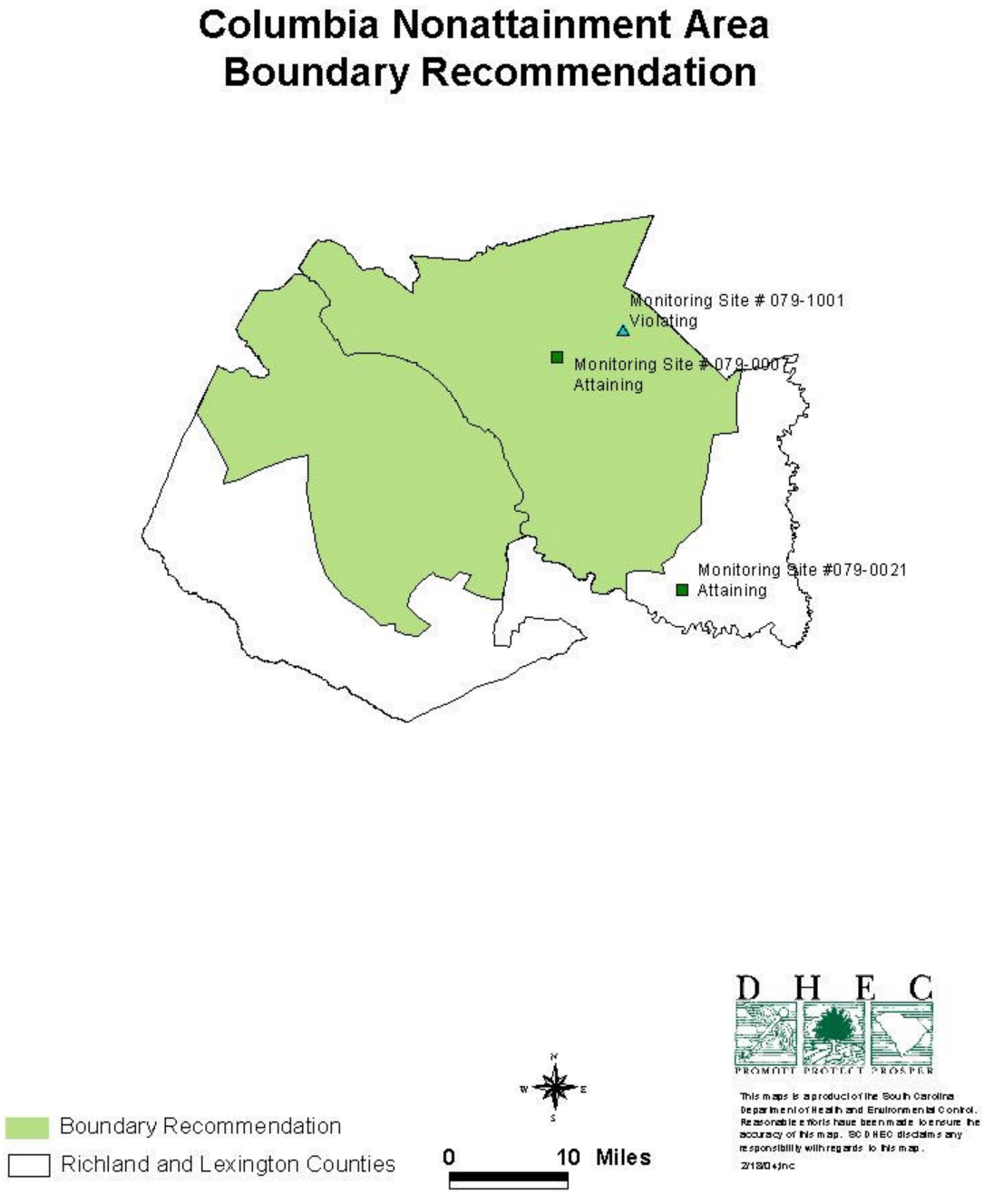
The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. The recommended Columbia nonattainment area is located in both areas. The line of demarcation runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional Boundaries

Figure I-1 shows the Department's recommended Columbia nonattainment area boundary.

Figure I-1



Starting point at I-77 at the county line of Richland/Fairfield and follows county line northeast for 9.6 miles to intersection of Richland/Fairfield/Kershaw county lines.

Follows county line of Richland/Kershaw southwest for 6.0 miles and then turns southeast for 11 miles over I-20 and SC 12. Turns northeast for 1.5 miles to US 601 (McCords Ferry Rd).

Follows US 601(McCords Ferry Rd) south for 5.2 miles to SC 262 (Leesburg Rd).

Follows SC 262 (Leesburg Rd) west for 2.2 miles to S-40-69 (Congress Rd).

Follows S-40-69 (Congress Rd) south for 3.6 miles to Toms Creek.

Follows Toms Creek South across US 76/378 (Garners Ferry Rd) for 5.8 miles to S-40-67 Zeigler Rd).

Follows S-40-67 (Zeigler RD) west for 0.5 miles to SC-769 (Congaree Rd).

Follows SC-769 (Congaree Rd) northwest for 0.2 miles to Dry Branch.

Follows Dry Branch southwest for 3.6 miles, past SC 48 (Bluff Rd) and S-40-734 (Old Bluff Rd) to power lines.

Follows power lines west for 1.6 miles to S-40-734 (Old Bluff Rd).

Follows S-40-734 (Old Bluff Rd) west for 1.6 miles to Cedar Creek.

Follows Cedar Creek South 0.1 miles to Congaree Swamp National Monument boundary.

Follows Congaree Swamp National Monument boundary south for 2.0 miles to Congaree River.

Follows Congaree River north to Richland/Lexington/Calhoun County Line.

Follows Lexington/Calhoun county line to S-32-65 (Mack St) and S-32-32 and Pine Plain Rd.

Follows S-32-65 (Mack St) west for 3.0 miles to US 321 (Main St).

Follows US 321 (Main St) north for 1.5 miles to Woodtrail Dr. (S-32-663).

Follows Woodtrail Dr (S-32-663) west for 3.5 miles to Shalam Dr.

Follows Shalam Dr. northwest for 0.5 miles to end and then to Fish Hatchery Rd (S-32-73) at Placid Valley Rd.

Follows Fish Hatchery Rd (S-32-79) southwest for 2.7 miles to SC 6.

Follows SC 6 Southeast for 3.0 miles to W.E. Jeffcoat Rd (S-32-100).

Follows W.E. Jeffcoat Rd (S-32-100) southwest for 1.5 miles to Sharon Church Rd (S-32-342).

Follows Sharon Church Rd (S-32-342) northwest for 0.1 miles to Jeff Sharpe Rd.

Follows Jeff Sharpe Rd west for 1.5 miles to Cherry Blossom Rd.

Follows Cherry Blossom Rd north for 0.3 miles to Hilton Yonce Rd.

Follows Hilton Yonce Rd northwest for 0.7 miles to Pelion Rd (S-32-247).

Follows Pelion Rd (S-32-247) west for 1.4 miles to Old Charleston Rd (S-32-625).

Follows Old Charleston Rd (S-32-625) northwest for 6.5 mile past US 302 (Edmund Hwy) to Calks Ferry Rd (S-32-278).

Follows Calks Ferry Rd (S-32-278) north for 9.0 miles over I-20 to US 1 (Augusta Hwy).

Follows US 1 (Augusta Hwy) west for 7.0 miles to Old Field Rd (S-32-31).

Follows Old Field Rd (S-32-31) north for 1.8 to Cedar Grove Rd (S-32-54).

Follows Cedar Grove Rd (S-32-54) northwest for 3.0 miles to Ansel Caughman Rd (S-32-157).

Follows Ansel Caughman Rd (S-32-157) northwest for 1.5 miles to Lexington/Saluda county line.

Follows Lexington/Saluda county line northeast for 3.5 miles to intersection of Lexington/Saluda/Newberry county line.

Follows Lexington/Newberry county line east, northwest, northeast and east for 17 miles to Lexington/Newberry/Richland county line intersection.

Follows Richland/Newberry county line northeast for 3.0 miles to Broad River/ Richland/Fairfield county line.

Follows Richland/Fairfield county line southeast on Broad River for 9.0 miles, then north on Little River for 3.0 miles and east and northeast to I-77 for 10 miles and to starting point.

J. Level of Control of Emission Sources

Local Controls

Through their participation with the Early Action Compact, Lexington and Richland Counties are both exploring countywide local control strategies to be implemented no later than April 2005. For Lexington County, these strategies include park and ride facilities, alternative commute options, alternative fuels and landfill methane reduction. Strategies under consideration by Richland County include strengthening land-use planning, alternative vehicles, ozone awareness and education, alternative work schedules, participation in Clean Cities, and open burning restrictions. A complete listing of the emission reduction strategies for each county was submitted to EPA in December 2003. This list will be updated in March 2004 upon submittal of the final Lexington County Early Action Plan and the Richland County Early Action Plan.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department must submit, for EPA approval, state implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed *R.61-62.5, Standard No. 5.2, Control of Oxides of Nitrogen (NO_x)*, on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NO_x from these sources.

As part of the Early Action Compact (EAC) process another regulation that the Department is revising in an effort to reduce NO_x emissions statewide is R. 61-62.2, *Prohibition of Open Burning*. The most significant revisions to this regulation are as follows: deleting the exception for the burning of household trash, modifiying the exception for the burning of construction waste, and revising the exception for fires set for the purpose of firefighter training. The burning of household trash and construction waste presents health and environmental concerns for many communities. Elimination of the burning of household trash will result in a statewide reduction of 2,379 tons per year of NO_x and 11,896 tons per year VOC. While the revisions to the burning of construction waste and fires set for the purpose of firefighter training are more difficult to quantify, these revisions will decrease NO_x and VOC emissions from these activities.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing "fail-safe" provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina's forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard and yet are still willing to plan and work with other areas to implement controls to ensure early attainment of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the Early Action Compact (EAC), EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and

Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. The Department has implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts, distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995. In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's Title V permit program. EPA's review of South Carolina's program found that it was operating at a very high level of proficiency.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers, and power plants are modified or added. In areas with unhealthy air, NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

South Carolina has a SIP approved NSR program with its own NSR rules. Therefore, South Carolina has full authority to issue both major and minor NSR permits. Because there are no nonattainment areas in South Carolina at present, the only applicable major NSR permitting regulations are the Prevention of Significant Deterioration (PSD) regulations.

In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's NSR program. The EPA determined that South Carolina has a thorough and well-organized process for permitting sources and a good comprehension of regulatory requirements and policies.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998)*. The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of

vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan. [15]

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies use alternative fuels when operating alternative fuel vehicles.

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile. [16]

[15] South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management
[16] U.S. EPA Office of Transportation and Air Quality

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road. [12]

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

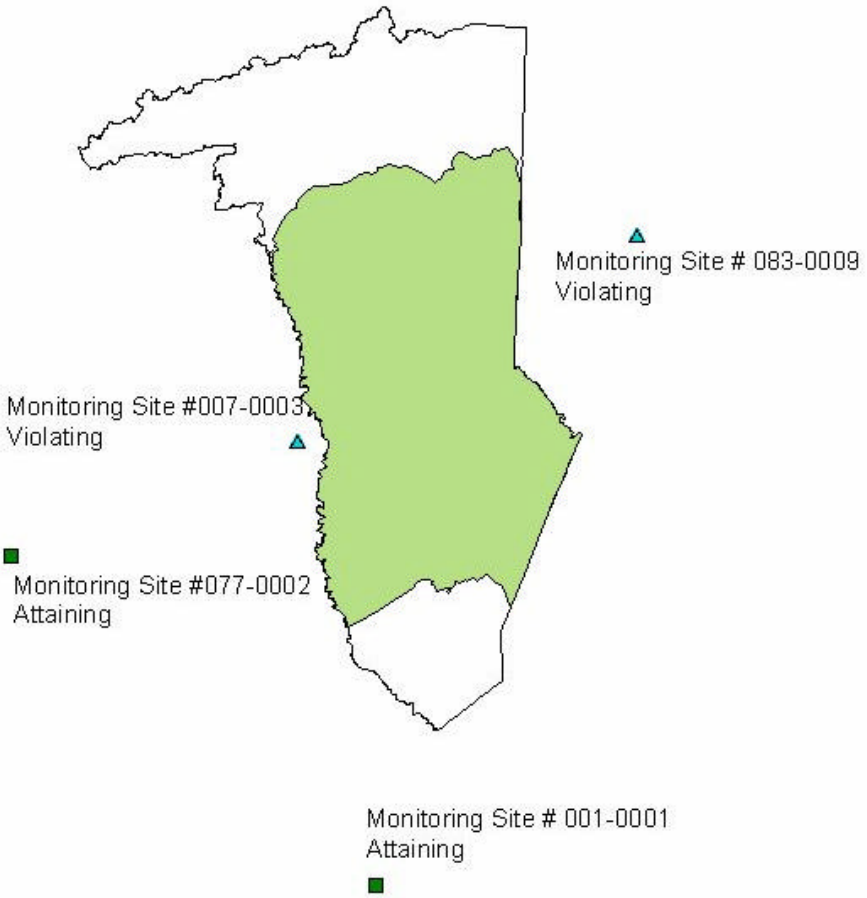
To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of

156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.

Greenville Nonattainment Area Boundary Recommendation

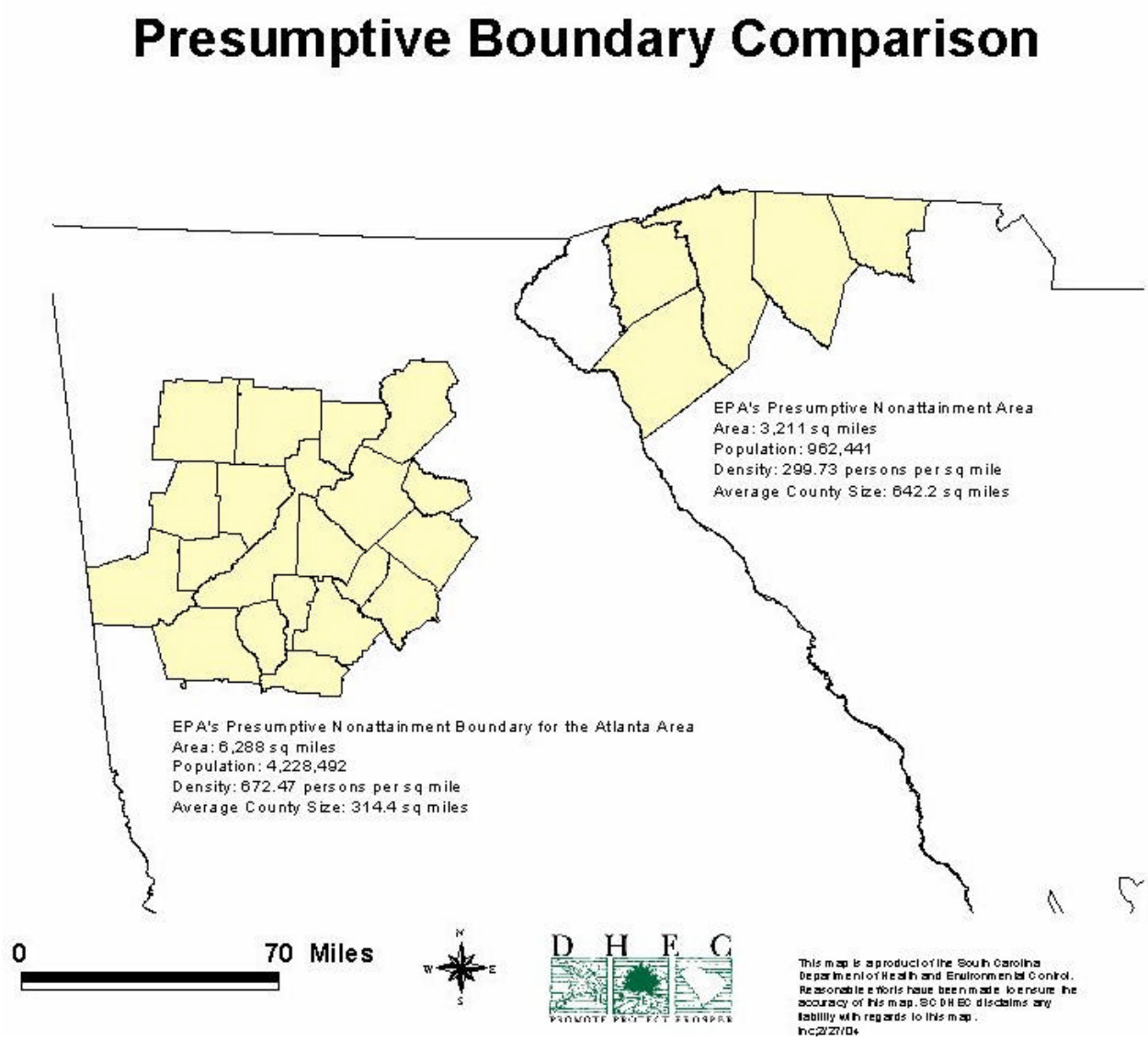


Greenville Nonattainment Area
Boundary Recommendation
Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, and later amended on November 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the Department's recommendations. Specifically, EPA's response indicated that the entire Greenville-Spartanburg-Anderson Metropolitan Statistical Area (MSA), which is based on the 1990 MSA definition, be designated as one nonattainment area. Such a recommendation would include the full counties of Anderson, Cherokee, Greenville, Pickens, and Spartanburg. The Department remains firm in its request that only portions of Anderson, Greenville, and Spartanburg Counties be designated and that their designations be independent of one another. The Department wishes to take this opportunity to again demonstrate why EPA's proposed modifications are inappropriate. The information and data provided below documents, on a technical basis, the Department's reasons for recommending only a **portion** of Greenville County as a **separate** nonattainment area.

Based on EPA presumptive boundary sizes, designation of a partial and separate nonattainment area for the Greenville boundary is appropriate. Figure 1 shows a side-by-side comparison of the recommended Atlanta, GA 8-hour ozone nonattainment area and the Greenville-Spartanburg-Anderson, SC MSA, (EPA's presumptive boundary for the upstate). Disturbing observations can be made, given that EPA has indicated that these will be the 8-hour ozone nonattainment boundaries for the respective areas. The five counties that make up the Greenville-Spartanburg-Anderson MSA average 641.8 square miles per county. In contrast, the Atlanta area includes 20 counties with an average size of 324.5 square miles per county. The comparative land areas and populations demonstrate a severe inequity in setting boundaries based on EPA's presumptive boundaries.

Figure 1



Based on 2003 MSA Definitions[1], designation of a partial and separate nonattainment area for the Greenville boundary is appropriate. Greenville County is located in the Upstate Region of South Carolina. Upon analysis of the 2000 Census, including the population dynamics and commuting data, the Office of Management and Budget (OMB) decided to create three separate MSA in the Upstate Region, which indicates that these areas are reasonably detached. The 2003 OMB designations provide justification on a technical basis and helps to substantiate the Department's recommendation of separate nonattainment areas in the Upstate Region.

[1] The definitions for the 2003 MSAs were established by the June 6, 2003, Office of Management and Budget (OMB) Bulletin No. 03-04. This Bulletin establishes revised definitions for the Nation's Metropolitan Statistical Areas and recognizes 49 new Metropolitan Statistical Areas. In addition, the bulletin establishes definitions for two new sets of statistical areas: Micropolitan Statistical Areas and Combined Statistical Areas.

Based on the 2003 MSA definitions, the Upstate Region is divided into three distinct MSAs:

1. Anderson, SC MSA, (Anderson County, SC)
2. Greenville, SC MSA, (Greenville County, SC; Laurens County, SC; Pickens County, SC)
3. Spartanburg, SC MSA, (Spartanburg County, SC)

Two separate Combined Statistical Areas were also designated for the Upstate Region in 2003:

1. Greenville-Anderson-Seneca, SC Combined Statistical Area (Anderson, SC MSA; Greenville, SC MSA; Seneca, SC Micropolitan Statistical Area)
2. Spartanburg-Gaffney-Union, SC Combined Statistical Area (Gaffney, SC Micropolitan Statistical Area; Spartanburg, SC MSA; Union, SC Micropolitan Area)

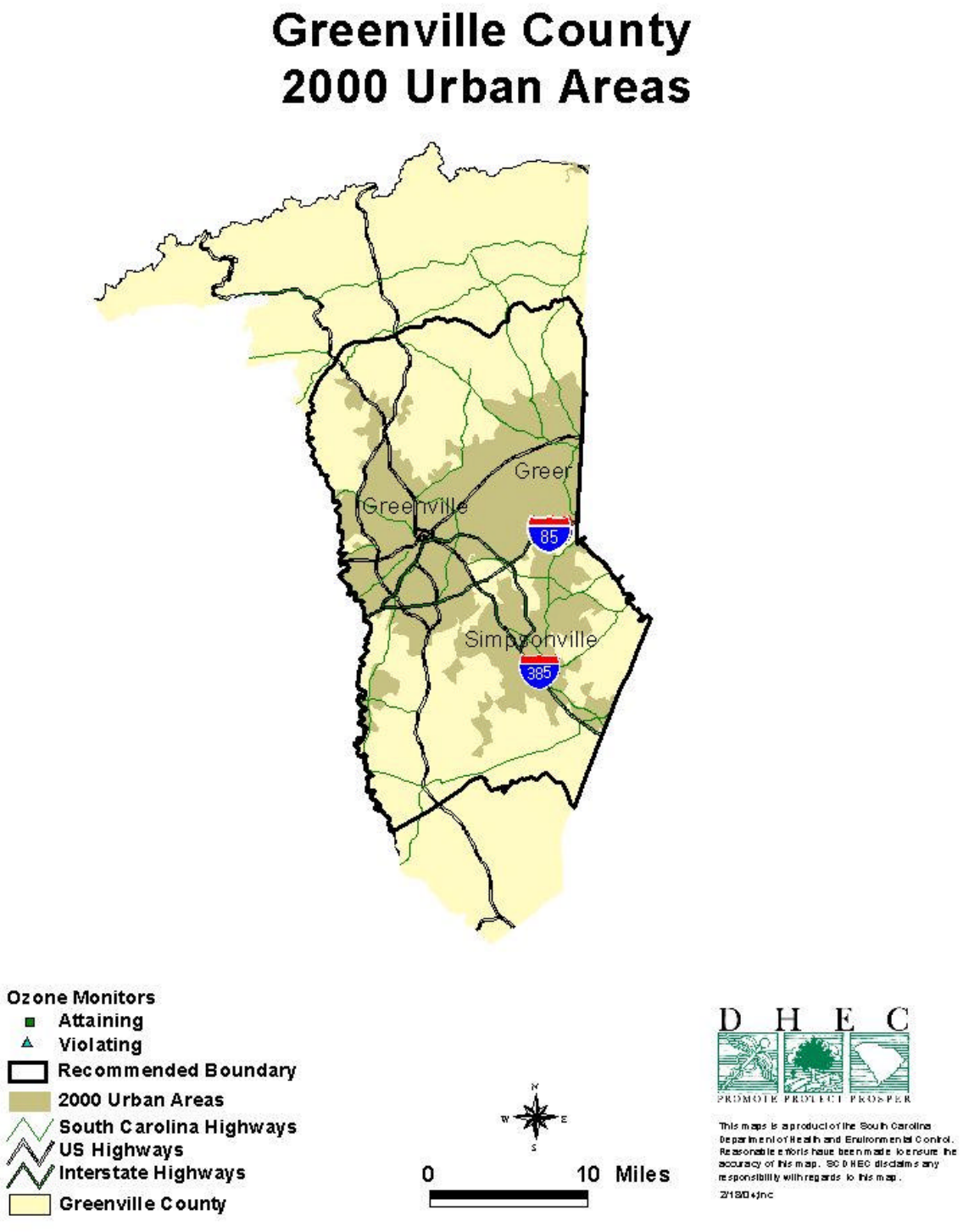
These definitions reflect the Standards for Defining Metropolitan and Micropolitan Statistical Areas that the OMB published on December 27, 2000, in the Federal Register (65 FR 82228 - 82238), and the application of those standards to Census 2000 population and journey-to-work data. The general concept of a Metropolitan Statistical Area or a Micropolitan Statistical Area is that of an area containing a recognized population nucleus and adjacent communities that have a high degree of integrations with the nucleus. For these reasons, the OMB has saw fit to break apart the Greenville-Spartanburg-Anderson MSA.

Furthermore, the Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as **serious** and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the violating monitors in the Upstate would be classified as marginal. The OMB has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. This was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to the public and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Throughout the rest of this summary of the Greenville nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

Based on low population and low population density, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. The recommended boundary captures 94.80 percent of the population and 60.05 percent of the land area. Moreover, the boundary includes the most densely populated land areas within the county. In fact, approximately 26 percent of Greenville County's land area contains nearly 100 percent of the urban population (see figure 2). Consequently, the remaining three-fourths of the county is inhabited by the rural population. Additionally, the recommended area, which covers a large percentage of the land area, captures this "contained" urban population, as well as the remaining rural population.

Figure 2



Based on low employee percentages and wide distribution of economic sector employees, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. The recommended boundary captures 97.5 percent of the manufacturing employees and 98.9 percent of the manufacturing establishments. Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Based on the point source emissions data, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. The recommended boundary captures 89.0 percent of the total point source NO_x emissions and 96.9 percent of the total point source VOC emissions (See figures 3 & 4).

Figure 3: Greenville County
Point Source NO_x Emissions

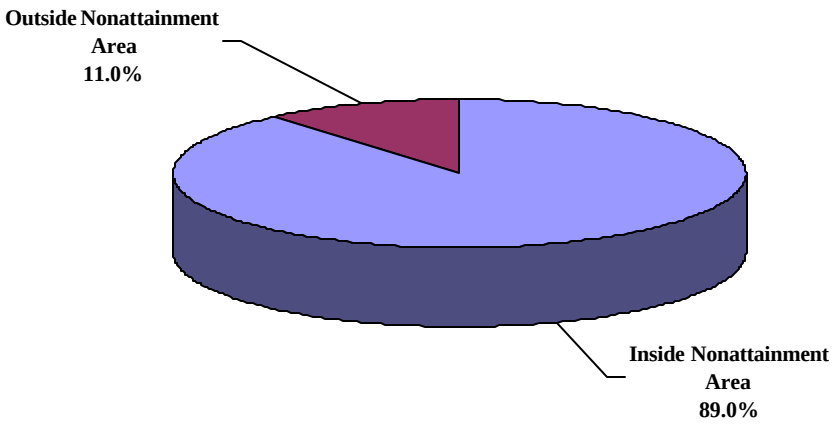
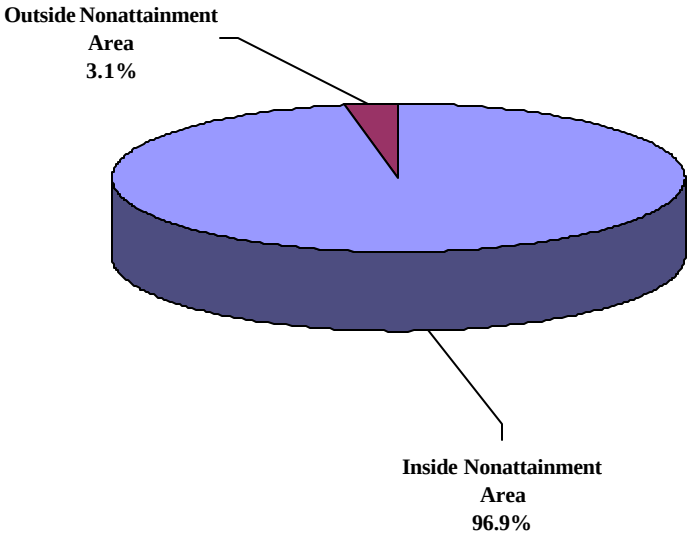


Figure 4: Greenville County
Point Source VOC Emissions



Based on commuter flow, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. According to the U.S. Census Bureau, 81.96 percent of workers in the Greenville-Spartanburg-Anderson MSA, work in the same county they live in. Greenville County accounts for 41.44 percent of the working population in the MSA. Workers living in Greenville and commuting to other counties in the MSA account for only 4.01 percent of the entire MSA worker flow.

Table 1: County of Residence for Greenville-Spartanburg-Anderson MSA

County Worked In	Anderson	Cherokee	Greenville	Pickens	Spartanburg	Grand Total
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Out of County Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Based on South Carolina's commitment to "Cleaner Air Sooner," designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. The South Carolina General Assembly passed and our Governor signed a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating

in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. These efforts demonstrate a commitment by all involved to protect and improve air quality for the citizens of South Carolina.

Based on South Carolina's statutory authority to require controls on sources regardless of location, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

Based on state and EPA modeling, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

Based on the 2001-2003 quality assured data, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. While there is no monitor in Greenville County, Greenville County is bounded by attaining monitors in Pickens, and Abbeville Counties. The monitor in Abbeville County is most representative of southern Greenville County, which the Department is not recommending for nonattainment designation.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including Greenville County, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. South Carolina's citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

Based on the unique transportation and air quality planning programs, designation of a partial and separate nonattainment boundary for the Greenville area is appropriate. The Greenville Area Transportation Study (GRATS) performs transportation planning specific for the urbanized portion of Greenville County. Similarly, the Department has a regional environmental office located in Greenville County that monitors compliance of the regulated sources within Greenville and Pickens counties.

Conclusion

The twelve factors listed below represent the most compelling reasons why the Department believes designating only **portions** of Greenville County as the nonattainment boundary for the Greenville area is appropriate. Additional data to support these factors, as well as other supporting documentation to address EPA's eleven criteria is attached.

1. EPA presumptive boundary sizes.

2. 2003 MSA definitions.
3. Low population and low population density.
4. Low percentage of employees in the recommended area.
5. Low point source emissions in the recommended area.
6. Low MSA commuter flow.
7. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
8. The Department's statutory authority to require controls on sources regardless of location.
9. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
10. Quality assured ozone-monitoring data indicating attainment around portions of the area not recommended.
11. Comprehensive Ozone Forecasting Program.
12. Unique transportation and air quality planning programs.

Supporting Documentation for
Greenville Nonattainment Area
Boundary Recommendation

Throughout the rest of this summary of the Greenville nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in Greenville County and adjacent counties, the Department utilized the estimated 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, biogenic, and off-road and on-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for Greenville County and surrounding South Carolina counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for Greenville and Adjacent Counties

*** Order of bars corresponds with order of counties in legend.**

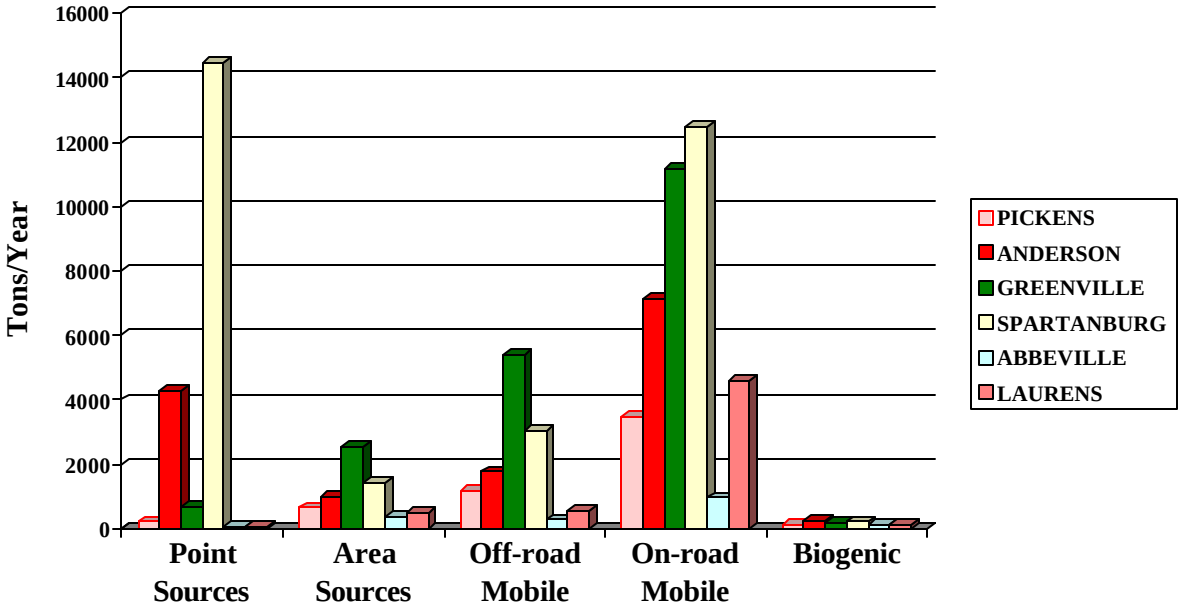
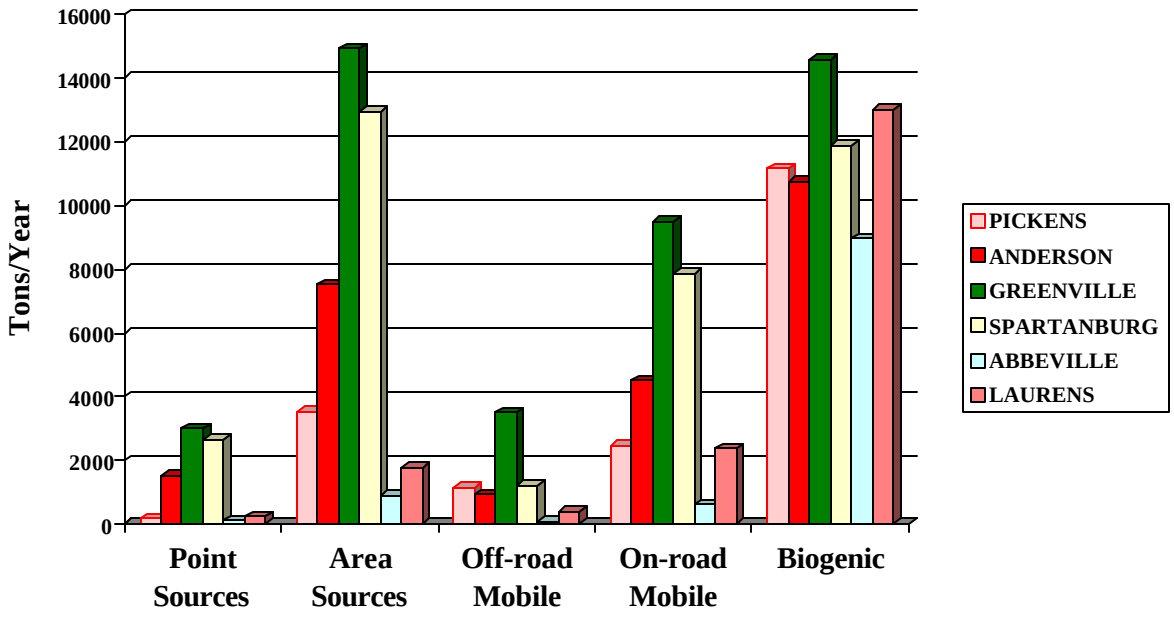


Figure A-2: VOC Sources for Greenville and Adjacent Countie

*** Order of bars corresponds with order of counties in legend.**



The Department currently has no ozone monitoring sites in Greenville County. Greenville County is bounded by attaining monitors in Pickens and Abbeville Counties. Additional air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000, Greenville County's population was 379,616, within a land area encompassing 790 square miles. Greenville County had a population density of 480.5 persons per square mile. The majority of Greenville County's population was urban as 83%, or 315,095 persons, resided mostly in urbanized areas. The recommended area encompasses 474.4 square miles, and captures 94.80% of the population, or 359,875 people, and has a population density of 758.6 persons per square mile. Figure B-1 shows that the recommended area contains all but the least populated areas in Greenville County. Areas North of the boundary being mountainous, it is reasonably assumed that the population and population density, as well as the number of businesses, both now and in the future is lower than the other parts of the county. The portion of Greenville County not captured in the boundary are rural in nature, with a population density of only 62.47 persons per square mile.

Figure B-1

Greenville County Population per Square Mile

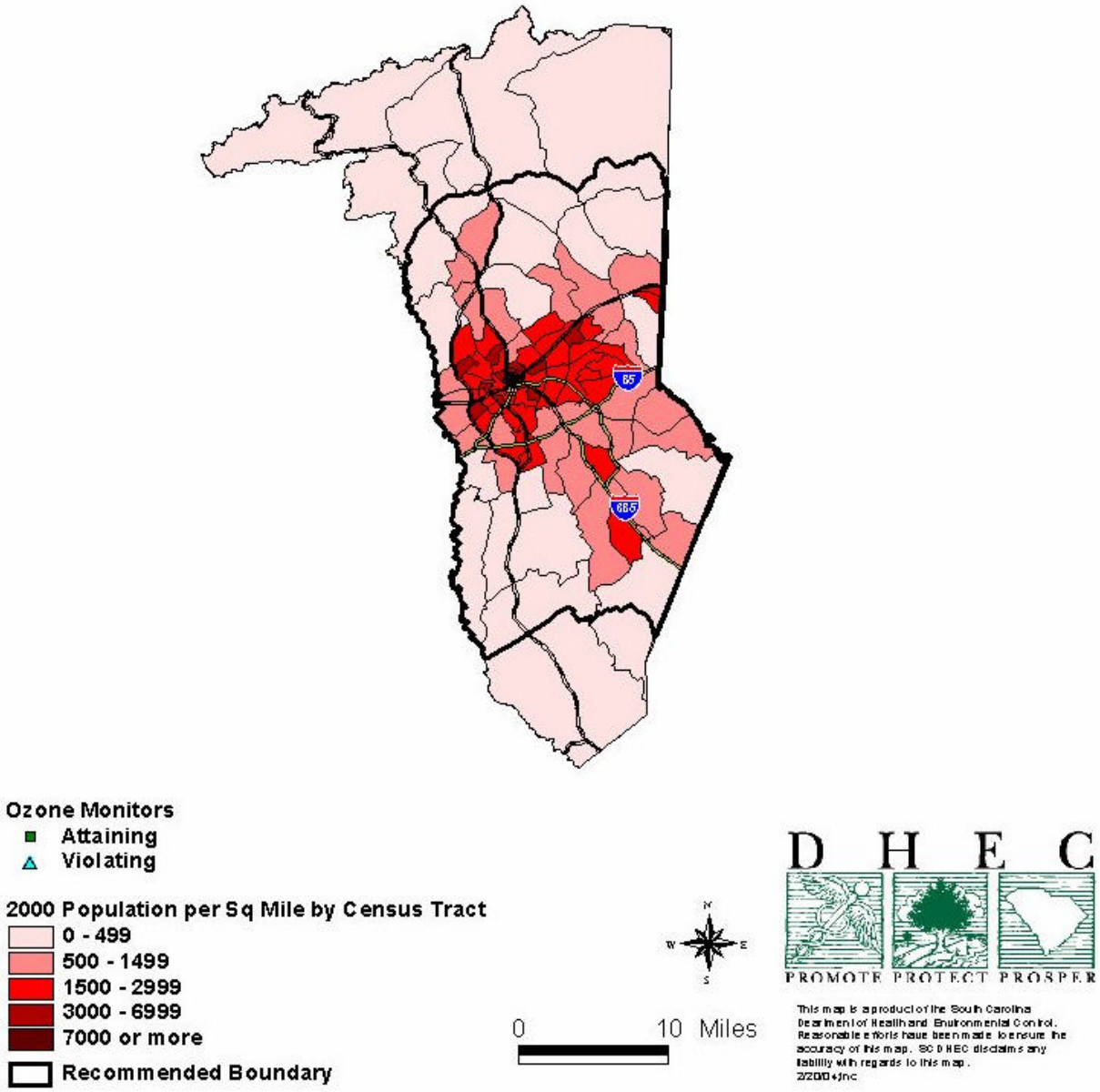


Figure B-2 shows the urban areas for Greenville County. Approximately 26% of Greenville County's land area encompasses nearly 100% of the urban population. Consequently, the remaining three-fourths of the county is rural in nature. The recommended nonattainment area captures 100% of the urban area.

Figure B-2

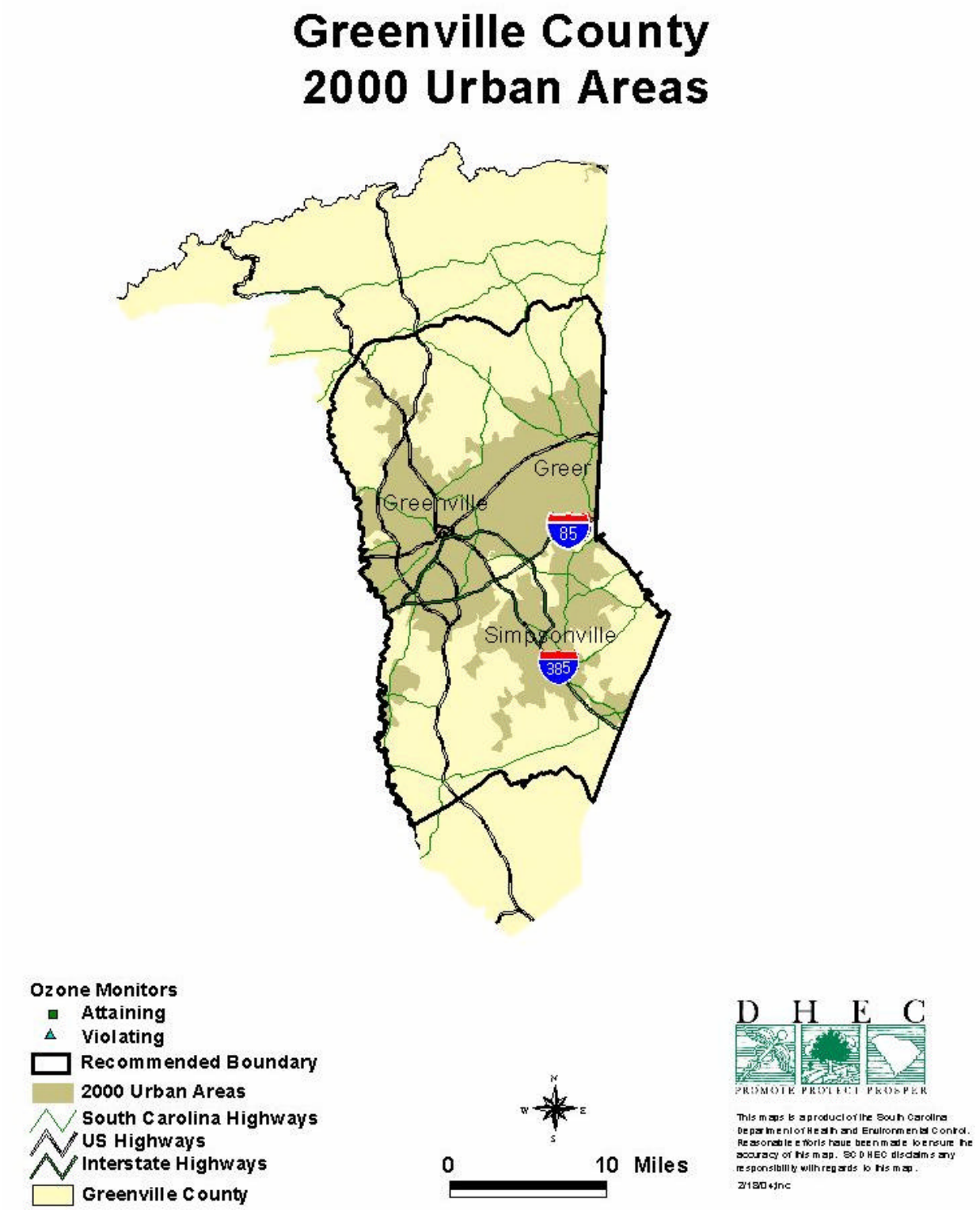


Table B-1 contains the population and land area data for Greenville County and the recommended area for the year 2000.

Table B-1: Total Population, Land Area, and Urban/Rural Population, 2000			
	Greenville County	**Recommended Area**	**% Captured by Recommended Area**
Population[2]	379,616	359,875	94.80%
Land Area (Square Miles)[1]	790	474.4	60.05%
Persons per Square Mile [1]	480.5	758.6	
Urban Population[3]	315,095		
% Urban Population [2]	83.0%		100.00%[4]
Rural Population [2]	64,521		
% Rural Population [2]	17.0%		

Table B-2 contains the population and land area data for Anderson, Greenville, and Spartanburg Counties and the recommended areas for the year 2000. The recommended areas capture 83.04% of the counties' population and 54.32%. Also, based on the population density and urban area maps for those counties, the recommended areas contain the densely populated areas in the vast majority of the populated areas.

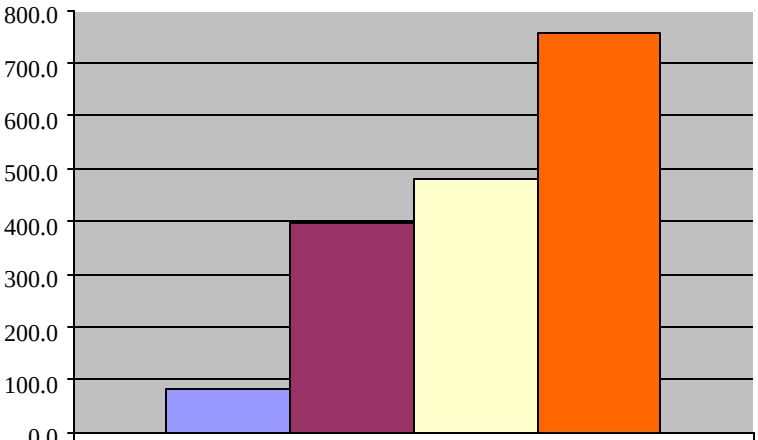
Table B-2 Population, Land Area, and Urban/Rural Population, 2000							
	Population	**Land Area (Square Miles)**	**Persons per Square Mile**	**Urban Population**	**% Urban Population**	**Rural Population**	**% Rural Population**
Greenville County	379,616	790	480.5	315,095	83.00%	64,521	17.00%
Recommended Area	359,875	474.4	758.6				
% Captured by Recommended Area	94.80%	60.05%					
Spartanburg County	253,791	811	313	164,341	64.80%	89,450	35.20%
Recommended Area	163,761	283.8	577.1				
% Captured by Recommended Area	64.53%	34.93%					
Anderson County	165,740	718	230.8	96,680	58.30%	69,060	41.70%
Recommended Area	139,961	502.01	278.8				
% Captured by Recommended Area	84.45%	69.92%					

[2] Data provided by US Census: 2000. The data for the recommended area was obtained from the SCDOT.
[3] Data provided by SC Office of Research and Statistics.
[4] Estimated.

Table B-2 Population, Land Area, and Urban/Rural Population, 2000							
	Population	**Land Area (Square Miles)**	**Persons per Square Mile**	**Urban Population**	**% Urban Population**	**Rural Population**	**% Rural Population**
3 County Total	799,147	2,319	344.61				
3 Recommended Areas Total	663,597	1,259.71	526.79				
% captured by Total 3 recommended Areas	83.04%	54.32%					

Figures B-3 through B-5 show the population density, the population, and land area, respectively, distribution relative to the full county and the recommended area.

Figure B-3: Population Density, 2000
(Persons per Square Mile)



	Greenville County
County Rural Persons per Sq. Mi.	81.7
County Urban Persons per Sq. Mi.	398.8
Total County Persons per Sq. Mi.	480.5
Recommended Area Persons per Sq. Mi.	758.6

Figure B-4:
Population Distribution
Relative to recommended Area Boundaries, 2000

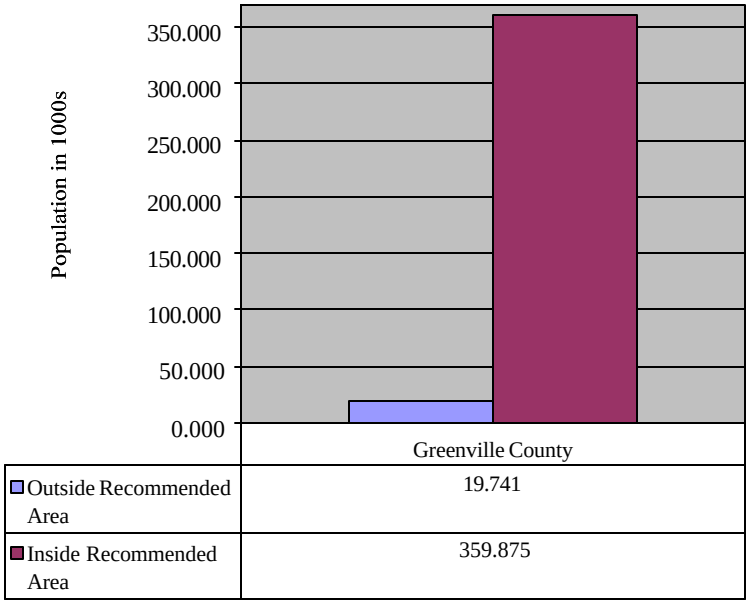
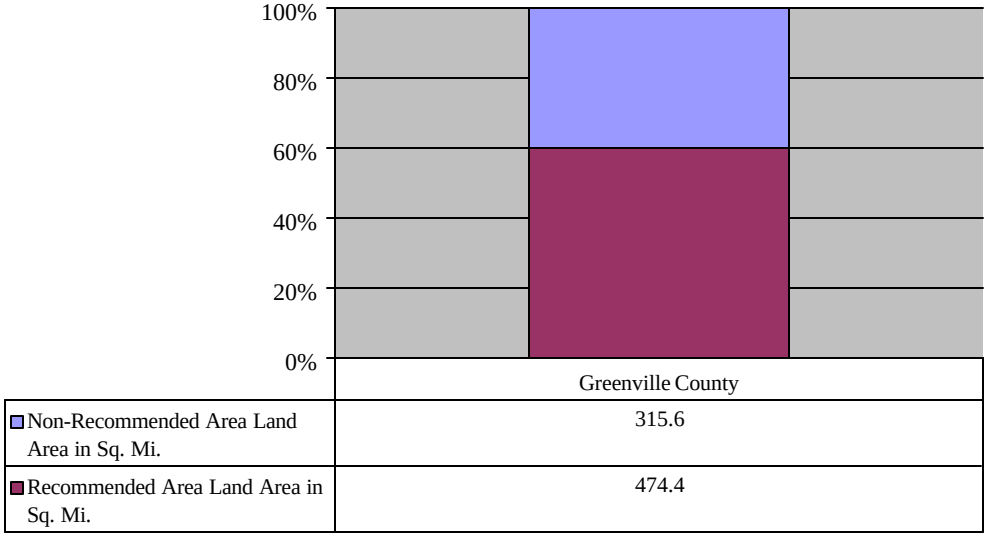


Figure B-5: Land Area Distribution
According to Recommended Area Boundaries, 2000



Greenville County contains a large majority of the economic development, both manufacturing and retail trade, relative to Greenville County. According to a Bureau of Air Quality data file that gives the location of manufacturing facilities and the respective number of employees, almost 99% of the manufacturing establishments and 97.5% of the manufacturing employees in Greenville County are located inside of the recommended area boundary. The concentrated urban area also supports retail trade. Greenville County employs a total of 26,275 retail trade employees at 1,860 establishments throughout the area. Greenville County's manufacturing and retail trade data is found in Tables B-3 through B-5.

Table B-3:
Total Number of Manufacturing Employees, 2000[5]

	In Recommended Boundary	In County Boundary	Percent in Recommended Boundary
Greenville County	47,041	48,227	97.5%

Table B-4:
Total Number of Manufacturing Establishments, 2000[6]

	In Recommended Area	In County Boundary	Percent in Recommended Area
Greenville County	537	543	98.9%

Table B-5:
Retail Trade Patterns, 2000[7]

	Number of Employees	Number of establishments
Greenville County	26,275	1,860

Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Table B-6 shows both the number of employees and establishments for Greenville County according to the Census 2000 NAICS database and is ranked in order according to the number of employees. The largest employment sector in Greenville County is manufacturing.[8] The second largest is construction while the third is administration, support, waste management, and remediation services.

It should be noted that the data in Table B-6 differs from the data in the previous tables due to the source of the data.

[5] Data from Bureau of Air Quality file entitled "SC Company File1.xls."
[6] Data from Bureau of Air Quality file entitled "SC Company File1.xls."
[7] Data provided by US Census: 2000.
[8] Data provided by US Census: 2000.

Table B-6: MSA Employees per Classification, NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank based on Number of Employees from greatest to least**
Greenville	Manufacturing	41,388	622	1
Greenville	Construction	29,735	1,203	2
Greenville	Admin, support, waste mgt, remediation services	27,630	661	3
Greenville	Retail trade	24,848	1,848	4
Greenville	Health care and social assistance	19,347	887	5
Greenville	Accommodation & food services	16,345	800	6
Greenville	Wholesale trade	11,820	878	7
Greenville	Professional, scientific & technical services	11,499	1,220	8
Greenville	Other services (except public administration)	10,015	1,178	9
Greenville	Management of companies & enterprises	9,298	102	10
Greenville	Finance & insurance	9,074	751	11
Greenville	Transportation & warehousing	7,695	254	12
Greenville	Information	6,183	167	13
Greenville	Educational services	5,062	103	14
Greenville	Real estate & rental & leasing	4,917	474	15
Greenville	Auxiliaries (exc corporate, subsidiary & regional mgt)	2,780	29	16
Greenville	Arts, entertainment & recreation	2,570	154	17
Greenville	Utilities	752	18	18
Greenville	Unclassified establishments	147	103	19
Greenville	Forestry, fishing, hunting, and agriculture support	20-99	13	*
Greenville	Mining	20-99	3	*
* The number of employees not available or the number of employees was reported as a range.				

Table B-7 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 7.58% of the employees in the MSA, and 45.95% of those employees worked in Greenville County while 9.90% of those employees worked in Pickens County. The largest employment in the MSA is in manufacturing (23.45%) and retail trade (11.66%); of those two classifications Greenville County employed 37.62% and 45.42%, respectively. In fact, in 2001 Greenville County comprised the majority of employees in each industry code category as seen in Table B-7.

Table B-7: MSA Employees per Classification, NAICS, 2001						
Industry Code Description	% in MSA	Greenville County	Spartanburg County	Anderson County	Pickens County	Cherokee County
Accommodation & food services	7.58%	45.95%	24.77%	14.90%	9.90%	4.47%
Admin, support, waste mgt, remediation services	9.42%	62.51%	27.23%	6.12%	2.77%	1.36%
Arts, entertainment & recreation	0.90%	61.12%	15.60%	12.44%	8.28%	2.57%
Auxiliaries (exc corporate, subsidiary & regional mgt)	0.86%	68.57%	23.95%	*	*	7.47%
Construction	9.38%	67.53%	14.82%	8.76%	5.15%	3.74%
Educational services	1.80%	59.91%	24.18%	5.79%	5.88%	4.24%
Finance & insurance	3.00%	64.43%	18.87%	9.71%	4.74%	2.25%
Forestry, fishing, hunting, and agriculture support	0.03%	*	63.64%	*	36.36%	*
Health care and social assistance	9.61%	42.90%	30.47%	17.26%	6.80%	2.57%
Information	1.83%	71.95%	15.43%	6.59%	4.61%	1.42%
Management of companies & enterprises	3.20%	61.85%	30.98%	1.41%	5.76%	*
Manufacturing	23.45%	37.62%	29.69%	17.14%	8.15%	7.41%
Mining	0.03%	*	100.00%	*	*	*
Other services (except public administration)	4.42%	48.31%	26.12%	13.79%	7.80%	3.98%
Professional, scientific & technical services	3.58%	68.45%	19.94%	6.91%	3.70%	1.01%
Real estate & rental & leasing	1.51%	69.36%	13.65%	6.11%	9.49%	1.38%
Retail trade	11.66%	45.42%	25.74%	15.70%	8.46%	4.67%
Transportation & warehousing	2.65%	61.86%	24.91%	6.91%	0.87%	5.45%
Unclassified establishments	0.04%	79.03%	*	16.67%	*	4.30%
Utilities	0.27%	58.75%	*	23.67%	11.17%	6.41%
Wholesale trade	4.78%	52.72%	27.30%	10.66%	5.23%	4.09%
** The number of employees not available or the number of employees was reported as a range.*						

Again, given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the employees and establishments in the county for each industry code category are contained within the recommended area boundary.

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

Greenville County does not have an ozone monitoring station; however, neighboring Abbeville, Anderson, Pickens, and Spartanburg Counties have monitors. Greenville County is bounded by attaining monitors in Abbeville, Pickens, and Oconee Counties. The Department's Division of Air Quality

Analysis, which is responsible for monitor siting and data gathering, believes the attaining monitor in Oconee County, which is sited in rural, high terrain, is better representative of northern, rural Greenville County.

The Spartanburg County ozone monitoring station (North Spartanburg Fire Station 45-083-0009) is located off John Dodd Road, approximately 265 meters above sea level. The surrounding area of the monitoring site is residential. According to the South Carolina Department of Transportation (SCDOT), traffic counts for 1993 show five hundred (500) vehicles per day accessed the road. The site has been in operation since 1990 and measurement of ozone concentration runs mid-March through mid-November. The monitoring objective for this site is to measure the maximum ozone concentration.

The Pickens County ozone monitoring station (Clemson CMS 45-077-0002) is located off of Hopewell Road, approximately 216 meters above sea level. The surrounding area of the monitoring site is agricultural. According to SCDOT traffic counts for 1993, one hundred (100) vehicles per day accessed the road. The site has been in operation since 1979 and measurement of ozone concentration runs mid-March through mid-November each year. The monitoring objective for this site is for general background.

The Anderson County ozone monitoring station (Powdersville 45-007-0003) is located off Route 81, approximately 300 meters above sea level. The area surrounding the monitoring site is agricultural. According to the South Carolina Department of Transportation (SCDOT), traffic counts for 1993, six hundred (600) vehicles per day accessed the road. The site has been in operation since 1991 and measurement of ozone concentrations runs mid-March through mid-November. The monitoring objective for this site is to measure the maximum ozone concentrations.

The Oconee County ozone monitoring station (Longcreek 45-073-0001) is located at the Round Mountain Fire Tower, approximately 658 meters above sea level. The surrounding area of the monitoring station is forested. According to SCDOT traffic count data for 1993, three (3) vehicles per day access the road near the monitor. The site was established in 1983 and measurement of ozone concentration has continuously run since May of 1989. The monitor objective for this site is to measure ozone concentration for regional transport purposes.

The Abbeville County ozone monitoring station (Due West 45-001-0001) is located near the Dixie High School football field, approximately 204 meters above sea level. The surrounding area is agricultural. According to SCDOT, traffic count data for 1993, 300 vehicles per day access the road near the monitor. The site has been in operation since 1991 and measurement of ozone concentrations runs mid March through mid November. The monitoring objective for Due West site is to measure concentration for general backgroumd.

Table C-1 presents the 2001 through 2003 quality assured 8-hour ozone monitoring data for Abbeville, Spartanburg, Pickens, Anderson, and Oconee Counties. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the Clemson and Long Creek monitors indicate attainment with the 8-hour ozone standard.

Table C-1: Greenville Area Ozone Monitoring Data						
County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2001	2002	2003	
Abbeville	45-001-0001	Due West	0.082	0.088	0.077	0.082
Spartanburg	45-083-0009	North Spartanburg Fire Station	0.090	0.093	0.079	0.087
Pickens	45-077-0002	Clemson CMS	0.088	0.088	0.078	0.084
Anderson	45-007-0003	Powdersville	0.088	0.093	0.078	0.086
Oconee	45-073-0001	Longcreek	0.078	0.094	0.077	0.083

Table C-2 contains the previous three years daily maximum ozone concentration above 0.084 ppm. A period in the box indicates no exceedance occurred on that date.

Table C-2: Greenville Area Ozone Values					
Date of Exceedance	North Spartanburg Fire Station Exceeding Value	Due West Exceeding Value	Powdersville Exceeding Value	Clemson Exceeding Value	Long Creek Exceeding Value
05/04/2001	0.085	.			
05/05/2001	0.090	.	0.092	0.085	.
05/06/2001	.	.	0.085	0.085	.
05/18/2001	.	0.091	.	.	.
05/30/2001	0.085	.	.	.	.
06/18/2001	0.088	.	0.088	0.088	0.085
06/20/2001	0.094	.	0.086	.	.
06/21/2001	.	.	.	0.088	.
07/12/2001	0.093	.	0.098	0.097	.
07/16/2001	0.086	.	.	.	.
07/17/2001	.	.	0.086	0.087	.
07/18/2001	0.09	.	.	.	.
08/14/2001	.	.	.	.	.
08/23/2001	0.089	.	0.089	.	
09/13/2001	.	.	.	0.090	.
09/19/2001	.	.	0.088	.	.
2001 Total Hits	**9**	**1**	**8**	**7**	**1**
05/24/2002	0.098	.	.	.	.
05/25/2002	0.085	.	0.085	.	.
06/03/2002	0.088	.	.	.	.
06/10/2002	0.088	.	0.093	0.088	0.094
06/11/2002	0.107	.	0.090	.	.

Table C-2: Greenville Area Ozone Values					
Date of Exceedance	**North Spartanburg Fire Station Exceeding Value**	**Due West Exceeding Value**	**Powdersville Exceeding Value**	**Clemson Exceeding Value**	**Long Creek Exceeding Value**
06/12/2002	.	.	.	.	.
06/13/2002	0.093	0.102	0.093	0.086	.
06/18/2002	0.085	0.085	.	.	.
06/19/2002	0.092	.	.	.	.
06/20/2002	0.086	.	0.085	0.088	
06/21/2002	.	.	.	0.086	0.086
06/29/2002	.	.	.	.	.
06/30/2002	.	.	0.085	.	.
07/02/2002	.	.	.	.	.
07/03/2002	0.086	.	0.095	.	.
07/04/2001	.	.	0.086	.	.
07/05/2002	.	0.086	.	.	.
07/06/2002	0.088	0.088	.	.	.
07/08/2002	0.091	.	.	.	.
07/09/2002	0.087	.	.	.	.
07/17/2002	.	0.085	.	.	.
07/18/2002	.	.	.	.	.
07/31/2002	.	.	.	.	.
08/01/2002	0.085	.	0.087	0.086	.
08/02/2002	.	.	0.089	0.088	.
08/05/2002	.	.	.	.	.
08/08/2002	.	0.086	0.089	0.085	.
08/09/2002	0.09	.	0.086	.	.
08/10/2002	0.093	.	0.089	.	.
08/11/2002	0.093	.	0.089	.	.
08/12/2002	0.1	.	.	0.087	.
08/21/2002	.	0.086	0.099	0.090	.
08/22/2002	.	.	0.086	.	.
08/23/2002	.	.	.	.	.
09/04/2002	.	.	0.086	.	.
09/05/2002	0.093	0.088	0.103	0.100	0.097
09/06/2002	.	.	0.091	0.093	0.094
09/10/2002	.	0.090	.	.	0.094
09/11/2002	.	0.088	.	.	0.091
2002 Total Hits	**19**	**10**	**19**	**11**	**6**
06/26/2003	0.092	0.085	.	.	.
07/17/2003	.	.	0.085	.	.
08/26/2003	0.094	.	.	.	.
08/27/2003	0.085	.	.	.	.
2003 Total Hits	**3**	**1**	**1**	**0**	**0**

D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in Greenville County and the other four MSA counties based on the 1999 NO_x point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Greenville County has 53 NO_x point sources in operation and 50 of these point sources are located within the nonattainment area. Facilities in Greenville County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Greenville County are located within the proposed boundary. Greenville County accounts for 5.46% of the total MSA NO_x point source emissions.

Table D-1:
MSA Point Source NO2 Emissions

County	Plant Name	Permit Number	Pollutant	Point Source-NO2 (Tons / Year)
Greenville	Bob Jones University	1200-0245	NO2	58.54
Greenville	US Finishing	1200-0009	NO2	48.73
Greenville	Kemet:Mauldin	1200-0104	NO2	46.97
Greenville	GE:Greenville	1200-0094	NO2	46.95
Greenville	Michelin:Greenville	1200-0039	NO2	41.31
Greenville	Carustar:Taylors	1200-0013	NO2	32.86
Greenville	* JPS:Slater	1200-0017	NO2	31.55
Greenville	Hitachi Electronic	1200-0203	NO2	30.69
Greenville	Mitsubishi Polyester Film LLC	1200-0026	NO2	29.72
Greenville	* Milliken:Gayley Mill	1200-0029	NO2	27.25
Greenville	3M:Film Plant	1200-0073	NO2	24.19
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	NO2	24.03
Greenville	Greenville Hospital System:Energy Plant	1200-0145	NO2	14.05
Greenville	Rexroth:Southchase SE Court	1200-0326	NO2	13.59
Greenville	Specialty Shearing	1200-0123	NO2	10.61
Greenville	Ashmore:#1	9900-0013	NO2	6.97
Greenville	Ethox Chemicals	1200-0171	NO2	6.82
Greenville	Nutricia: Greenville	1200--127	NO2	4.44
Greenville	Dan River:White Horse	1200-0196	NO2	4.16
Greenville	St Francis Hospital	1200-0139	NO2	4.01
Greenville	Columbia Farms:Greenville	1200-0232	NO2	3.20
Greenville	Kemet:Fountain Inn	1200-0147	NO2	3.19
Greenville	Delta Mills:Estes	1200-0016	NO2	3.07
Greenville	King Asphalt:# 3	9900-0283	NO2	2.82
Greenville	Crown Metro:Plant1	1200-0034	NO2	2.78
Greenville	Geschmay Corp	1200-0315	NO2	2.71
Greenville	Milliken:Judson Mill	1200-0028	NO2	2.52
Greenville	Blythe Construction:Plant 4	9900-0169	NO2	2.46
Greenville	Air Products:Piedmont	1200-0075	NO2	2.31

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	NO2	2.22
Greenville	Greenville Finishing	1200-0217	NO2	2.20
Greenville	Reynolds Chemical:Greenville	1200-0247	NO2	2.08
Greenville	Lockheed Martin Aircraft Center	1200-0149	NO2	2.06
Greenville	* Milliken:Enterprise Plant	1200-0060	NO2	1.98
Greenville	Scotts Sierra:Travelers Rest	1200-0033	NO2	1.49
Greenville	Para-Chem Southern Inc	1200-0099	NO2	1.34
Greenville	National Electric Carbon	1200-0121	NO2	1.16
Greenville	Kemet:Greenville	1200-0018	NO2	0.77
Greenville	Panagakos Asphalt Paving	9900-0362	NO2	0.77
Greenville	BellSouth:Greenville-College St	1200-0231	NO2	0.76
Greenville	Stevens Aviation:Donaldson Park	1200-0311	NO2	0.75
Greenville	Holly Oak Chemical	1200-0191	NO2	0.55
Greenville	American Woodworks	1200-0346	NO2	0.52
Greenville	Sherwin Williams:Fountain Inn	1200-0163	NO2	0.31
Greenville	Zupan & Smith:Simpsonville	9900-0158	NO2	0.26
Greenville	Cognis Corporation	1200-0067	NO2	0.20
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	NO2	0.19
Greenville	Excalibur Tool:Poinsett	1200-0277	NO2	0.13
Greenville	RMAX	1200-0345	NO2	0.13
Greenville	Mita South Carolina	1200-0207	NO2	0.09
Greenville	Ernst Winter & Sons	1200-0179	NO2	0.03
Greenville	Gateway Mfg:Plant #2 - Greenville	1200-0317	NO2	0.01
Greenville	Metromont:Paris Mountain	1200-0150	NO2	0.01
	1999 Greenville Co. Total			**552.51**
	Emissions in Nonattainment Area-Total			**491.73**
	Emissions in Nonattainment Area-Percent			**89.0%**
Anderson	Duke Energy:Lee	0200-0004	NO2	3,556.57
Anderson	Owens Corning:Anderson	0200-0031	NO2	302.91
Anderson	Milliken:Pendleton	0200-0011	NO2	69.28
Anderson	Isola Laminate Systems Pendleton	0200-0058	NO2	44.74
Anderson	Michelin:Sandy Spring	0200-0018	NO2	22.49
Anderson	Vytech	0200-0050	NO2	17.64
Anderson	Milliken:Cushman	0200-0032	NO2	15.12
Anderson	Hexcel Schwebel Inc	0200-0036	NO2	11.33
Anderson	Anderson Medical Center	0200-0061	NO2	10.73
Anderson	Springs Industries:Wamsutta	0200-0014	NO2	9.83
Anderson	BASF:Anderson	0200-0005	NO2	9.71
Anderson	Sloan Construction:Anderson	9900-0113	NO2	9.27

Table D- 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Anderson	Blair Mills LP	0200-0034	NO2	6.69
Anderson	Pickens Construction Inc	9900-0041	NO2	5.96
Anderson	LaFrance:Mt Vernon	0200-0009	NO2	5.67
Anderson	Ashmore:#2	9900-0045	NO2	4.83
Anderson	Hydro Aluminum North America	0200-0127	NO2	4.65
Anderson	Maxxim Medical	0200-0033	NO2	4.28
Anderson	F&R Ashphalt:Plant #2	9900-0107	NO2	4.02
Anderson	Plastic Omnium	0200-0117	NO2	3.32
Anderson	Mount Vernon Mills:Williamston	0200-0045	NO2	2.91
Anderson	Apache Products:Anderson	0200-0048	NO2	2.12
Anderson	Transmontaigne:Belton-SE	0200-0056	NO2	2.02
Anderson	Chiquola Industrial Products:Chiquola	0200-0047	NO2	1.00
Anderson	Frigidaire:Anderson	0200-0084	NO2	1.00
Anderson	Ryobi Technologies Inc	0200-0043	NO2	0.59
Anderson	Goodman Conveyor	0200-0093	NO2	0.55
Anderson	Taylor Pallets Inc	0200-0153	NO2	0.40
Anderson	Griffin Thermal Products	0200-0147	NO2	0.18
Anderson	Fibertech Corp	0200-0095	NO2	0.13
Anderson	Metromont:Belton	0200-0102	NO2	0.10
Anderson	Clemson University:ARF	0200-0096	NO2	0.01
Anderson	Thomas Concrete:Anderson	9900-0332	NO2	0.01
	1999 Anderson Co. Total			**4,130.06**
Cherokee	Broad River Energy LLC	0600-0076	NO2	294.18
Cherokee	Milliken:Magnolia	0600-0007	NO2	244.06
Cherokee	Cherokee Cogeneration	0600-0060	NO2	90.61
Cherokee	Linpac Paper	0600-0044	NO2	57.28
Cherokee	Timken Co	0600-0009	NO2	27.69
Cherokee	Nestle Frozen Foods	0600-0033	NO2	25.88
Cherokee	SC Pipeline:Blacksburg	0600-0065	NO2	23.14
Cherokee	Boren Clay Products Blacksburg Plant	0600-0005	NO2	10.83
Cherokee	Industrial Minerals	0600-0039	NO2	3.34
Cherokee	Core Materials Corp	0600-0068	NO2	2.79
Cherokee	Hamrick Industries:Plant 5	0600-0036	NO2	1.74
Cherokee	Springfield LLC:Limestone	0600-0014	NO2	1.62
Cherokee	TNS Mills:Gaffney	0600-0054	NO2	1.55
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	NO2	1.43
Cherokee	Hamrick Mills:Musgrove	0600-0062	NO2	1.36
Cherokee	IFCO ICS-South Carolina Inc	0600-0055	NO2	0.94
Cherokee	Milliken Chemical:Cypress	0600-0040	NO2	0.20

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
	1999 Cherokee Co. Total			788.64
Pickens	Clemson University	1880-0010	NO2	74.18
Pickens	BASF:Clemson	1880-0007	NO2	73.56
Pickens	Greenwood Mills:Liberty Plants	1880-0005	NO2	16.36
Pickens	Easley Combined Utilities:Utility Street	1880-0051	NO2	7.01
Pickens	Sloan Construction:Liberty	9900-0098	NO2	5.70
Pickens	Alice Manufacturing:Ellison	1880-0019	NO2	3.83
Pickens	Alice Manufacturing:Airal	1880-0018	NO2	3.67
Pickens	Alice Manufacturing:EllJean	1880-0020	NO2	3.63
Pickens	Alice Manufacturing:Foster	1880-0021	NO2	2.10
Pickens	Hollingsworth Saco Lowell	1880-0011	NO2	1.56
Pickens	One World Industries:Pickens	1880-0006	NO2	1.14
Pickens	McKechnie:Highway 93 Plant	1880-0052	NO2	0.65
Pickens	Flexiwall:208 Carolina Drive	1880-0040	NO2	0.02
	1999 Pickens Co. Total			**193.41**
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	NO2	3,881.99
Spartanburg	Kosa: Arteva Specialties	2060-0345	NO2	258.74
Spartanburg	Spartanburg Regional Medical Center	2060-0142	NO2	32.72
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	NO2	28.21
Spartanburg	BMW Manufacturing Corp	2060-0230	NO2	27.58
Spartanburg	Michelin: Spartanburg	2060-0065	NO2	23.95
Spartanburg	Springs Industries: Lyman	2060-0018	NO2	22.93
Spartanburg	Kohler Co: Plastics Plant	2060-0071	NO2	21.66
Spartanburg	Blackman Uhler Chemical	2060-0029	NO2	17.85
Spartanburg	Intelicoat Technologies	2060-0182	NO2	7.80
Spartanburg	Exopack LLC	2060-0075	NO2	7.76
Spartanburg	BASF: Spartanburg	2060-0068	NO2	7.51
Spartanburg	Bayer Corp: Wellford	2060-0055	NO2	7.41
Spartanburg	American Fast Print	2060-0026	NO2	7.10
Spartanburg	National Starch & Chemical Company	2060-0085	NO2	7.07
Spartanburg	Milliken Chemical: Dewey	2060-0001	NO2	6.87
Spartanburg	Tietex International Ltd	2060-0147	NO2	6.63
Spartanburg	Saxon Fibers LLC	2060-0039	NO2	6.44
Spartanburg	Sloan Construction: Pacolet	9900-0091	NO2	6.30
Spartanburg	Reeves Brothers: Fairforest	2060-0019	NO2	5.64
Spartanburg	Asphalt Contractors LLC	9900-0152	NO2	4.94
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	NO2	4.61
Spartanburg	Sloan Construction: Lyman	9900-0115	NO2	4.60

Table D- 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Spartanburg	Milliken: Research	2060-0022	NO2	4.34
Spartanburg	Inman Mills: Ramey Plant	2060-0271	NO2	3.87
Spartanburg	F & R Asphalt: Plant #1	9900-0090	NO2	3.34
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	NO2	3.24
Spartanburg	ISG Resources Inc	2060-0025	NO2	3.10
Spartanburg	Mary Black Memorial Hospital	2060-0121	NO2	3.10
Spartanburg	Inman Mills: Saybrook	2060-0042	NO2	2.71
Spartanburg	Goodyear: Spartanburg	2060-0035	NO2	2.33
Spartanburg	Mohawk: Landrum	2060-0012	NO2	2.19
Spartanburg	L:ubrizol Form Control Additives	2060-0069	NO2	2.12
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	NO2	2.04
Spartanburg	Steris-Isomedix Services	2060-0180	NO2	1.78
Spartanburg	Spartanburg Automotive Products	2060-0007	NO2	1.45
Spartanburg	Spartanburg Stainless Products	2060-0348	NO2	1.45
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	NO2	1.40
Spartanburg	Hoke Inc	2060-0175	NO2	1.30
Spartanburg	Bommer Industries: Landrum	2060-0119	NO2	1.22
Spartanburg	Palmetto Vermiculite	2060-0181	NO2	1.22
Spartanburg	King Asphalt: # 4	9900-0352	NO2	1.21
Spartanburg	TNS Mills: Spartanburg	2060-0079	NO2	1.17
Spartanburg	Phelps Dodge	2060-0086	NO2	0.83
Spartanburg	Asphalt Associates	9900-0023	NO2	0.77
Spartanburg	MEMC Electronic Materials	2060-0070	NO2	0.59
Spartanburg	Appalachian Engineered Hardwood Flooring	2060-0299	NO2	0.47
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	NO2	0.29
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	NO2	0.24
Spartanburg	Donnelley, RR & Sons	2060-0081	NO2	0.13
Spartanburg	Engelhard: Duncan	2060-0266	NO2	0.10
Spartanburg	Mack Molding Co	2060-0061	NO2	0.09
Spartanburg	Piedmont Dielectrics	2060-0108	NO2	0.06
Spartanburg	Eastman Chemical Company	2060-0051	NO2	0.05
Spartanburg	Leigh Fibers Inc	2060-0084	NO2	0.04
Spartanburg	Piedmont Concrete: Duncan	9900-0282	NO2	0.02
Spartanburg	Metromont: Spartanburg I-85	2060-0038	NO2	0.01
	1999 Spartanburg Co. Total			**4,454.58**

Table D-2 lists the VOC point sources that are in operation in Greenville County and the other four MSA counties based on the 1999 VOC point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Greenville County has 61 VOC point sources in operation and 58 of these point sources are located within the nonattainment area. Facilities in Greenville County that

are notated with an asterisk are located outside of the proposed boundary; all other facilities in Greenville County are located within the proposed boundary. Greenville County accounts for 37.21% of the total MSA VOC point source emissions.

Table D-2:
MSA Point Source VOC Emissions

County	Plant Name	Permit Number	Pollutant	Point Source-VOC (Tons / Year)
Greenville	3M:Tape Plant	1200-0148	VOC	641.15
Greenville	Michelin:Greenville	1200-0039	VOC	423.60
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	VOC	407.78
Greenville	Mitsubishi Polyester Film LLC	1200-0026	VOC	224.22
Greenville	US Finishing	1200-0009	VOC	107.03
Greenville	Hitachi Electronic	1200-0203	VOC	97.74
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	VOC	76.92
Greenville	Nutricia:Greenville	1200-0127	VOC	66.37
Greenville	3M:Film Plant	1200-0073	VOC	55.34
Greenville	Kemet:Mauldin	1200-0104	VOC	53.57
Greenville	Kemet:Fountain Inn	1200-0147	VOC	46.19
Greenville	National Electrick Carbon	1200-0121	VOC	40.97
Greenville	* Milliken:Gayley Mill	1200-0029	VOC	40.35
Greenville	Bob Jones University	1200-0245	VOC	34.41
Greenville	SC Steel Corp	1200-0362	VOC	32.60
Greenville	Gateway Mfg:Plant #2-Greenville	1200-0317	VOC	26.65
Greenville	* JPS:Slater	1200-0017	VOC	26.28
Greenville	Reynolds Chemical:Greenville	1200-0247	VOC	25.23
Greenville	Kemet:Greenville	1200-0018	VOC	22.57
Greenville	GE:Greenville	1200-0094	VOC	22.02
Greenville	Para-Chem Southern Inc	1200-0099	VOC	21.71
Greenville	Lockheed Martin Aircraft Center	1200-0149	VOC	21.01
Greenville	Stevens Aviation:Donaldson Park	1200-0311	VOC	20.07
Greenville	Messer Industries	1200-0269	VOC	19.53
Greenville	Rudco Products Inc	1200-0194	VOC	17.93
Greenville	* Milliken:Enterprise Plant	1200-0060	VOC	15.76
Greenville	Excalibur Tool:Poinsett	1200-0277	VOC	14.41
Greenville	Sherwin Williams:Fountain Inn	1200-0163	VOC	12.83
Greenville	RMAX	1200-0345	VOC	9.55
Greenville	Parthenon Marble	1200-0260	VOC	7.12
Greenville	Cognis Corporation	1200-0067	VOC	7.11
Greenville	American Woodworks	1200-0346	VOC	6.94
Greenville	Crown Metro:Plant #1	1200-0034	VOC	6.03
Greenville	Delta Mills:Estes	1200-0016	VOC	5.74
Greenville	St Francis Hospital	1200-0139	VOC	5.55
Greenville	Woven Electronics	1200-0252	VOC	5.16

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Greenville	King Asphalt:# 3	9900-0283	VOC	4.50
Greenville	Dan River:White Horse	1200-0196	VOC	4.12
Greenville	Milliken:Judson Mill	1200-0028	VOC	4.09
Greenville	Air Products:Piedmont	1200-0075	VOC	4.08
Greenville	Greenville Finishing	1200-0217	VOC	2.20
Greenville	National Cabinet Lock	1200-0107	VOC	2.01
Greenville	Geschmay Corp	1200-0315	VOC	1.97
Greenville	Greenville News	1200-0226	VOC	1.35
Greenville	Panagakos Asphalt Paving	9900-0362	VOC	1.19
Greenville	Thermo Kinetics	1200-0313	VOC	1.01
Greenville	Standard Motor Products Inc	1200-0132	VOC	0.88
Greenville	Rexroth:Southchase Court	1200-0326	VOC	0.87
Greenville	Greenville Hospital System:Energy Plant	1200-0145	VOC	0.83
Greenville	Carustar:Taylors	1200-0013	VOC	0.65
Greenville	Ethox Chemicals	1200-0171	VOC	0.52
Greenville	Specialty Shearing	1200-0123	VOC	0.27
Greenville	Ashmore:#1	9900-0013	VOC	0.13
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	VOC	0.12
Greenville	Columbia Farms:Greenville	1200-0232	VOC	0.06
Greenville	Scotts Sierra:Travelers Rest	1200-0033	VOC	0.06
Greenville	Blythe Construction:Plant 4	9900-0169	VOC	0.05
Greenville	BellSouth:Greenville-College St	1200-0231	VOC	0.04
Greenville	Holly Oak Chemical	1200-0191	VOC	0.03
Greenville	Mita South Carolina	1200-0207	VOC	0.01
Greenville	Zupan & Smith:Simpsonville	9900-0158	VOC	0.01
	1999 Greenville Co. Total			**2,698.49**
	Emissions in Nonattainment Area-Total			**2,616.10**
	Emissions in Nonattainment Area-Percent			**97.0%**
Anderson	Plastic Omnium	0200-0117	VOC	216.89
Anderson	Owens Corning:Anderson	0200-0031	VOC	175.05
Anderson	Vytech	0200-0050	VOC	136.83
Anderson	Michelin:Sandy Spring	0200-0018	VOC	124.50
Anderson	Isola Laminate Systems Pendleton	0200-0058	VOC	113.32
Anderson	Hydro Aluminum North America	0200-0127	VOC	81.37
Anderson	BASF:Anderson	0200-0005	VOC	76.05
Anderson	Milliken:Pendleton	0200-0011	VOC	58.14
Anderson	Apache Products:Anderson	0200-0048	VOC	50.75
Anderson	Goodman Conveyor	0200-0093	VOC	46.95
Anderson	Hexcel Schwebel Inc	0200-0036	VOC	42.89

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Anderson	Transmontaigne:Belton-PD	0200-0057	VOC	40.93
Anderson	Marathon Ashland:Belton	0200-0052	VOC	33.16
Anderson	Ryobi Technologies Inc	0200-0043	VOC	25.86
Anderson	Transmontaigne:Belton-SE	0200-0056	VOC	18.51
Anderson	Duke Energy:Lee	0200-0004	VOC	14.40
Anderson	Maxxim Medical	0200-0033	VOC	13.87
Anderson	Springs Industries:Wamsutta	0200-0014	VOC	9.20
Anderson	Fibertech Corp	0200-0095	VOC	7.58
Anderson	Griffin Thermal Products	0200-0147	VOC	6.96
Anderson	Rockwell Automation/Dodge	0200-0119	VOC	4.56
Anderson	Blair Mills LP	0200-0034	VOC	3.37
Anderson	Clemson University:ARF	0200-0096	VOC	3.04
Anderson	Milliken:Cushman	0200-0032	VOC	2.73
Anderson	Darby Metal Works	0200-0129	VOC	2.04
Anderson	Frigidaire:Anderson	0200-0084	VOC	1.05
Anderson	Pickens Construction Inc	9900-0041	VOC	0.46
Anderson	Chiquola Industrial Products:Chiquola	0200-0047	VOC	0.33
Anderson	Anderson Medical Center	0200-0061	VOC	0.29
Anderson	Ashmore:#2	9900-0045	VOC	0.13
Anderson	LaFrance:Mt Vernon	0200-0009	VOC	0.11
Anderson	Mount Vernon Mills:Williamston	0200-0045	VOC	0.05
Anderson	Sloan Construction:Anderson	9900-0113	VOC	0.04
Anderson	F&R Asphalt:Plant #2	9900-0107	VOC	0.02
	1999 Anderson Co. Total			**1311.43**
Cherokee	Alcoa Building Products	0600-0016	VOC	145.00
Cherokee	Milliken:Magnolia	0600-0007	VOC	133.60
Cherokee	IFCO ICS-South Caorlina Inc	0600-0055	VOC	55.00
Cherokee	Milliken Chemical:Cypress	0600-0040	VOC	31.69
Cherokee	Hamrick Industries:Plant 5	0600-0036	VOC	13.31
Cherokee	Core Materials Corp	0600-0068	VOC	9.91
Cherokee	Cherokee Cogeneration	0600-0060	VOC	5.48
Cherokee	Sanders Bros Metals	0600-0052	VOC	5.07
Cherokee	Linpac Paper	0600-0044	VOC	4.33
Cherokee	Springfield LLC:Limestone	0600-0014	VOC	3.03
Cherokee	TNS Mills:Gaffney	0600-0054	VOC	1.90
Cherokee	Timken Co	0600-0009	VOC	1.23
Cherokee	Freightliner Custom Chassis	0600-0049	VOC	0.79
Cherokee	Boren Clay Products-Blacksburg Plant	0600-0005	VOC	0.74
Cherokee	Hamrick Mills:Musgrove	0600-0062	VOC	0.73

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Cherokee	Broad River Energy LLC	0600-0076	VOC	0.71
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	VOC	0.66
Cherokee	Nestle Frozen Foods	0600-0033	VOC	0.45
Cherokee	SC Pipeline:Blacksburg	0600-0065	VOC	0.15
Cherokee	Industrial Minerals	0600-0039	VOC	0.03
	1999 Cherokee Co. Total			**413.81**
Pickens	McKechnie:Hwy 93 Plant	1880-0052	VOC	42.38
Pickens	BASF:Clemson	1880-0007	VOC	39.87
Pickens	One World Industries:Pickens	1880-0006	VOC	22.71
Pickens	Flexiwall:208 Carolina Drive	1880-0040	VOC	18.58
Pickens	Greenwood Mills:Liberty Plants	1880-0005	VOC	14.12
Pickens	Hollingsworth Saco Lowell	1880-0011	VOC	3.10
Pickens	Alice Manufacturing:Elljean	1880-0020	VOC	2.81
Pickens	Alice Manufacturing:Ellison	1880-0019	VOC	2.43
Pickens	Alice Manufacturing:Arial	1880-0018	VOC	2.04
Pickens	Alice Manufacturing:Foster	1880-0021	VOC	2.02
Pickens	Clemson University	1880-0010	VOC	0.61
Pickens	Easley Combined Utilities:Utility Street	1880-0051	VOC	0.18
Pickens	Sloan Construction:Liberty	9900-0098	VOC	0.03
	1999 Pickens Co. Total			**150.88**
Spartanburg	Michelin: Spartanburg	2060-0065	VOC	537.00
Spartanburg	National Starch & Chemical Company	2060-0085	VOC	231.43
Spartanburg	Goodyear: Spartanburg	2060-0035	VOC	224.44
Spartanburg	Kohler Co: Plastics Plant	2060-0071	VOC	204.41
Spartanburg	Exopack LLC	2060-0075	VOC	170.71
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	VOC	152.00
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	VOC	144.34
Spartanburg	Donnelley, RR & Sons	2060-0081	VOC	137.49
Spartanburg	Intelicoat Technologies	2060-0182	VOC	126.34
Spartanburg	American Fast Print	2060-0026	VOC	73.35
Spartanburg	Kosa: Arteva Specialties	2060-0345	VOC	72.81
Spartanburg	Mack Molding Co	2060-0061	VOC	62.75
Spartanburg	BMW Manufacturing Corp	2060-0230	VOC	58.05
Spartanburg	Reeves Brothers: Fairforest	2060-0019	VOC	49.99
Spartanburg	Motiva Enterprises LLC	2060-0097	VOC	46.91
Spartanburg	Springs Industries: Lyman	2060-0018	VOC	41.63
Spartanburg	Saxon Fibers LLC	2060-0039	VOC	39.34
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	VOC	33.29

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	Dot Packaging-Printpak	2060-0215	VOC	30.49
Spartanburg	Citgo: Spartanburg	2060-0101	VOC	26.60
Spartanburg	Transmontaigne: Spartanburg-PD	2060-0098	VOC	26.41
Spartanburg	Tietex International Ltd	2060-0147	VOC	25.72
Spartanburg	Phillips Pipeline: Spartanburg	2060-0056	VOC	24.81
Spartanburg	Lubrizol Form Control Additives	2060-0069	VOC	22.79
Spartanburg	Milliken Chemical: Dewey	2060-0001	VOC	19.31
Spartanburg	Conocophillips Company	2060-0096	VOC	13.38
Spartanburg	Crown Central Petroleum	2060-0094	VOC	12.65
Spartanburg	Michelin: Duncan	2060-0183	VOC	10.41
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	VOC	9.86
Spartanburg	Color Converting Ind	2060-0199	VOC	7.93
Spartanburg	Bayer Corp: Wellford	2060-0055	VOC	7.35
Spartanburg	Bommer Industries: Landrum	2060-0119	VOC	5.91
Spartanburg	Blackman Uhler Chemical	2060-0029	VOC	3.72
Spartanburg	Piedmont Dielectrics	2060-0108	VOC	3.02
Spartanburg	Steris-Isomedix Services	2060-0180	VOC	2.68
Spartanburg	Mohawk: Landrum	2060-0012	VOC	2.20
Spartanburg	Cooper Standard Automotive	2060-0088	VOC	2.02
Spartanburg	Inman Mills: Ramey Plant	2060-0271	VOC	2.01
Spartanburg	Spartanburg Regional Medical Center	2060-0142	VOC	2.00
Spartanburg	King Asphalt: # 4 - New	9900-0352	VOC	1.85
Spartanburg	BASF: Spartanburg	2060-0068	VOC	1.35
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	VOC	1.26
Spartanburg	TNS Mills: Spartanburg	2060-0079	VOC	0.94
Spartanburg	Engelhard: Duncan	2060-0266	VOC	0.92
Spartanburg	Inman Mills: Saybrook	2060-0042	VOC	0.64
Spartanburg	Spartanburg Stainless Products	2060-0348	VOC	0.59
Spartanburg	MEMC Electronic Materials	2060-0070	VOC	0.45
Spartanburg	Asphalt Associates	9900-0023	VOC	0.43
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	VOC	0.29
Spartanburg	ISG Resources Inc	2060-0025	VOC	0.17
Spartanburg	Milliken: Research	2060-0022	VOC	0.17
Spartanburg	Mary Black Memorial Hospital	2060-0121	VOC	0.13
Spartanburg	Appalachian Engineered Hardwood Flooring	2060-0299	VOC	0.11
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	VOC	0.08
Spartanburg	Spartanburg Automotive Products	2060-0007	VOC	0.08
Spartanburg	Palmetto Vermiculite	2060-0181	VOC	0.07
Spartanburg	Phelps Dodge	2060-0086	VOC	0.05
Spartanburg	Hoke Inc	2060-0175	VOC	0.03

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	Sloan Construction: Pacolet	9900-0091	VOC	0.03
Spartanburg	Asphalt Contractors LLC	9900-0152	VOC	0.02
Spartanburg	F & R Asphalt: Plant #1	9900-0090	VOC	0.02
Spartanburg	Sloan Construction: Lyman	9900-0115	VOC	0.02
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	VOC	0.02
Spartanburg	Eastman Chemical Company	2060-0051	VOC	0.01
	1999 Spartanburg Co. Total			**2,677.28**

Table D-3 lists the NO_x on-road emissions for Greenville County and Table D-4 lists the VOC on-road emissions for Greenville County.

Table D-3: Greenville County On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons / Year)**
Greenville	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	4,091.00
Greenville	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,268.00
Greenville	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	588.00
Greenville	11-Highway Vehicles	04-Diesels	4,219.00
	1999 Greenville Co. Total		**11,166.00**

Table D-4: Greenville County On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons / Year)**
Greenville	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	5,411.00
Greenville	11-Highway Vehicles	02-Light-Duty Gas Trucks	3,040.00
Greenville	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	708.00
Greenville	11-Highway Vehicles	04-Diesels	332.00
	1999 Greenville Co. Total		**9,491.00**

E. Traffic and Commuting Patterns

The proposed boundary captures 100% of the urban interstate Daily Vehicle Miles Traveled (DVMT) and more than 69% of the total DVMT within the county in 2025. Over 90% of Greenville County residents work in Greenville County and over 37% of the entire MSA commuter flow is contained within

Greenville County.

Estimates of the DVMT were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows the 2000 and 2025 DVMT data for the Greenville-Spartanburg-Anderson MSA.

Table E-1:
DVMT for the Greenville-Spartanburg-Anderson MSA

County	2000 DVMT	2025 DVMT	DVMT Change (2000-2025)
Anderson	5,207,194	8,687,689	3,480,495
Cherokee	2,063,088	3,303,158	1,240,070
Greenville	9,421,709	14,705,492	5,283,783
Pickens	2,224,743	3,613,182	1,388,439
Spartanburg	8,041,582	13,086,740	5,045,158
Statewide	**123,805,748**	**199,789,677**	**75,983,929**

Figure E-1 shows the Interstates that are located within the Greenville-Spartanburg-Anderson MSA. There two interstates (I-85 and I-385). I-85 is the major corridor of travel between Spartanburg and Greenville, SC, and I-385 is the interstate spur between I-26 and Greenville. This figure also shows the 2000 traffic counts for the interstates. The highest traffic occurs near the intersection of I-85 and I-385 and also in Greenville County. The further away from Greenville County the road section is located, the lower the traffic count. It is apparent from the map below that the 2003 recommended boundary for Greenville County encompasses 100% of the interstate traffic, and 100% of the urban area within the county and a large percentage of the non-interstate roads.

Figure E-1:

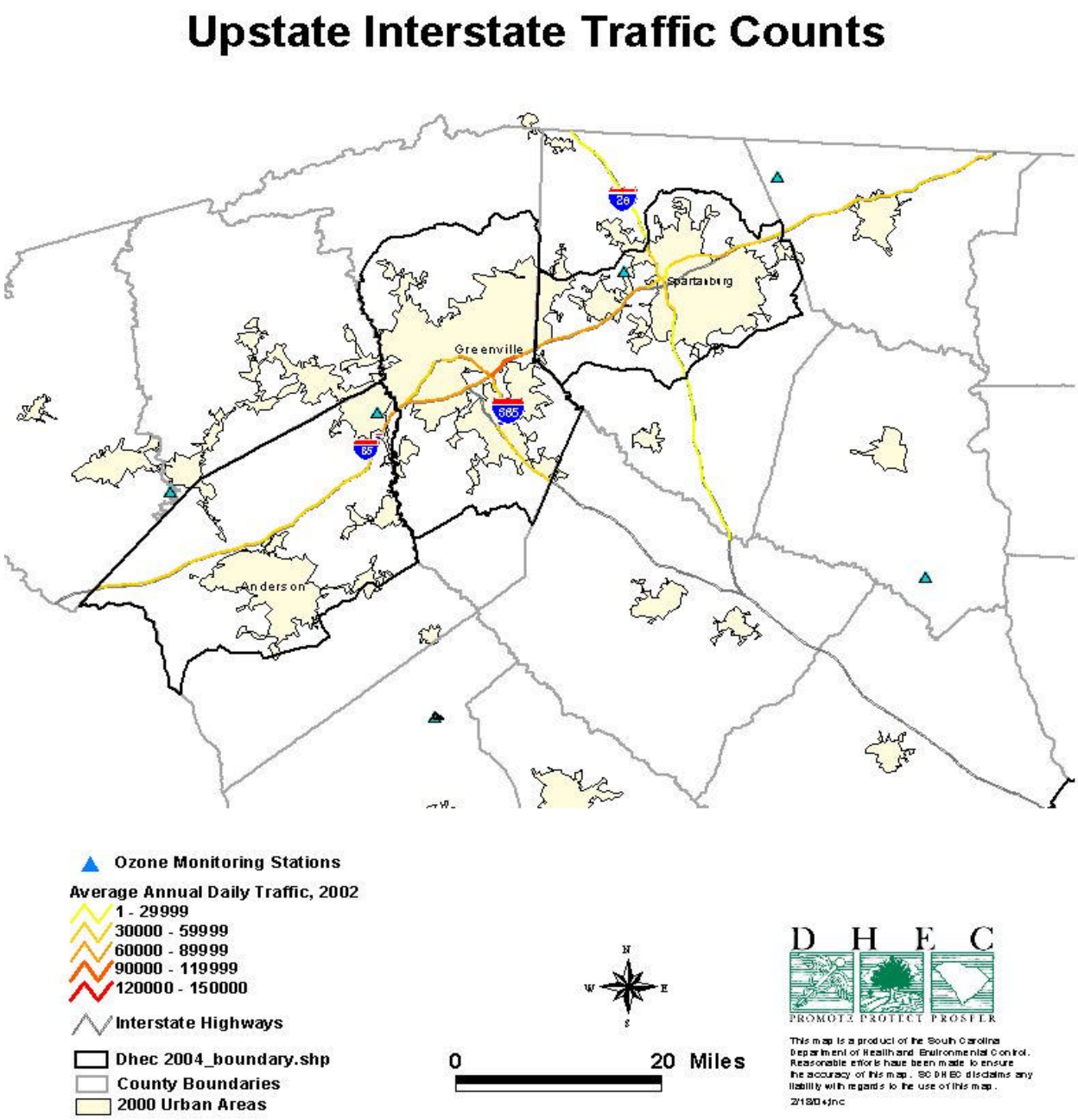


Table E-2 shows the DVMT for each classification of road for 2000, 2007, 2012 and 2025 for Greenville-Spartanburg-Anderson MSA.

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Anderson County				
Rural Interstate (01)	1,600,864	1,968,809	2,231,627	2,914,954
Rural Principal Arterial (02)	292,648	341,872	377,032	468,448
Rural Minor Arterial (03)	706,739	825,614	910,524	1,131,293
Rural Major Collector (04)	1,030,719	1,204,088	1,327,924	1,649,895
Rural Minor Collector (05)	70,663	82,549	91,039	113,113
Rural Local (09)	306,263	357,777	394,573	490,242
Rural Total	*4,007,896*	*4,780,709*	*5,332,719*	*6,767,945*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	607,982	710,246	783,292	973,211
Urban Minor Arterial (14)	320,296	374,170	412,652	512,704
Urban Collector (15)	193,409	225,941	249,178	309,595
Urban Local (18)	77,612	90,666	99,991	124,235
Urban Total	*1,199,298*	*1,401,023*	*1,545,113*	*1,919,745*
Grand Total DVMT	**5,207,194**	**6,181,733**	**6,877,832**	**8,687,689**
Cherokee County				
Rural Interstate (01)	1,022,864	1,248,380	1,409,462	1,828,277
Rural Principal Arterial (02)	44,911	50,318	53,215	63,677
Rural Minor Arterial (03)	235,062	263,364	278,527	333,281
Rural Major Collector (04)	315,400	353,375	373,721	447,189
Rural Minor Collector (05)	31,875	35,713	37,769	45,194
Rural Local (09)	187,725	210,327	222,437	266,164
Rural Total	*1,837,837*	*2,161,478*	*2,375,132*	*2,983,782*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	-	-	-	-
Urban Minor Arterial (14)	97,669	109,429	115,729	138,479
Urban Collector (15)	67,539	75,671	80,028	95,760
Urban Local (18)	60,043	67,272	71,145	85,131
Urban Total	*225,251*	*252,372*	*266,902*	*319,371*
Grand Total DVMT	**2,063,088**	**2,413,849**	**2,642,034**	**3,303,152**
Greenville County				
Rural Interstate (01)	605,987	755,682	862,607	1,140,612
Rural Principal Arterial (02)	470,166	534,064	568,524	691,096
Rural Minor Arterial (03)	543,348	617,191	657,015	798,665
Rural Major Collector (04)	930,573	1,057,042	1,125,247	1,367,847

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Rural Minor Collector (05)	50,942	57,865	61,599	74,880
Rural Local (09)	309,140	351,154	373,812	454,404
Rural Total	*2,910,155*	*3,372,998*	*3,648,804*	*4,527,504*
Urban Interstate (11)	1,604,349	1,985,303	2,257,413	2,964,899
Urban Freeway/Expressway (12)	46,581	52,912	56,326	68,469
Urban Principal Arterial (13)	1,743,223	1,980,136	2,107,902	2,562,360
Urban Minor Arterial (14)	1,797,160	2,041,403	2,173,123	2,641,641
Urban Collector (15)	1,036,576	1,177,451	1,253,426	1,523,660
Urban Local (18)	283,665	322,217	343,008	416,959
Urban Total	*6,511,554*	*7,559,421*	*8,191,197*	*10,177,988*
Grand Total DVMT	**9,421,709**	**10,932,419**	**11,840,001**	**14,705,492**
Pickens County				
Rural Interstate (01)	-	-	-	-
Rural Principal Arterial (02)	303,647	358,369	388,825	493,150
Rural Minor Arterial (03)	449,827	530,892	576,011	730,559
Rural Major Collector (04)	465,085	548,900	595,549	755,340
Rural Minor Collector (05)	46,606	55,006	59,680	75,693
Rural Local (09)	214,650	253,333	274,863	348,610
Rural Total	*1,479,815*	*1,746,499*	*1,894,928*	*2,403,353*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	44,814	52,890	57,385	72,782
Urban Principal Arterial (13)	286,329	337,930	366,649	465,024
Urban Minor Arterial (14)	255,655	301,728	327,370	415,207
Urban Collector (15)	106,750	125,988	136,695	173,371
Urban Local (18)	51,380	60,639	65,793	83,445
Urban Total	*744,928*	*879,174*	*953,892*	*1,209,829*
Grand Total DVMT	**2,224,743**	**2,625,674**	**2,848,820**	**3,613,182**
Spartanburg County				
Rural Interstate (01)	2,395,210	3,044,958	3,509,064	4,715,740
Rural Principal Arterial (02)	137,290	152,821	160,853	188,254
Rural Minor Arterial (03)	984,884	1,096,301	1,153,919	1,350,484
Rural Major Collector (04)	1,194,093	1,329,176	1,399,034	1,637,353
Rural Minor Collector (05)	177,077	197,109	207,468	242,809
Rural Local (09)	264,722	294,669	310,155	362,989
Rural Total	*5,153,275*	*6,115,034*	*6,740,494*	*8,497,628*
Urban Interstate (11)	524,281	754,792	919,442	1,347,534
Urban Freeway/Expressway (12)	162,742	181,152	190,673	223,154
Urban Principal Arterial (13)	871,282	969,847	1,020,819	1,194,711
Urban Minor Arterial (14)	657,734	732,141	770,620	901,892
Urban Collector (15)	565,477	629,448	662,530	775,389
Urban Local (18)	106,791	118,872	125,119	146,433

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Urban Total	*2,888,307*	*3,386,253*	*3,689,204*	*4,589,111*
Grand Total DVMT	**8,041,582**	**9,501,287**	**10,429,698**	**13,086,740**
Statewide				
Rural Interstate (01)	23,146,274	28,309,862	31,998,139	41,587,660
Rural Principal Arterial (02)	12,905,947	14,916,454	16,175,569	20,131,432
Rural Minor Arterial (03)	17,145,253	19,735,411	21,341,306	26,491,890
Rural Major Collector (04)	15,569,699	17,893,702	19,330,816	23,911,717
Rural Minor Collector (05)	2,061,800	2,372,015	2,565,610	3,178,012
Rural Local (09)	7,634,920	8,763,106	9,471,020	11,703,697
Rural Total	*78,463,892*	*91,990,550*	*100,882,461*	*127,004,409*
Urban Interstate (11)	9,470,591	12,063,075	13,914,850	18,729,464
Urban Freeway/Expressway (12)	2,039,115	2,311,200	2,483,836	2,991,347
Urban Principal Arterial (13)	14,308,881	16,393,798	17,631,864	21,720,541
Urban Minor Arterial (14)	11,057,992	12,630,175	13,565,185	16,623,891
Urban Collector (15)	5,611,026	6,401,102	6,857,898	8,403,840
Urban Local (18)	2,854,251	3,267,188	3,511,242	4,316,185
Urban Total	*45,341,855*	*53,066,538*	*57,964,874*	*72,785,268*
Grand Total DVMT	**123,805,748**	**145,057,088**	**158,847,335**	**199,789,677**

Tables E-3[9] and E-4 on the following pages present the 2000 worker flow data from each of the counties and the percent commute for the MSA. Some counties that are listed on these tables are not being considered for boundary recommendations, and are being included on this table to account for all workers in each county. The below tables show that there is very little commuting outside of the MSA within the state of South Carolina.

Table E-3: Where People Living in the Greenville-Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	591		47	26		664
Aiken		6	54	39	20	119
Anderson	52,133	31	3,367	3,648	480	59,659
Barnwell	8	0	7	0	0	15
Beaufort	0	0	33	9	16	58
Berkeley	35	30		9	15	89
Charleston	59	52	104	100	70	385
Cherokee	61	16,052	203	63	2,029	18,408
Chester	5	17	11		27	60
Colleton	0	0	12	8	25	45

[9] Data provided from US Census: 2000

Table E-3: Where People Living in the Greenville-Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Darlington	0	4	6	11	8	29
Dorchester	0	20	29	11	0	60
Edgefield	0	0	0	3	0	3
Fairfield	0	0	0	0	33	33
Florence	0	8	27	0	0	35
Georgetown	8				8	16
Greenville	13,766	431	161,906	15,095	14,586	205,784
Greenwood	520	18	381	64	226	1,209
Hampton	7	0	0	8	0	15
Horry	42	0	14	5	31	92
Kershaw	0	6	0	7	0	13
Lancaster	24	25	36	6	20	111
Laurens	268	26	1,613	112	703	2,722
Lee	0	0	18	0	0	18
Lexington	40	12	127	21	23	223
Marion	0	0	14	6	0	20
McCormick	2	0	6	0	0	8
Newberry	12	0	58	20	22	112
Oconee	1,274	11	396	2,331	112	4,124
Orangeburg	3	0	0	0	6	9
Pickens	4,300	16	2,566	28,951	198	36,031
Richland	88	8	193	110	71	470
Saluda	3	0	6	0	0	9
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Sumter	0	0	22	0	7	29
Union	40	141	130	37	522	870
York	38	274	73	33	130	548
Grand Total	74,591	21,125	182,664	51,517	114,884	444,781
Abbeville	591	0	47	26	0	664

Table E-4: Where People Living in the Greenville-Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	0.13%	0.00%	0.01%	0.01%	0.00%	0.15%
Aiken	0.00%	0.00%	0.01%	0.01%	0.00%	0.03%
Anderson	11.72%	0.01%	0.76%	0.82%	0.11%	13.41%
Barnwell	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Beaufort	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Berkeley	0.01%	0.01%	0.00%	0.00%	0.00%	0.02%
Charleston	0.01%	0.01%	0.02%	0.02%	0.02%	0.09%

Table E-4:
Where People Living in the Greenville-Spartanburg-Anderson MSA Work
(Percentage Table)

County Worked In	County of Residence					
	Anderson	Cherokee	Greenville	Pickens	Spartanburg	Grand Total
Cherokee	0.01%	3.61%	0.05%	0.01%	0.46%	4.14%
Chester	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Colleton	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Darlington	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Dorchester	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Edgefield	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fairfield	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Florence	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Georgetown	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Greenville	3.10%	0.10%	36.40%	3.39%	3.28%	46.27%
Greenwood	0.12%	0.00%	0.09%	0.01%	0.05%	0.27%
Hampton	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Horry	0.01%	0.00%	0.00%	0.00%	0.01%	0.02%
Kershaw	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lancaster	0.01%	0.01%	0.01%	0.00%	0.00%	0.02%
Laurens	0.06%	0.01%	0.36%	0.03%	0.16%	0.61%
Lee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lexington	0.01%	0.00%	0.03%	0.00%	0.01%	0.05%
Marion	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
McCormick	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Newberry	0.00%	0.00%	0.01%	0.00%	0.00%	0.03%
Oconee	0.29%	0.00%	0.09%	0.52%	0.03%	0.93%
Orangeburg	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pickens	0.97%	0.00%	0.58%	6.51%	0.04%	8.10%
Richland	0.02%	0.00%	0.04%	0.02%	0.02%	0.11%
Saluda	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Spartanburg	0.28%	0.89%	2.52%	0.18%	21.47%	25.34%
Sumter	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Union	0.01%	0.03%	0.03%	0.01%	0.12%	0.20%
York	0.01%	0.06%	0.02%	0.01%	0.03%	0.12%
Grand Total	16.77%	4.75%	41.07%	11.58%	25.83%	100.00%

Tables E-5 and E-6 show that in the Greenville-Spartanburg-Anderson MSA, 81.96% of all people work in the same county they live in. There are 179,247 (or 41.44%) workers that live in Greenville County and work in the Greenville-Spartanburg-Anderson MSA. There are 205,784 (or 47.57%) people that work in Greenville County. This results in a net increase of 26,537 workers in the county. Greenville County only accounts for 4.01% of all intercounty commuter travel in the Greenville-Spartanburg-Anderson MSA. Only 0.78% of the commuters in the Greenville-Spartanburg-Anderson MSA travel from Greenville County to Anderson County, and 2.59% travel from Greenville County to Spartanburg County. Conversely, 3.18 % of the workers commute from Anderson County to Greenville County and 3.37% of the workers commute from Spartanburg County to Greenville County.

Table E-5: County of Residence for the Greenville-Spartanburg-Anderson MSA						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	52,133	31	3,367	3,648	480	59,659
Cherokee	61	16,052	203	63	2,029	18,408
Greenville	13,766	431	161,906	15,095	14,586	205,784
Pickens	4,300	16	2,566	28,951	198	36,031
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Grand Total	*71,524*	*20,467*	*179,247*	*48,541*	*112,789*	*432,568*

Table E-6: County of Residence for the Greenville-Spartanburg-Anderson MSA (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Intercounty Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

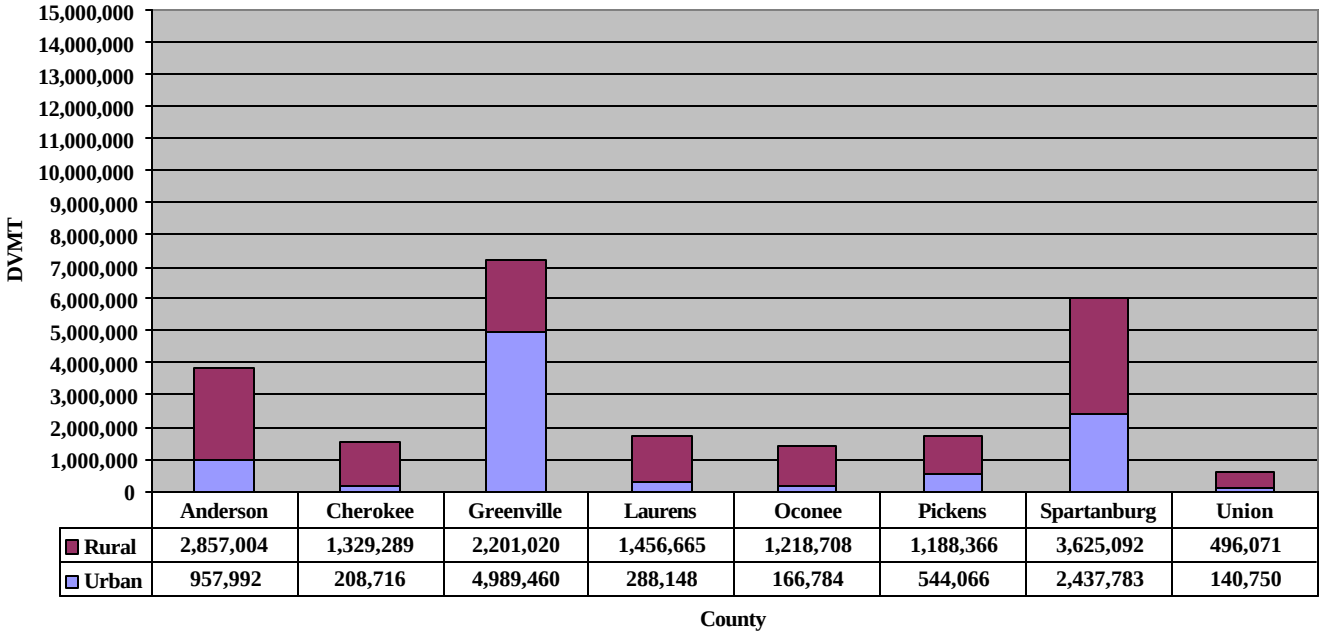
Table E-7 shows the mobile source emissions in Greenville County in relation to the other counties in the MSA. Even though Greenville County has high onroad mobile source NO_x and VOC emissions, Federal fuel and engine standards will help lower these emissions in Greenville County.

Table E-7: Percent Mobile Source NO_x and VOC Emissions in the Greenville-Spartanburg-Anderson MSA					
County	**NO_x tons / day**	**Percent NO_x**	**County**	**VOC tons / day**	**Percent VOC**
Anderson	19.11	19.85%	Anderson	11.82	18.52%
Cherokee	7.33	7.61%	Cherokee	3.87	6.06%
Greenville	28.87	29.99%	Greenville	22.39	35.07%
Pickens	9.33	9.69%	Pickens	6.00	9.41%
Spartanburg	31.64	32.87%	Spartanburg	19.76	30.95%
Grand Total	96.28	100.00%	Grand Total	63.84	100.00%

Figures E-2 – E-6 show the urban and rural DVMT for the Greenville-Spartanburg-Anderson MSA.

While the DVMT increases 105% from 1990-2025, the character of the miles traveled changes very little. For example, in 1990, the DVMT is 30.6% rural and 69.4% urban, while in 2025, the DVMT is projected to be 30.8% rural and 69.2% urban.

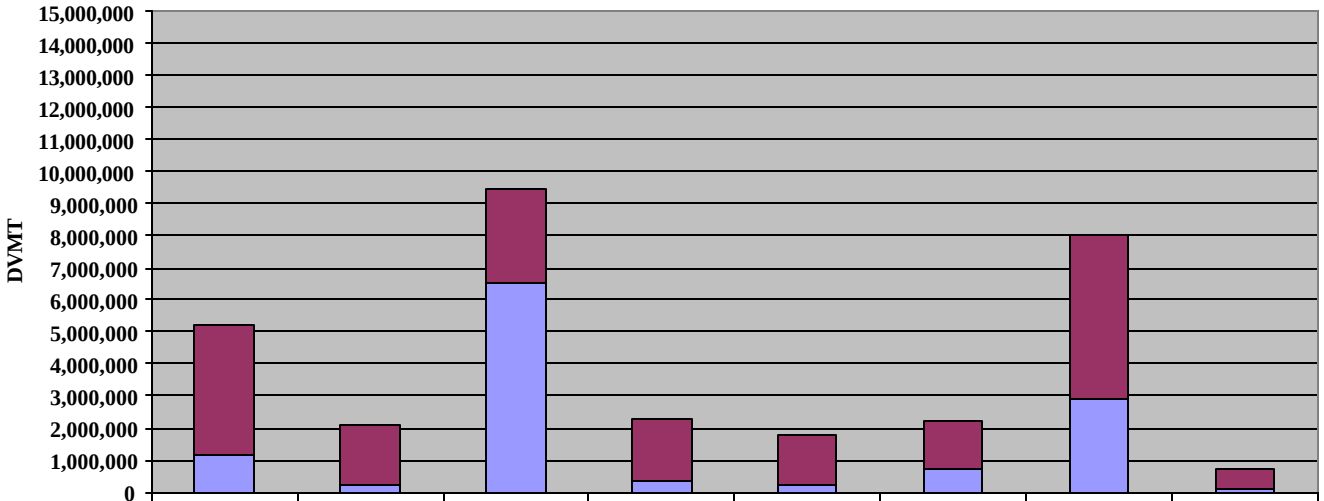
Figure E-2:
1990 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Laurens	Oconee	Pickens	Spartanburg	Union
Rural	2,857,004	1,329,289	2,201,020	1,456,665	1,218,708	1,188,366	3,625,092	496,071
Urban	957,992	208,716	4,989,460	288,148	166,784	544,066	2,437,783	140,750

County

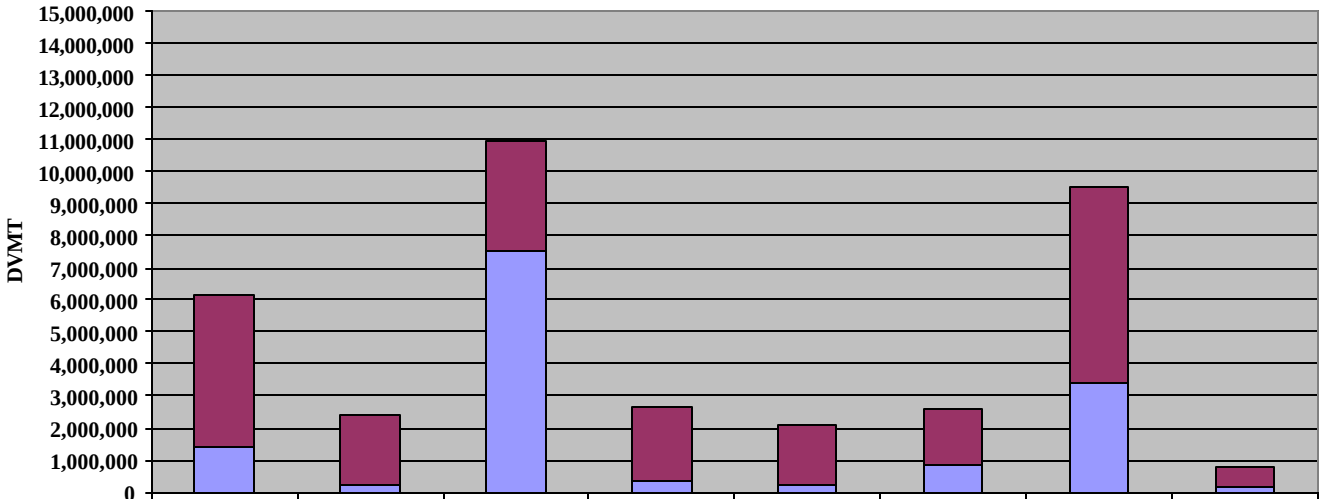
Figure E-3:
2000 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Laurens	Oconee	Pickens	Spartanburg	Union
Rural	4,007,896	1,837,837	2,910,155	1,949,919	1,575,576	1,479,815	5,153,275	582,231
Urban	1,199,298	225,251	6,511,554	345,129	211,287	744,928	2,888,307	140,202

County

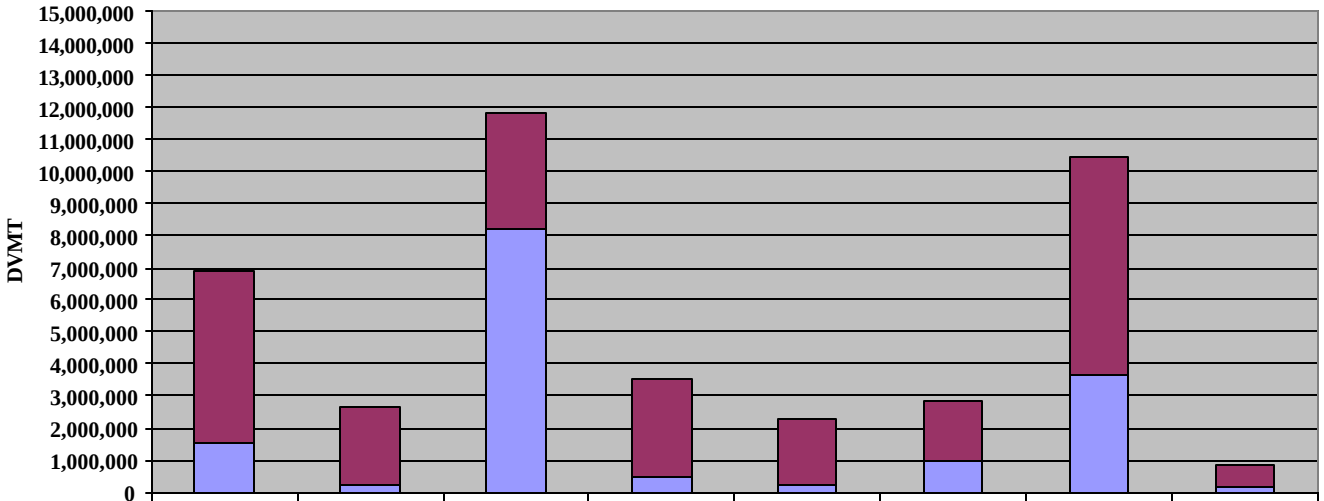
Figure E-4:
2007 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Laurens	Oconee	Pickens	Spartanburg	Union
Rural	4,780,709	2,161,478	3,372,998	2,271,223	1,824,435	1,749,499	6,115,034	642,416
Urban	1,401,023	252,372	7,559,421	386,686	243,388	879,174	3,386,253	154,694

County

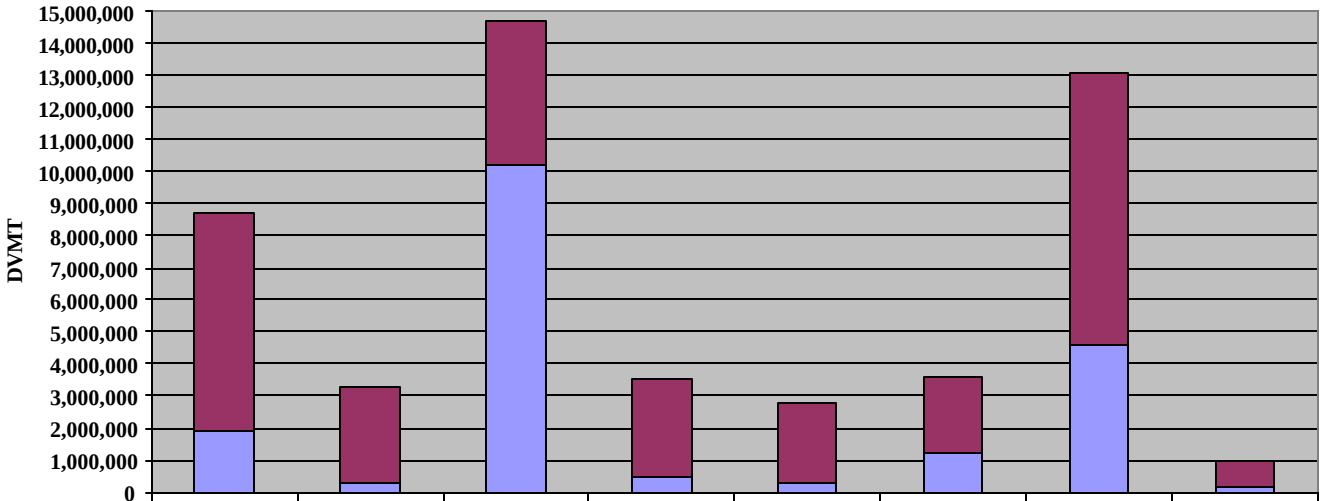
Figure E-5:
2012 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Laurens	Oconee	Pickens	Spartanburg	Union
Rural	5,332,719	2,375,132	3,648,804	3,070,432	2,002,191	1,894,928	6,740,494	686,921
Urban	1,545,113	266,902	8,191,197	485,149	266,318	953,892	3,689,204	165,411

County

Figure E-6:
2025 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT

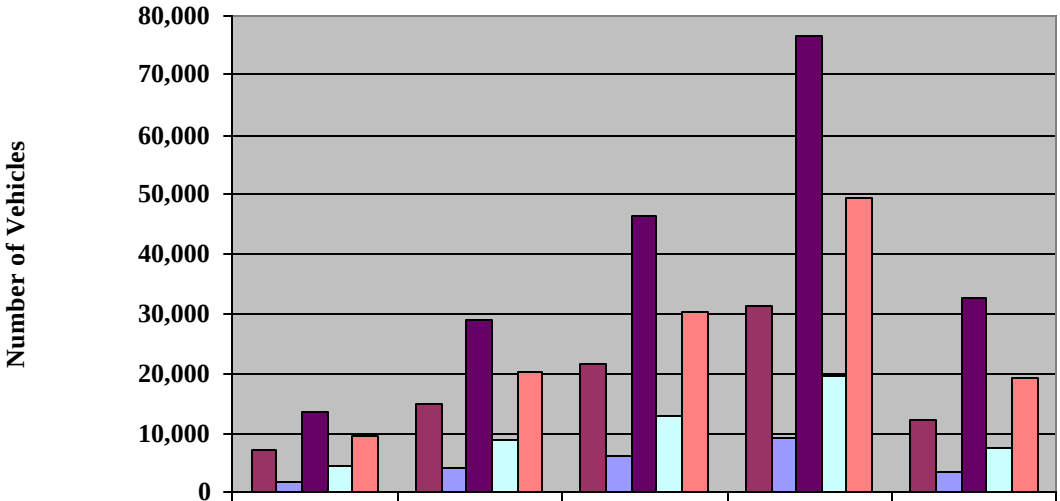


	Anderson	Cherokee	Greenville	Laurens	Oconee	Pickens	Spartanburg	Union
Rural	6,767,945	2,983,782	4,527,504	3,070,432	2,464,357	2,403,353	8,497,628	795,581
Urban	1,919,745	319,371	10,177,988	485,149	325,934	1,209,829	4,589,111	191,577

County

Figure E-7[10] presents the motor vehicle registration data for the Greenville-Spartanburg-Anderson MSA. Only a small portion of the vehicles are pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 models.

Figure E-7:
2000 Motor Vehicle Data for the Greenville-Spartanburg-Anderson MSA



	<1979	1980-1986	1987-1990	1991-1995	1996-2001
Anderson	7,121	14,896	21,425	31,432	12,024
Cherokee	1,863	4,265	6,049	9,255	3,512
Greenville	13,423	28,947	46,387	76,720	32,652
Pickens	4,495	8,745	12,989	19,573	7,447
Spartanburg	9,461	20,262	30,312	49,393	19,183

This data reflects 2000 registration figures, and many of the older vehicles have probably been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Refueling Vapor Recovery (ORVR) systems will help to offset any potential impacts from the increased emissions from mobile sources in this area.

F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for Greenville County, and there is no known data to assess growth for the Greenville Nonattainment Area. Conclusions were drawn based on historical

[10] Data provided from SC Department of Public Safety, Division of Motor Vehicles

data from 1990, current data from 2000, and population projections for 2020. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur. It is reasonable to expect the majority of that growth to be located inside, or at least near, the boundary.

Table F-1:
Historical and Projected Population and Population Density per County

	Greenville County
Population, 1990[11]	320,127
Population, 2000[12]	379,616
Projected Population, 2020[13]	432,000
County growth Rate, 2000 - 20202	13.80%

Greenville County's growth rate from 2000-2020 is 13.80 %. Assuming the county growth is equally distributed throughout the county, the projected population of the recommended area for the year 2020 is 409,537 (359,875 in 2000 X 13.8% growth). However, equal distribution of growth is unlikely since the northern part of the county is mountainous and does not contain the densely populated areas, and probably not the industry either. With some degree of certainty, the future growth in Greenville County will be to the south, centered along I-85, particularly in the recommended area, which contains the urban center.

Additionally, since the boundary includes the majority of Greenville County and already captures the area's urban population, it is reasonable to conclude that the boundary at least approximates, if not contains, the expected population growth, and hence the economic growth, for the area in the coming years.

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive

[11] Data provided by US Census: 2000.
[12] Data provided by US Census: 2000.
[13] Data provided by EPA.

to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

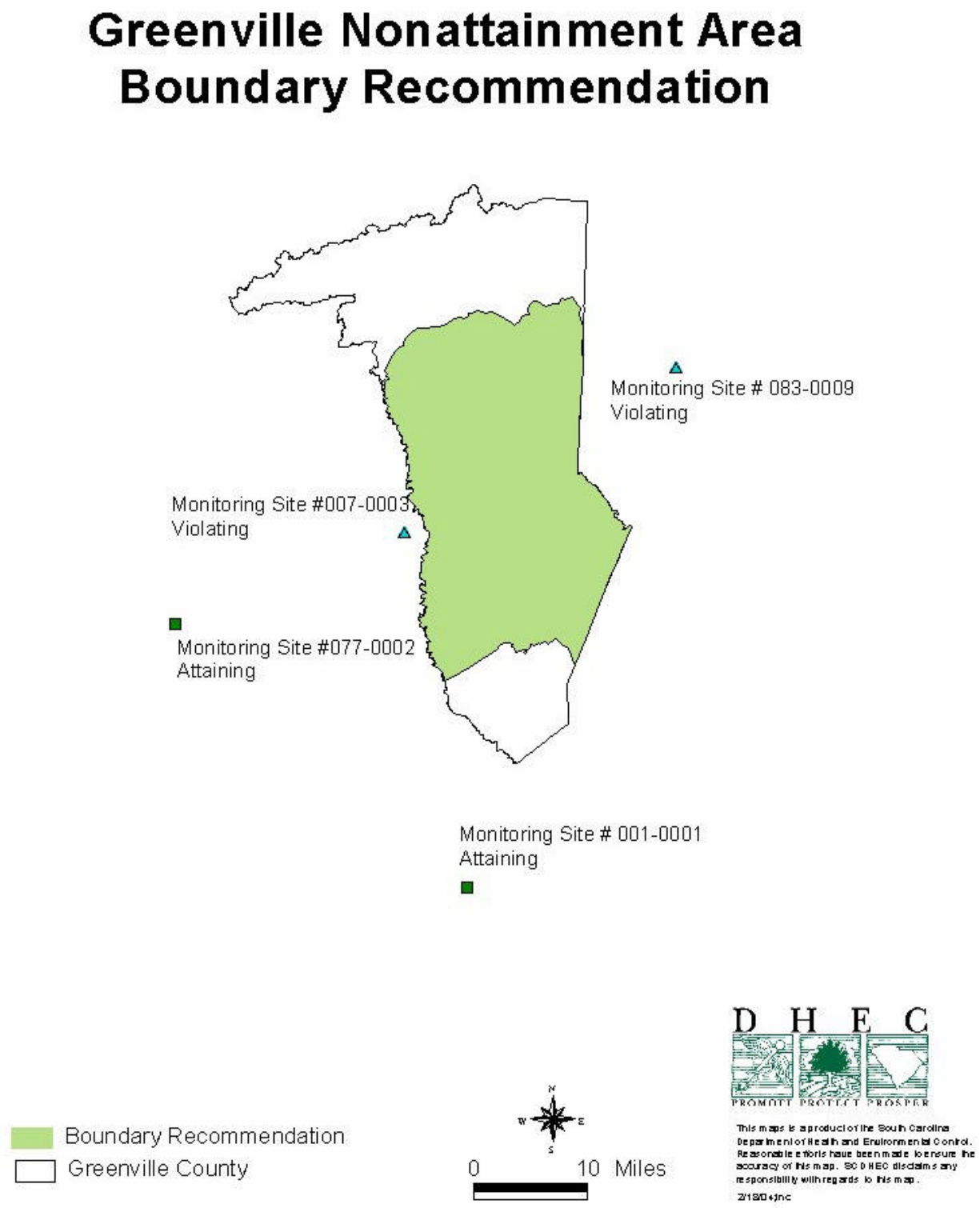
The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. Greenville County is located in the Piedmont Area. The line of demarcation runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional Boundaries

Figure I-1 shows the Department's recommended Greenville nonattainment area boundary.

Figure I-1



Starting point is on the west side of the Greenville County - Pickens County line at SC 183 (Farrs Bridge Rd) on the Saluda River.

Follows Saluda River - Greenville - Pickens county line north for 5.0 miles to North Saluda River.

Follows North Saluda River north and northeast into Greenville County for 7.2 miles to Bulls Creek.

Follows Bulls Creek east for 1.9 miles to Valley Lake.

From Valley Lake northeast for 0.4 miles to US 25 at Skyview Dr.

From US 25 at Skyview Dr. northeast for 1.3 miles to Mush Creek.

Follows Mush Creek east for 3.8 miles to South Tyger River.

Follows South Tyger River southeast for 1.9 miles to Wildcat Creek.

Follows Wildcat Creek northeast for 3.0 miles to intersection of S-23-114 (Donahue Rd) and S-23-277 (Jordan Rd.)

From intersection of S-23-114 (Donahue Rd.) and S-23-277 (Jordan Rd.) southeast for 0.5 miles to Pink Dill Mill Rd and Barnes Creek.

Follows Barnes Creek east for 3.6 miles to Middle Tyger River.

Follows Middle Tyger River southeast for 3.4 miles to the Greenville - Spartanburg county line.

Follows Greenville - Spartanburg county line southeast to intersection of Greenville - Spartanburg - Laurens county line.

Follows Greenville - Laurens county line southwest South Rabon Creek.

Follows South Rabon Creek northwest for 3.1 miles to S-23-55 (Fairview Rd.) at S-23-154 (McKelvey Rd.)

Follows S-23-154 (McKelvey Rd.) southwest for 0.6 miles to branch of Reedy River.

Follows branch of Reedy River west for 3.0 miles to Reedy River.

Follows Reedy River South 1.0 mile to Little Creek.

Follows Little Creek west for 4.9 miles to S-23-50 (Hopkins Rd.)

From S-23-50 (Hopkins Rd.) and Little Creek intersection southwest for 5.4 miles to Saluda River at gas pipeline on Greenville - Anderson county line just north of Kirby Green Rd.

Follows Saluda River - Greenville county line north back to starting point.

J. Level of Control of Emission Sources

Local Controls

In December 2002, Greenville County entered into an Early Action Compact (EAC) with the Department and EPA, Region 4. Each of the Upstate Counties (Greenville, Anderson, and Spartanburg) recognizes the value and importance of the health of the citizens and the related need for clean air; however, each recognizes that individual county planning is the quickest way to achieve results. Through its participation with the EAC, Greenville County is exploring countywide local control strategies to be implemented no later than April 2005. These strategies include designating an ozone action coordinator; encouraging the use of hybrid vehicles and alternative fuels; evaluating the use of high occupancy vehicle lanes; implementing open burning restrictions; and supporting Department statewide efforts. A complete listing of the emission reduction strategies for Greenville County was included in their December 2003 Progress Report and will be updated in March 2004.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department must submit, for EPA approval, state implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved.

The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed R.61-62.5, Standard 5.2, Control of Oxides of Nitrogen (NO_x) on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NO_x from these sources.

As part of the Early Action Compact (EAC) process another regulation that the Department is revising in an effort to reduce NO_x emissions statewide is R. 61-62.2, *Prohibition of Open Burning*. The most significant revisions to this regulation are as follows: deleting the exception for the burning of household trash, modifiying the exception for the burning of construction waste, and revising the exception for fires set for the purpose of firefighter training. The burning of household trash and construction waste presents health and environmental concerns for many communities. Elimination of the burning of household trash will result in a statewide reduction of 2,379 tons per year of NO_x and 11,896 tons per year VOC. While the revisions to the burning of construction waste and fires set for the purpose of firefighter training are more difficult to quantify, these revisions will decrease NO_x and VOC emissions from these activities.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing "fail-safe" provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina's forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard and yet are still willing to plan and work with other areas to implement controls to ensure early attainment of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the Early Action Compact (EAC), EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. We have implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts, distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia

and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995. In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's Title V permit program. EPA's review of South Carolina's program found that it was operating at a very high level of proficiency.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers, and power plants are modified or added. In areas with unhealthy air, NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

South Carolina has a SIP approved NSR program with its own NSR rules. Therefore, South Carolina has full authority to issue both major and minor NSR permits. Because there are no nonattainment areas in South Carolina at present, the only applicable major NSR permitting regulations are the Prevention of Significant Deterioration (PSD) regulations.

In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's NSR program. The EPA determined that South Carolina has a thorough and well-organized process for permitting sources and a good comprehension of regulatory requirements and policies.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998)*. The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan. [14]

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies use alternative fuels when operating alternative fuel vehicles.

[14] South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile. [15]

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road. [12]

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel

[15] U.S. EPA Office of Transportation and Air Quality

by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

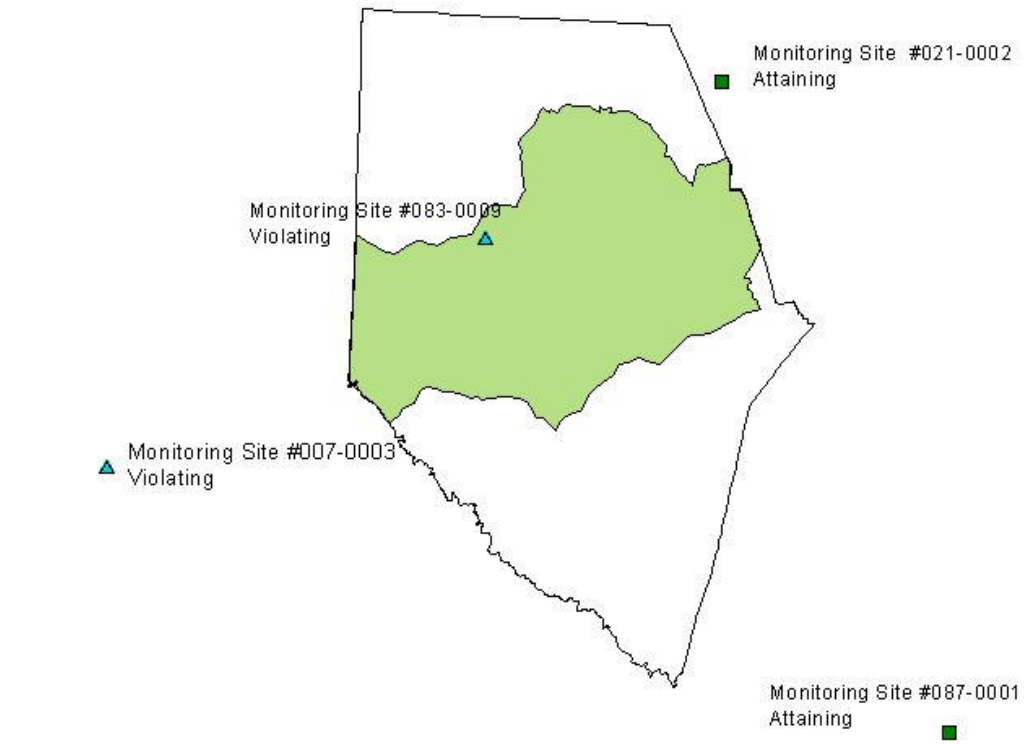
The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of 156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.

Spartanburg Nonattainment Area
Boundary Recommendation



Boundary Recommendation
Spartanburg County

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This maps is a product of the South Carolina Department of Health and Environmental Control. Reasonable efforts have been made to ensure the accuracy of this map. SCDHEC disclaims any responsibility with regards to this map.

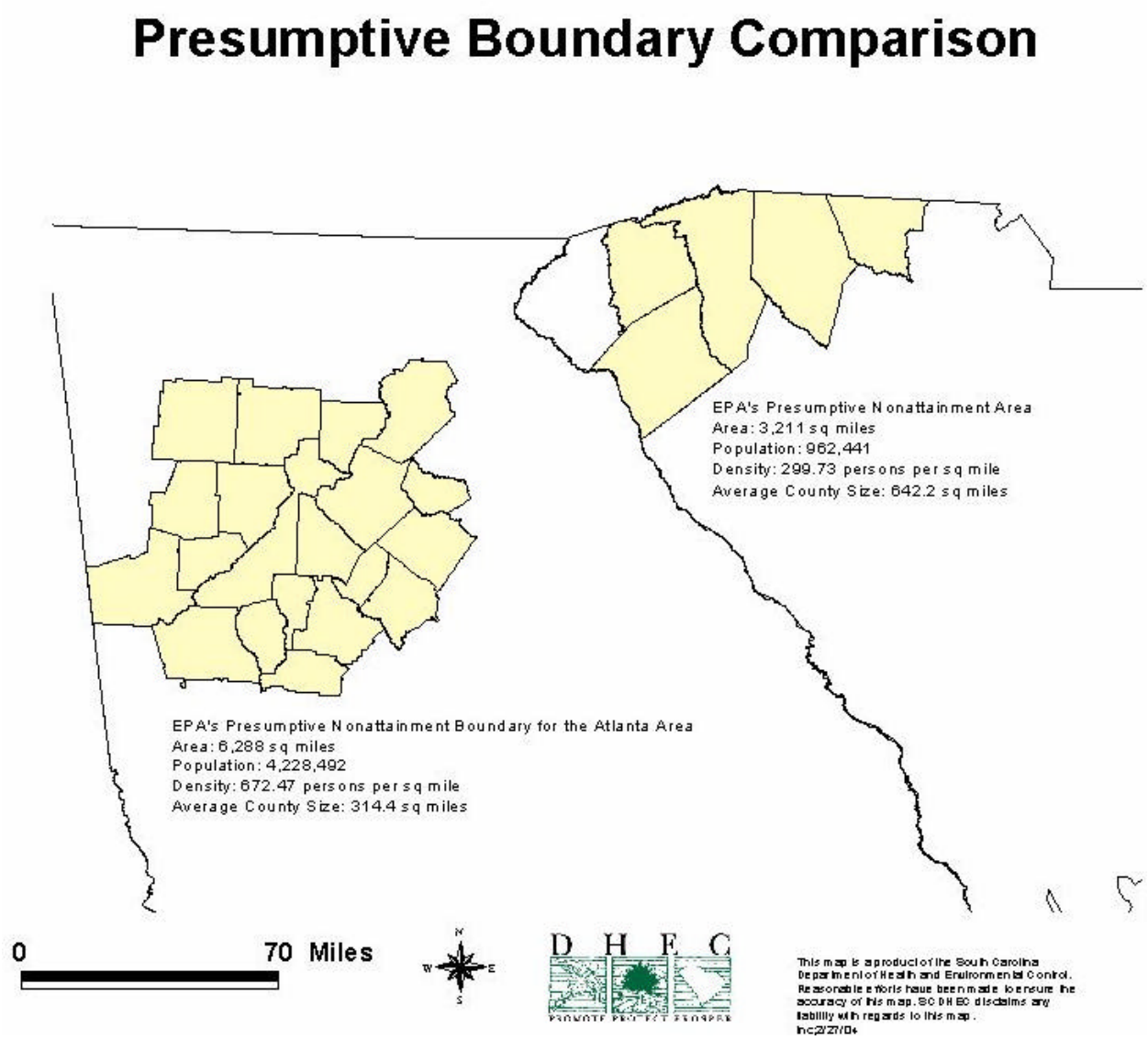
2/18/04 jnc

Spartanburg Nonattainment Area
Boundary Recommendation
Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, and later amended on November 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the Department's recommendations. Specifically, EPA's response indicated that the entire Greenville-Spartanburg-Anderson Metropolitan Statistical Area (MSA), which is based on the 1990 MSA definition, be designated as one nonattainment area. Such a recommendation would include the full counties of Anderson, Cherokee, Greenville, Pickens, and Spartanburg. The Department remains firm in its request that only portions of Anderson, Greenville, and Spartanburg Counties be designated and that their designations be independent of one another. The Department wishes to take this opportunity to again demonstrate why EPA's proposed modifications are inappropriate. The information and data provided below documents, on a technical basis, the Department's reasons for recommending only a **portion** of Spartanburg County as a **separate** nonattainment area.

Based on EPA presumptive boundary sizes, designation of a partial and separate nonattainment area for the Spartanburg boundary is appropriate. Figure 1 shows a side-by-side comparison of the recommended Atlanta, GA 8-hour ozone nonattainment area and the Greenville-Spartanburg-Anderson, SC MSA, (EPA's presumptive boundary for the upstate). Disturbing observations can be made, given that EPA has indicated that these will be the 8-hour ozone nonattainment boundaries for the respective areas. The five counties that make up the Greenville-Spartanburg-Anderson MSA average 641.8 square miles per county. In contrast, the Atlanta area includes 20 counties with an average size of 324.5 square miles per county. The comparative land areas and populations demonstrate a severe inequity in setting boundaries based on EPA's presumptive boundaries.

Figure 1



Based on 2003 MSA Definitions[1], designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. Spartanburg County is located in the Upstate Region of South Carolina. Upon analysis of the 2000 Census, including the population dynamics and commuting data, the Office of Management and Budget (OMB) decided to create three separate MSA in the Upstate Region, which indicates that these areas are reasonably detached. The 2003 OMB designations provide justification on a technical basis and helps to substantiate the Department's recommendation of separate nonattainment areas in the Upstate Region.

[1] The definitions for the 2003 MSAs were established by the June 6, 2003, Office of Management and Budget (OMB) Bulletin No. 03-04. This Bulletin establishes revised definitions for the Nation's Metropolitan Statistical Areas and recognizes 49 new Metropolitan Statistical Areas. In addition, the bulletin establishes definitions for two new sets of statistical areas: Micropolitan Statistical Areas and Combined Statistical Areas.

Based on the 2003 MSA definitions, the Upstate Region is divided into three distinct MSAs:

1. Anderson, SC MSA, (Anderson County, SC)
2. Greenville, SC MSA, (Greenville County, SC; Laurens County, SC; Pickens County, SC)
3. Spartanburg, SC MSA, (Spartanburg County, SC)

Two separate Combined Statistical Areas were also designated for the Upstate Region in 2003:

1. Greenville-Anderson-Seneca, SC Combined Statistical Area (Anderson, SC MSA; Greenville, SC MSA; Seneca, SC Micropolitan Statistical Area)
2. Spartanburg-Gaffney-Union, SC Combined Statistical Area (Gaffney, SC Micropolitan Statistical Area; Spartanburg, SC MSA; Union, SC Micropolitan Area)

These definitions reflect the Standards for Defining Metropolitan and Micropolitan Statistical Areas that the OMB published on December 27, 2000, in the Federal Register (65 FR 82228 - 82238), and the application of those standards to Census 2000 population and journey-to-work data. The general concept of a Metropolitan Statistical Area or a Micropolitan Statistical Area is that of an area containing a recognized population nucleus and adjacent communities that have a high degree of integrations with the nucleus. For these reasons, the OMB has saw fit to break apart the Greenville-Spartanburg-Anderson MSA.

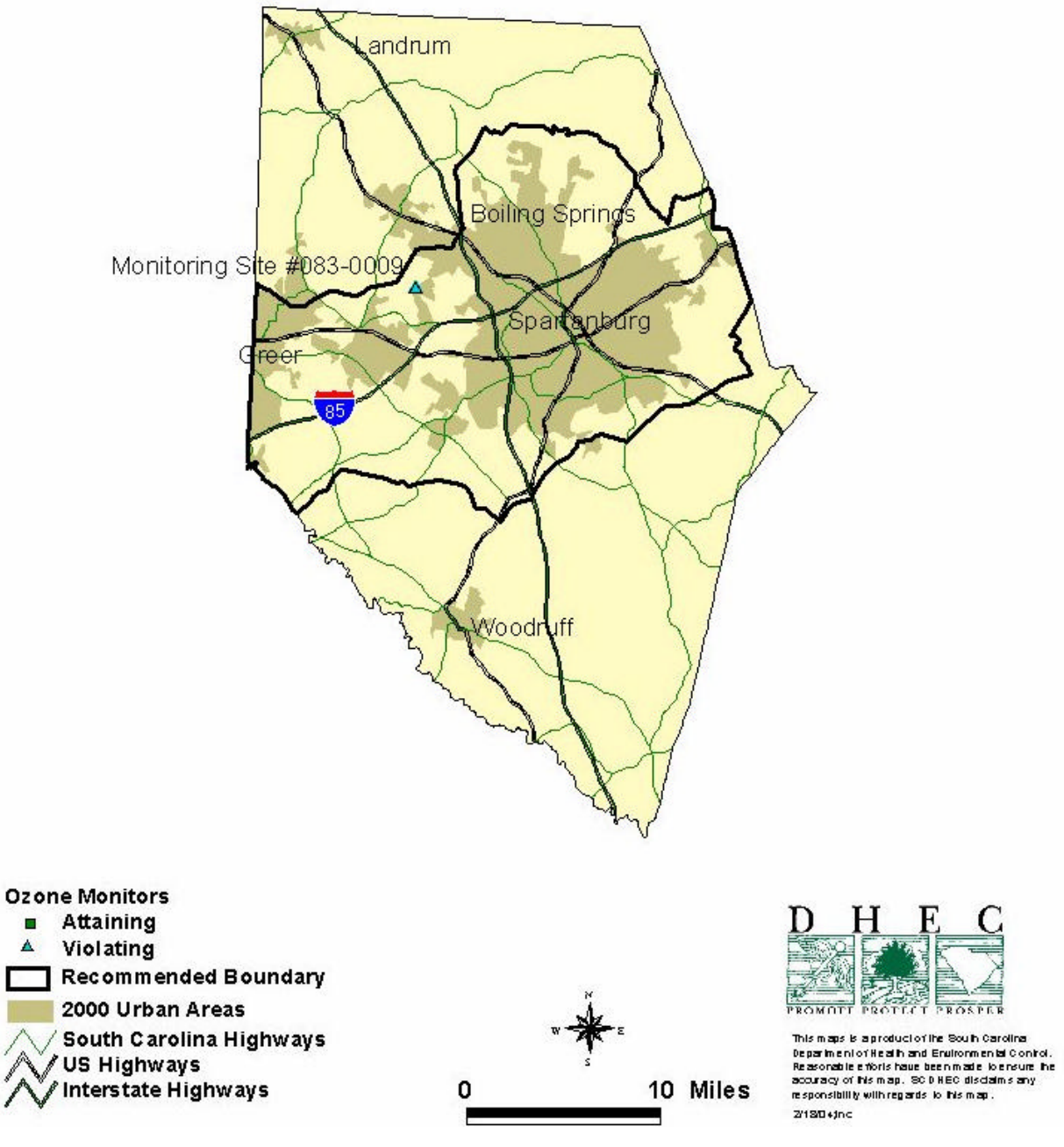
Furthermore, the Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as **serious** and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the violating monitors in the Upstate would be classified as marginal. The OMB has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. This was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to the public and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Throughout the rest of this summary of the Spartanburg nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

Based on low population and low population density, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The recommended boundary captures 64.53 percent of the population and 34.93 percent of the land area. Moreover, the boundary includes the majority of the most densely populated land areas within the county. In fact, approximately 19.6 percent of Spartanburg County's land area contains an estimated 80-85 percent of the county's urban population (see figure 2). Additionally, the recommended area, which covers a large percentage of the land area, captures this "contained" urban population, as well as the remaining rural population.

Figure 2

Spartanburg County 2000 Urban Area



Based on low employee percentages and wide distribution of economic sector employees, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The recommended boundary captures 87.17 percent of the manufacturing employees and 88.31 percent of the manufacturing establishments. Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Based on the point source emissions data, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The recommended boundary captures 98.8 percent of the total point source NO_x emissions and 90.4 percent of the total point source VOC emissions (see figures 3 & 4).

Figure 3: Spartanburg County
Point Source NO_x Emissions

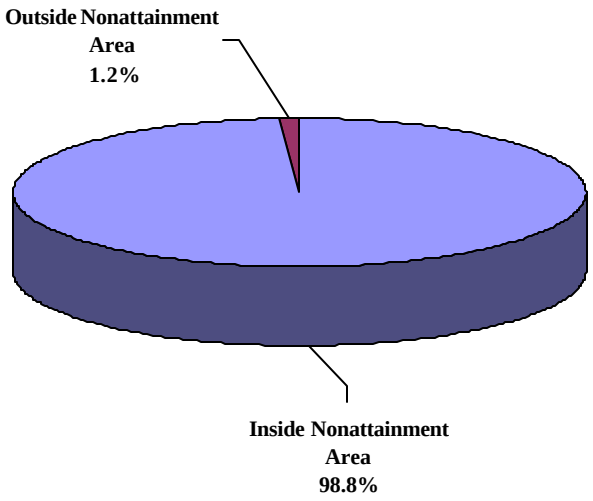
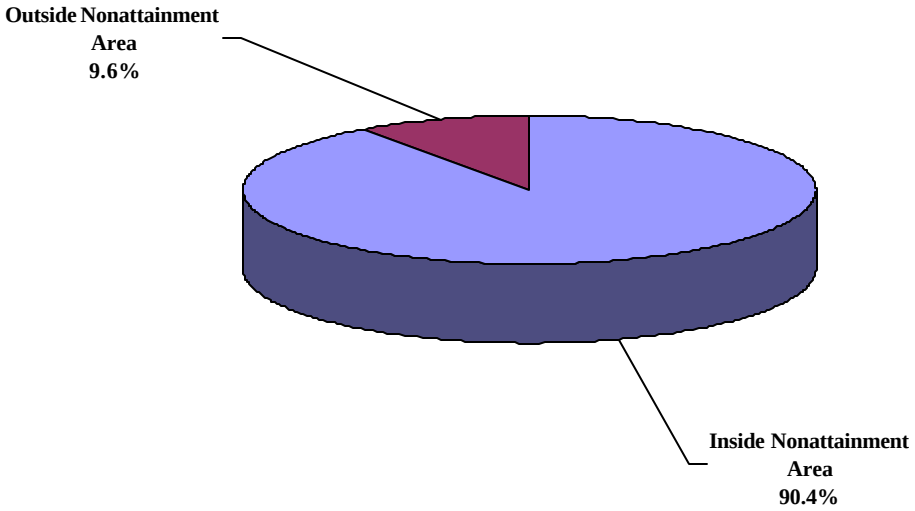


Figure 4: Spartanburg County
Point Source VOC Emissions



Based on commuter flow, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. According to the U.S. Census Bureau, 81.96 percent of workers in the Greenville-Spartanburg-Anderson MSA, work in the same county they live in. Spartanburg County accounts for 26.07 percent of the working population in the MSA. Workers living in Spartanburg and commuting to other counties in the MSA account for only 3.99 percent of the entire MSA worker flow.

Table 1:
County of Residence for Greenville -Spartanburg-Anderson MSA

County Worked In	Anderson	Cherokee	Greenville	Pickens	Spartanburg	Grand Total
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Out of County Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Based on South Carolina's commitment to "Cleaner Air Sooner," designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The South Carolina General Assembly passed and our Governor signed a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders

have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. These efforts demonstrate a commitment by all involved to protect and improve air quality for the citizens of South Carolina.

Based on South Carolina's statutory authority to require controls on sources regardless of location, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

Based on state and EPA modeling, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

Based on the 2001-2003 quality assured data, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. While the monitor in Spartanburg County is currently violating the 8-hour standard, it is bounded by attaining monitors in Cherokee, and Union Counties. Furthermore, the Department believes that the attaining, Cowpens monitor in Cherokee County is most representative of conditions in the northern portion of the county, thus justifying excluding the northern part of Spartanburg County. The monitor in Union County is most representative of southern Spartanburg County, which the Department is not recommending for nonattainment designation. Spartanburg County experienced only three exceedances of the ozone standard value (0.085ppm or higher) in 2003.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including Spartanburg County, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. South Carolina's citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

Based on the unique transportation and air quality planning programs, designation of a partial and separate nonattainment boundary for the Spartanburg area is appropriate. The Spartanburg Area Transportation Study (SPATS) performs transportation planning specific for the urbanized portion of Spartanburg County. Similarly, the Department has a regional environmental office located in Spartanburg County that monitors compliance of the regulated sources within Spartanburg, Cherokee, and Union counties.

Conclusion

The twelve factors listed below represent the most compelling reasons why the Department believes designating only **portions** of Spartanburg County as the nonattainment boundary for the Spartanburg area is appropriate. Additional data to support these factors, as well as other supporting documentation to address EPA's eleven criteria is attached.

1. EPA presumptive boundary sizes.
2. 2003 MSA definitions.
3. Low population and low population density.
4. Low percentage of employees in the recommended area.
5. Low point source emissions in the recommended area.
6. Low MSA commuter flow.
7. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
8. The Department's statutory authority to require controls on sources regardless of location.
9. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
10. Quality assured ozone-monitoring data indicating attainment around portions of the area not recommended.
11. Comprehensive Ozone Forecasting Program.
12. Unique transportation and air quality planning programs.

Supporting Documentation for
Spartanburg Nonattainment Area
Boundary Recommendation

Throughout the rest of this summary of the Spartanburg nonattainment area recommendation, any statistical analysis or evaluation of data will be conducted in comparison to the EPA's presumptive nonattainment area, which includes Greenville, Spartanburg, Anderson, Pickens, and Cherokee Counties (Greenville-Spartanburg-Anderson MSA).

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in Spartanburg County and adjacent counties, the Department utilized the estimated 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, biogenic, and off-road and on-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for Spartanburg County and surrounding South Carolina counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for Spartanburg and Adjacent Counties*

*** Order of bars corresponds with order of counties in legend.**

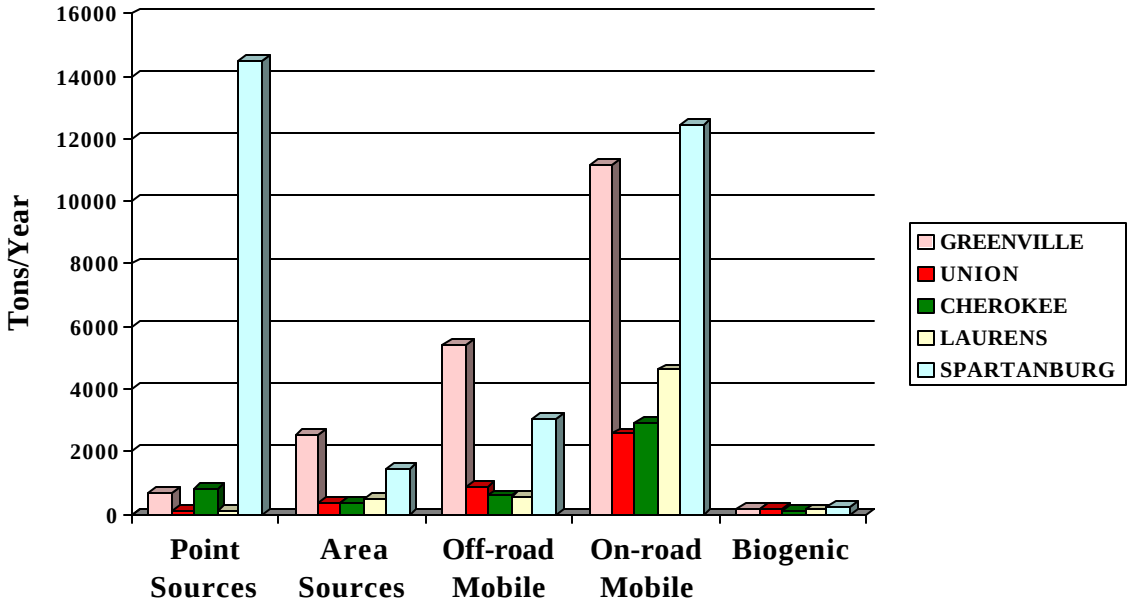
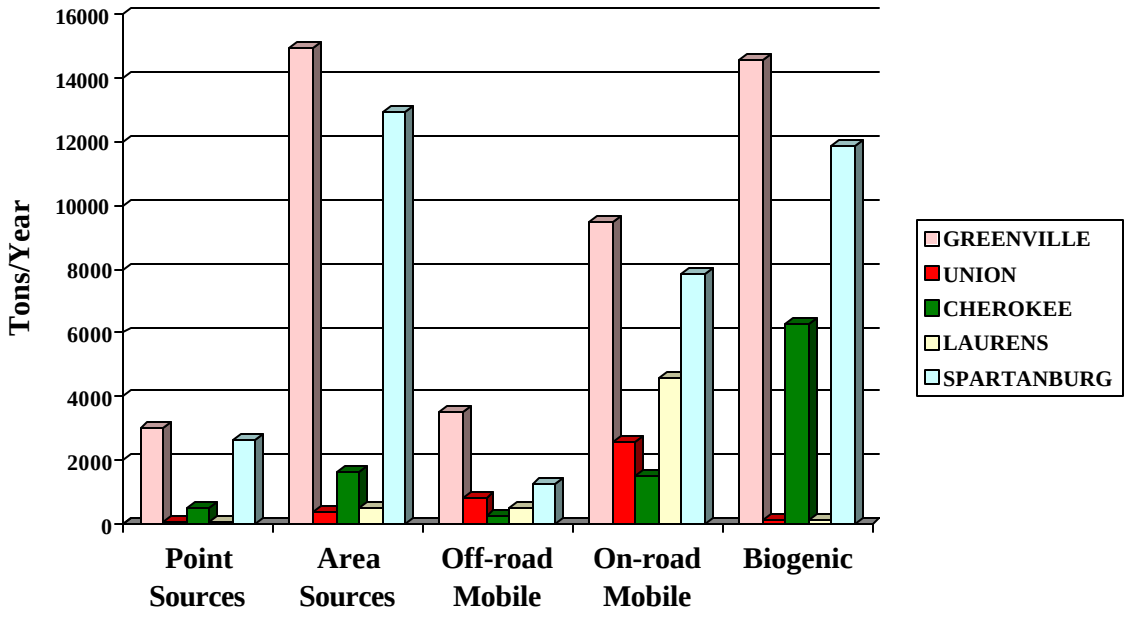


Figure A-2: VOC Sources for Spartanburg and Adjacent Counties
*** Order of bars corresponds with order of counties in legend.**



The Department currently has one ozone-monitoring site in Spartanburg County; the monitor indicates nonattainment of the air quality standard. Spartanburg County is bounded by attaining monitors in Cherokee and Union Counties. Additional air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000, Spartanburg County's population was 253,791, and covering 811 square miles, Spartanburg County had a population density of 313 persons per square mile. The county was nearly two-thirds urban, as 64.8 percent of the county's population, or 164,341 people, lived mostly in urbanized areas. The recommended area captures 64.53% of the population, or 163,761 people, and has a population density of 577.1 persons per square mile. Figure B-1 shows that the recommended area contains nearly all of the populated areas in Spartanburg County; the boundary clearly excludes the least populated areas in Spartanburg County. Areas North of the boundary being mountainous and areas South of the boundary being predominantly rural, it is reasonably assumed that the population and population density, as well as the number of businesses, both now and in the future are captured by the recommended area boundary.

Figure B-1

Spartanburg County Population per Square Mile

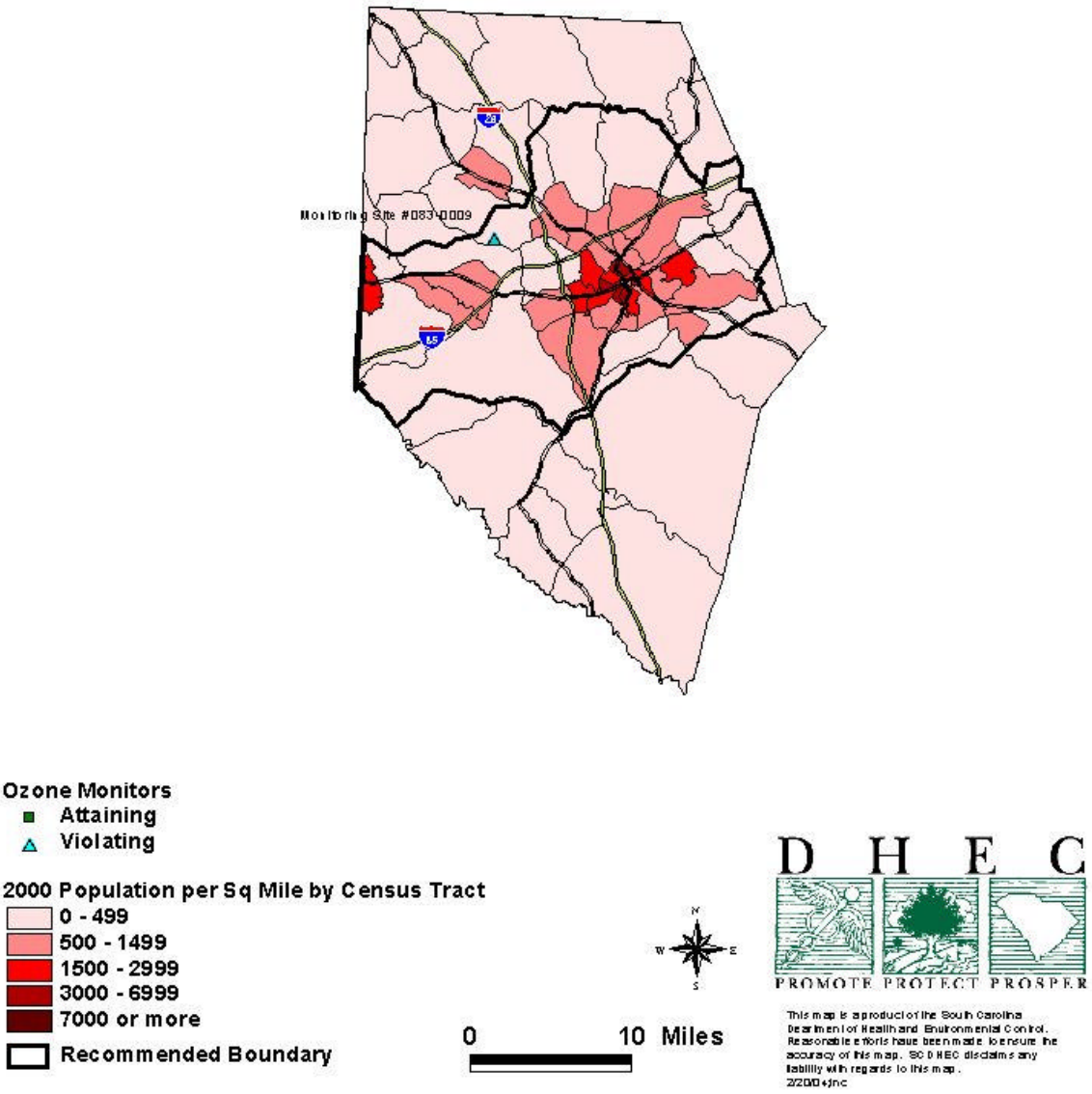


Figure B-2 shows the urban areas for Spartanburg County. Approximately 19.6% of Spartanburg County's land area encompasses an estimate 80-85% of the urban population.

Figure B-2

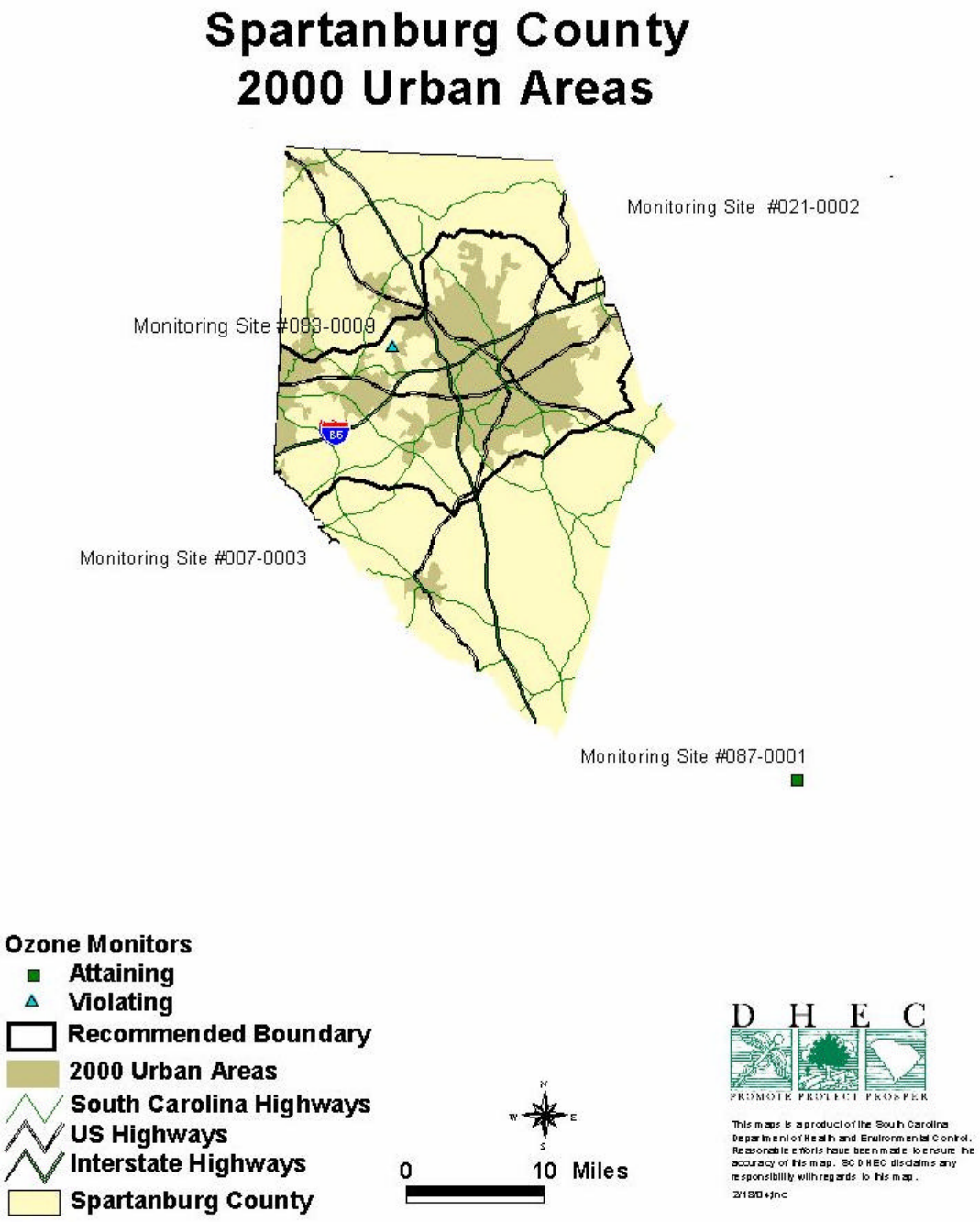


Table B-1 contains the population and land area data for Spartanburg County and the recommended area for the year 2000.

Table B-1 Population, Land Area, and Urban/Rural Population, 2000			
	Spartanburg County	**Recommended Area**	**% Captured by Recommended Area**
Population[2]	253,791	163,761	64.53%
Land Area (Square Miles)[1]	811	283.8	34.93%
Persons per Square Mile[1]	313.0	577.1	
Urban Population[3]	164,341		
% Urban Population[2]	64.8%		80-85%[4]
Rural Population[2]	89,450		
% Rural Population[2]	35.2%		

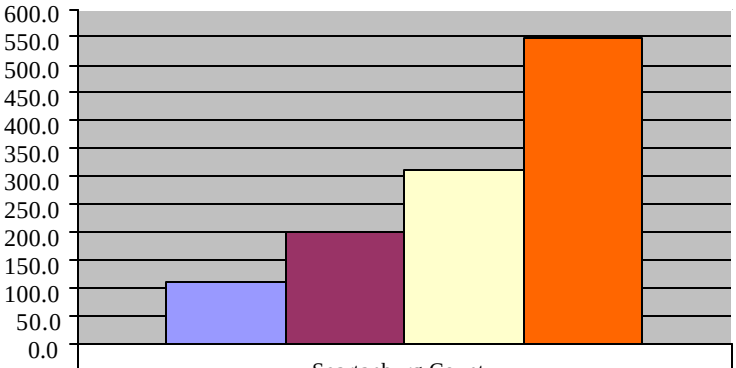
Table B-2 contains the population and land area for Anderson, Greenville, and Spartanburg Counties and the recommended areas for the year 2000. The recommended areas capture 83.04% of the counties' population and 54.32% of the counties' land area. Also, based on the population density and urban area maps for those counties, the recommended areas contain the densely populated areas and the vast majority of the populated areas.

Table B-2 Population, Land Area, and Urban/Rural Population, 2000							
	Population	**Land Area (Square Miles)**	**Persons per Square Mile**	**Urban Population**	**% Urban Population**	**Rural Population**	**% Rural Population**
Greenville County	379,616	790	480.5	315,095	83.00%	64,521	17.00%
Recommended Area	359,875	474.4	758.6				
% Captured by Recommended Area	94.80%	60.05%					
Spartanburg County	253,791	811	313	164,341	64.80%	89,450	35.20%
Recommended Area	163,761	283.8	577.1				
% Captured by Recommended Area	64.53%	34.93%					
Anderson County	165,740	718	230.8	96,680	58.30%	69,060	41.70%
Recommended Area	139,961	502.01	278.8				
% Captured by Recommended Area	84.45%	69.92%					
3 County Total	799,147	2,319	344.61				
3 Recommended Areas Total	663,597	1,259.71	526.79				
% captured by Total 3 recommended Areas	83.04%	54.32%					

[2] Data provided by US Census: 2000. The data for the recommended area was obtained from the SCDOT.
[3] Data provided by SC Office of Research and Statistics.
[4] Estimated.

Figures B-3 through B-5 show the population density, the population, and land area, respectively, distribution relative to the full county and the recommended area.

Figure B-3: Population Density, 2000
(Persons per Square Mile)

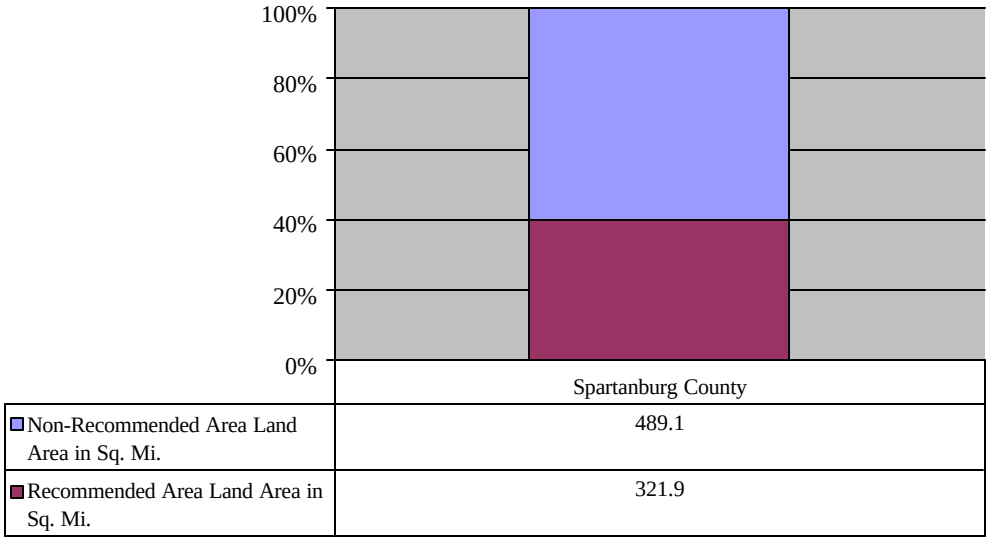


	Spartanburg County
County Rural Persons per Sq. Mi.	110.2
County Urban Persons per Sq. Mi.	202.8
Total County Persons per Sq. Mi.	313.0
Recommended Area Persons per Sq. Mi.	549.2

Figure B-4:
Population Distribution
Relative to Recommended Area Boundaries, 2000

	Spartanburg County
Outside Recommended Area	76.995
Inside Recommended Area	176.796

Figure B-5: Land Area Distribution in Spartanburg County According to Recommended Area Boundaries, 2000



Spartanburg County has various industry and businesses located throughout the county. Manufacturing is the county's largest employment sector as some 37,548 persons are employed at 385 manufacturing establishments throughout the county. The Spartanburg County portion of the recommended area contains 87.17% of the county's manufacturing employees and 88.31% of the county's manufacturing establishments. Retail trade is the county's second largest sector of employment as some 15,095 persons work at some 1,123 retail businesses throughout the county. Tables B-3 and B-4 contain the manufacturing and retail trade data for Spartanburg County and the Spartanburg Nonattainment Area.

Table B-3:
Manufacturing Patterns in, 2000[5]

Spartanburg County	Recommended Area	County	% in Recommended Area
Employees	32,730	37,548	87.17%
Establishments	340	385	88.31%

Table B-4:
Retail Trade Patterns, 2000[6]

	Number of Employees	Number of Establishments
Spartanburg County	15,095	1,123

[5] Data from Bureau of Air Quality "SC Company File1.xls," based on 2001.
[6] Data provided by US Census: 2000.

Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the majority of the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

Table B-5 shows both the number of employees and establishments for Spartanburg County according to the Census 2000 North American Industry Classification System (NAICS) database and is ranked in order according to the number of employees. The largest employment sector in Spartanburg County is manufacturing.[7] The second largest is Retail trade while the third is Health care and social assistance.

It should be noted that the data in Table B-5 differs from the data in the previous tables due to the source of the data.

Table B-5:
MSA Employees per Classification, NAICS, 2001

County	Industry Code Description	Number of Employees	Total Establishments	Rank based on Number of Employees from greatest to least
Spartanburg	Manufacturing	32,668	502	1
Spartanburg	Retail trade	14,083	1,089	2
Spartanburg	Health care and social assistance	13,745	457	3
Spartanburg	Admin, support, waste mgt, remediation services	12,036	327	4
Spartanburg	Accommodation & food services	8,809	491	5
Spartanburg	Construction	6,524	681	6
Spartanburg	Wholesale trade	6,121	475	7
Spartanburg	Other services (except public administration)	5,414	693	8
Spartanburg	Management of companies & enterprises	4,658	45	9
Spartanburg	Professional, scientific & technical services	3,349	410	10
Spartanburg	Transportation & warehousing	3,099	195	11
Spartanburg	Finance & insurance	2,657	391	12
Spartanburg	Educational services	2,043	44	13
Spartanburg	Information	1,326	74	14
Spartanburg	Auxiliaries (exc corporate, subsidiary & regional mgt)	971	19	15
Spartanburg	Real estate & rental & leasing	968	225	16
Spartanburg	Arts, entertainment & recreation	656	69	17
Spartanburg	Mining	132	4	18

[7] Data provided by US Census: 2000.

Table B-5: MSA Employees per Classification, NAICS, 2001				
County	**Industry Code Description**	**Number of Employees**	**Total Establishments**	**Rank based on Number of Employees from greatest to least**
Spartanburg	Forestry, fishing, hunting, and agriculture support	98	19	19
Spartanburg	Unclassified establishments	20-99	50	*
Spartanburg	Utilities	100-249	6	*
** The number of employees not available or the number of employees was reported as a range.*				

Table B-6 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 7.58% of the employees in the MSA, and 24.77% of those employees worked in Spartanburg County while 45.95% of those employees worked in Greenville County. The largest employment in the MSA is in manufacturing (23.45%) and retail trade (11.66%); of those two classifications Spartanburg County employed 29.69% and 25.74%, respectively. In fact, in 2001 Spartanburg County generally contained the second most employees in each industry code category as seen in Table B-6.

Table B-6: MSA Employees per Classification, NAICS, 2001						
Industry Code Description	**% in MSA**	**Greenville County**	**Spartanburg County**	**Anderson County**	**Pickens County**	**Cherokee County**
Accommodation & food services	7.58%	45.95%	24.77%	14.90%	9.90%	4.47%
Admin, support, waste mgt, remediation services	9.42%	62.51%	27.23%	6.12%	2.77%	1.36%
Arts, entertainment & recreation	0.90%	61.12%	15.60%	12.44%	8.28%	2.57%
Auxiliaries (exc corporate, subsidiary & regional mgt)	0.86%	68.57%	23.95%	*	*	7.47%
Construction	9.38%	67.53%	14.82%	8.76%	5.15%	3.74%
Educational services	1.80%	59.91%	24.18%	5.79%	5.88%	4.24%
Finance & insurance	3.00%	64.43%	18.87%	9.71%	4.74%	2.25%
Forestry, fishing, hunting, and agriculture support	0.03%	*	63.64%	*	36.36%	*
Health care and social assistance	9.61%	42.90%	30.47%	17.26%	6.80%	2.57%
Information	1.83%	71.95%	15.43%	6.59%	4.61%	1.42%
Management of companies & enterprises	3.20%	61.85%	30.98%	1.41%	5.76%	*
Manufacturing	23.45%	37.62%	29.69%	17.14%	8.15%	7.41%
Mining	0.03%	*	100.00%	*	*	*
Other services (except public administration)	4.42%	48.31%	26.12%	13.79%	7.80%	3.98%

Table B-6: MSA Employees per Classification, NAICS, 2001						
Industry Code Description	**% in MSA**	**Greenville County**	**Spartanburg County**	**Anderson County**	**Pickens County**	**Cherokee County**
Professional, scientific & technical services	3.58%	68.45%	19.94%	6.91%	3.70%	1.01%
Real estate & rental & leasing	1.51%	69.36%	13.65%	6.11%	9.49%	1.38%
Retail trade	11.66%	45.42%	25.74%	15.70%	8.46%	4.67%
Transportation & warehousing	2.65%	61.86%	24.91%	6.91%	0.87%	5.45%
Unclassified establishments	0.04%	79.03%	*	16.67%	*	4.30%
Utilities	0.27%	58.75%	*	23.67%	11.17%	6.41%
Wholesale trade	4.78%	52.72%	27.30%	10.66%	5.23%	4.09%
** The number of employees not available or the number of employees was reported as a range.*						

Given that the vast majority of the manufacturing establishments and employees in the county are located in the recommended area, that the county is predominantly urban, and that the recommended area contains the majority of the urbanized areas in the county, it is reasonably assumed that the majority of the retail trade employees and establishments in the county, as well as other businesses, are contained within the recommended area boundary.

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

The North Spartanburg Fire Station monitor is surrounded by attaining monitors in Cherokee and Union Counties. The Department's Division of Air Quality Analysis, which is responsible for monitor siting, and data gathering, believes that while the monitor in Spartanburg County is in nonattainment, it is not representative of the entire county. The attaining monitor in Union County, which is sited in a rural portion of the state in close proximity to Spartanburg County, is better representative of southern, rural Spartanburg County and the monitor in Cherokee County is representative of northern Spartanburg County.

The Spartanburg County ozone monitoring station (North Spartanburg Fire Station 45-083-0009) is located off John Dodd Road, approximately 265 meters above sea level. The surrounding area of the monitoring site is residential. According to the South Carolina Department of Transportation (SCDOT), traffic counts for 1993 show five hundred (500) vehicles per day accessed the road. The site has been in operation since 1990 and measurement of ozone concentration runs mid-March through mid-November. The monitoring objective for this site is to measure the maximum ozone concentration.

The Cherokee County ozone monitoring station (Cowpens National Battle Ground 045-021-0002) is located off Highway 11, approximately 296 meters above sea level. The surrounding area of the monitoring site is forest. According to SC DOT, traffic counts for 1993 show one thousand (1,000) vehicles per day accessed the road. The site has been in operation since 1988 and measurement of ozone concentrations has run continuously since April of that year. The monitoring objective for this site is to measure concentrations for upwind background.

The Union County ozone monitoring station (Delta 045-087-0001) is located off Highway 121,

approximately113 meters above sea level. The surrounding area of the monitor is rural. According to SC DOT, traffic counts for 1993 show twenty-five (25) vehicles per day accessed the road. The site has been in operation since 1983, but the ozone monitoring station only runs mid-March through mid-November. The monitoring objective for this site is to measure ozone concentration for general background.

Table C-1 presents the 2001 through 2003 quality assured 8-hour ozone monitoring data for Spartanburg, Cherokee, and Union Counties. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the Cowpens National Battleground, and Delta monitors indicate attainment with the 8-hour ozone standard.

Table C-1:
Spartanburg Area Ozone Monitoring Data

County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2001	2002	2003	
Spartanburg	45-083-0009	North Spartanburg Fire Station	0.090	0.093	0.079	0.087
Cherokee	45-021-0002	Cowpens National Battleground	0.080	0.093	0.079	0.084
Union	45-087-0001	Delta	0.079	0.085	0.078	0.080

Table C-2 contains the previous three years daily maximum ozone concentration above 0.084 ppm. A period in the box indicates no exceedance occurred on that date.

Table C-2:
Spartanburg Area Ozone Values

Date of Exceedance	North Spartanburg Fire Station Exceeding Value	Cowpens National Battleground Exceeding Value	Delta Exceeding Value
05/04/2001	0.085	.	.
05/05/2001	0.090	.	.
05/30/2001	0.085	.	.
06/18/2001	0.088	.	.
06/20/2001	0.094	.	.
07/12/2001	0.093	.	.
07/16/2001	0.086	.	.
07/18/2001	0.090	.	.
08/14/2001	.	0.091	.
08/23/2001	0.089	.	.
08/25/2001	.	0.085	.
2001 Total Hits	**9**	**2**	**0**
05/24/2002	0.098	.	0.088
05/25/2002	0.085	.	.
06/03/2002	0.088	.	.
06/10/2002	0.088	0.091	.
06/11/2002	0.107	.	.

Table C-2: Spartanburg Area Ozone Values			
Date of Exceedance	**North Spartanburg Fire Station Exceeding Value**	**Cowpens National Battleground Exceeding Value**	**Delta Exceeding Value**
06/12/2002	.	0.086	.
06/13/2002	0.093	0.090	0.096
06/18/2002	0.085	.	.
06/19/2002	0.092	.	.
06/20/2002	0.086	.	.
06/29/2002	.	0.085	.
07/02/2002	.	0.089	.
07/03/2002	0.086	0.088	.
07/06/2002	0.088	0.085	.
07/08/2002	0.091	0.093	.
07/09/2002	0.087	.	.
07/17/2002	.	0.102	.
07/18/2002	.	0.085	.
07/31/2002	.	0.090	.
08/01/2002	0.085	.	.
08/02/2002	.	0.090	.
08/05/2002	.	0.096	.
08/09/2002	0.090	0.087	.
08/10/2002	0.093	.	.
08/11/2002	0.093	.	.
08/12/2002	0.100	.	.
08/21/2002	.	0.098	0.085
08/23/2002	.	0.085	0.086
09/05/2002	0.093	.	.
2002 Total Hits	**19**	**16**	**4**
06/26/2003	0.092	0.087	.
08/26/2003	0.094	.	.
08/27/2003	0.085	.	.
2003 Total Hits	**3**	**1**	**0**

D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in Spartanburg County and the other four MSA counties based on the 1999 NO_x point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Spartanburg County has 57 NO_x point sources in operation and 48 of these point sources are located within the proposed nonattainment area. Facilities in Spartanburg County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Spartanburg County are located within the proposed boundary. Spartanburg County accounts for 44.02% of the total MSA NO_x point source emissions.

Table D - 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	NO2	3,881.99
Spartanburg	Kosa: Arteva Specialties	2060-0345	NO2	258.74
Spartanburg	Spartanburg Regional Medical Center	2060-0142	NO2	32.72
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	NO2	28.21
Spartanburg	BMW Manufacturing Corp	2060-0230	NO2	27.58
Spartanburg	Michelin: Spartanburg	2060-0065	NO2	23.95
Spartanburg	Springs Industries: Lyman	2060-0018	NO2	22.93
Spartanburg	Kohler Co: Plastics Plant	2060-0071	NO2	21.66
Spartanburg	Blackman Uhler Chemical	2060-0029	NO2	17.85
Spartanburg	Intelicoat Technologies	2060-0182	NO2	7.80
Spartanburg	Exopack LLC	2060-0075	NO2	7.76
Spartanburg	BASF: Spartanburg	2060-0068	NO2	7.51
Spartanburg	Bayer Corp: Wellford	2060-0055	NO2	7.41
Spartanburg	American Fast Print	2060-0026	NO2	7.10
Spartanburg	* National Starch & Chemical Company	2060-0085	NO2	7.07
Spartanburg	Milliken Chemical: Dewey	2060-0001	NO2	6.87
Spartanburg	Tietex International Ltd	2060-0147	NO2	6.63
Spartanburg	Saxon Fibers LLC	2060-0039	NO2	6.44
Spartanburg	* Sloan Construction: Pacolet	9900-0091	NO2	6.30
Spartanburg	Reeves Brothers: Fairforest	2060-0019	NO2	5.64
Spartanburg	Asphalt Contractors LLC	9900-0152	NO2	4.94
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	NO2	4.61
Spartanburg	Sloan Construction: Lyman	9900-0115	NO2	4.60
Spartanburg	Milliken: Research	2060-0022	NO2	4.34
Spartanburg	* Inman Mills: Ramey Plant	2060-0271	NO2	3.87
Spartanburg	F & R Asphalt: Plant #1	9900-0090	NO2	3.34
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	NO2	3.24
Spartanburg	* ISG Resources Inc	2060-0025	NO2	3.10
Spartanburg	Mary Black Memorial Hospital	2060-0121	NO2	3.10
Spartanburg	Inman Mills: Saybrook	2060-0042	NO2	2.71
Spartanburg	Goodyear: Spartanburg	2060-0035	NO2	2.33
Spartanburg	* Mohawk: Landrum	2060-0012	NO2	2.19
Spartanburg	L:ubrizol Form Control Additives	2060-0069	NO2	2.12
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	NO2	2.04
Spartanburg	Steris-Isomedix Services	2060-0180	NO2	1.78
Spartanburg	Spartanburg Automotive Products	2060-0007	NO2	1.45
Spartanburg	Spartanburg Stainless Products	2060-0348	NO2	1.45
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	NO2	1.40
Spartanburg	Hoke Inc	2060-0175	NO2	1.30
Spartanburg	* Bommer Industries: Landrum	2060-0119	NO2	1.22

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Spartanburg	Palmetto Vermiculite	2060-0181	NO2	1.22
Spartanburg	King Asphalt: # 4	9900-0352	NO2	1.21
Spartanburg	TNS Mills: Spartanburg	2060-0079	NO2	1.17
Spartanburg	Phelps Dodge	2060-0086	NO2	0.83
Spartanburg	Asphalt Associates	9900-0023	NO2	0.77
Spartanburg	MEMC Electronic Materials	2060-0070	NO2	0.59
Spartanburg	* Appalachian Engineered Hardwood Flooring	2060-0299	NO2	0.47
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	NO2	0.29
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	NO2	0.24
Spartanburg	Donnelley, RR & Sons	2060-0081	NO2	0.13
Spartanburg	Engelhard: Duncan	2060-0266	NO2	0.10
Spartanburg	* Mack Molding Co	2060-0061	NO2	0.09
Spartanburg	* Piedmont Dielectrics	2060-0108	NO2	0.06
Spartanburg	Eastman Chemical Company	2060-0051	NO2	0.05
Spartanburg	Leigh Fibers Inc	2060-0084	NO2	0.04
Spartanburg	Piedmont Concrete: Duncan	9900-0282	NO2	0.02
Spartanburg	Metromont: Spartanburg I-85	2060-0038	NO2	0.01
	1999 Spartanburg Co. Total			**4,454.58**
	Emissions in Nonattainment Area-Total			**4,400.29**
	Emissions in Nonattainment Area-Percent			**98.8%**
Anderson	Duke Energy:Lee	0200-0004	NO2	3,556.57
Anderson	Owens Corning:Anderson	0200-0031	NO2	302.91
Anderson	Milliken:Pendleton	0200-0011	NO2	69.28
Anderson	Isola Laminate Systems Pendleton	0200-0058	NO2	44.74
Anderson	Michelin:Sandy Spring	0200-0018	NO2	22.49
Anderson	Vytech	0200-0050	NO2	17.64
Anderson	Milliken:Cushman	0200-0032	NO2	15.12
Anderson	Hexcel Schwebel Inc	0200-0036	NO2	11.33
Anderson	Anderson Medical Center	0200-0061	NO2	10.73
Anderson	Springs Industries:Wamsutta	0200-0014	NO2	9.83
Anderson	BASF:Anderson	0200-0005	NO2	9.71
Anderson	Sloan Construction:Anderson	9900-0113	NO2	9.27
Anderson	Blair Mills LP	0200-0034	NO2	6.69
Anderson	Pickens Construction Inc	9900-0041	NO2	5.96
Anderson	LaFrance:Mt Vernon	0200-0009	NO2	5.67
Anderson	Ashmore:#2	9900-0045	NO2	4.83
Anderson	Hydro Aluminum North America	0200-0127	NO2	4.65
Anderson	Maxxim Medical	0200-0033	NO2	4.28
Anderson	F&R Ashphalt:Plant #2	9900-0107	NO2	4.02

Table D- 1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Anderson	Plastic Omnium	0200-0117	NO2	3.32
Anderson	Mount Vernon Mills:Williamston	0200-0045	NO2	2.91
Anderson	Apache Products:Anderson	0200-0048	NO2	2.12
Anderson	Transmontaigne:Belton-SE	0200-0056	NO2	2.02
Anderson	Chiquola Industrial Products:Chiquola	0200-0047	NO2	1.00
Anderson	Frigidaire:Anderson	0200-0084	NO2	1.00
Anderson	Ryobi Technologies Inc	0200-0043	NO2	0.59
Anderson	Goodman Conveyor	0200-0093	NO2	0.55
Anderson	Taylor Pallets Inc	0200-0153	NO2	0.40
Anderson	Griffin Thermal Products	0200-0147	NO2	0.18
Anderson	Fibertech Corp	0200-0095	NO2	0.13
Anderson	Metromont:Belton	0200-0102	NO2	0.10
Anderson	Clemson University:ARF	0200-0096	NO2	0.01
Anderson	Thomas Concrete:Anderson	9900-0332	NO2	0.01
	1999 Anderson Co. Total			**4,130.06**
Cherokee	Broad River Energy LLC	0600-0076	NO2	294.18
Cherokee	Milliken:Magnolia	0600-0007	NO2	244.06
Cherokee	Cherokee Cogeneration	0600-0060	NO2	90.61
Cherokee	Linpac Paper	0600-0044	NO2	57.28
Cherokee	Timken Co	0600-0009	NO2	27.69
Cherokee	Nestle Frozen Foods	0600-0033	NO2	25.88
Cherokee	SC Pipeline:Blacksburg	0600-0065	NO2	23.14
Cherokee	Boren Clay Products Blacksburg Plant	0600-0005	NO2	10.83
Cherokee	Industrial Minerals	0600-0039	NO2	3.34
Cherokee	Core Materials Corp	0600-0068	NO2	2.79
Cherokee	Hamrick Industries:Plant 5	0600-0036	NO2	1.74
Cherokee	Springfield LLC:Limestone	0600-0014	NO2	1.62
Cherokee	TNS Mills:Gaffney	0600-0054	NO2	1.55
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	NO2	1.43
Cherokee	Hamrick Mills:Musgrove	0600-0062	NO2	1.36
Cherokee	IFCO ICS-South Carolina Inc	0600-0055	NO2	0.94
Cherokee	Milliken Chemical:Cypress	0600-0040	NO2	0.20
	1999 Cherokee Co. Total			788.64
Greenville	Bob Jones University	1200-0245	NO2	58.54
Greenville	US Finishing	1200-0009	NO2	48.73
Greenville	Kemet:Mauldin	1200-0104	NO2	46.97
Greenville	GE:Greenville	1200-0094	NO2	46.95
Greenville	Michelin:Greenville	1200-0039	NO2	41.31

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Greenville	Carustar:Taylors	1200-0013	NO2	32.86
Greenville	JPS:Slater	1200-0017	NO2	31.55
Greenville	Hitachi Electronic	1200-0203	NO2	30.69
Greenville	Mitsubishi Polyester Film LLC	1200-0026	NO2	29.72
Greenville	Milliken:Gayley Mill	1200-0029	NO2	27.25
Greenville	3M:Film Plant	1200-0073	NO2	24.19
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	NO2	24.03
Greenville	Greenville Hospital System:Energy Plant	1200-0145	NO2	14.05
Greenville	Rexroth:Southchase SE Court	1200-0326	NO2	13.59
Greenville	Specialty Shearing	1200-0123	NO2	10.61
Greenville	Ashmore:#1	9900-0013	NO2	6.97
Greenville	Ethox Chemicals	1200-0171	NO2	6.82
Greenville	Nutricia: Greenville	1200--127	NO2	4.44
Greenville	Dan River:White Horse	1200-0196	NO2	4.16
Greenville	St Francis Hospital	1200-0139	NO2	4.01
Greenville	Columbia Farms:Greenville	1200-0232	NO2	3.20
Greenville	Kemet:Fountain Inn	1200-0147	NO2	3.19
Greenville	Delta Mills:Estes	1200-0016	NO2	3.07
Greenville	King Asphalt:# 3	9900-0283	NO2	2.82
Greenville	Crown Metro:Plant1	1200-0034	NO2	2.78
Greenville	Geschmay Corp	1200-0315	NO2	2.71
Greenville	Milliken:Judson Mill	1200-0028	NO2	2.52
Greenville	Blythe Construction:Plant 4	9900-0169	NO2	2.46
Greenville	Air Products:Piedmont	1200-0075	NO2	2.31
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	NO2	2.22
Greenville	Greenville Finishing	1200-0217	NO2	2.20
Greenville	Reynolds Chemical:Greenville	1200-0247	NO2	2.08
Greenville	Lockheed Martin Aircraft Center	1200-0149	NO2	2.06
Greenville	Milliken:Enterprise Plant	1200-0060	NO2	1.98
Greenville	Scotts Sierra:Travelers Rest	1200-0033	NO2	1.49
Greenville	Para-Chem Southern Inc	1200-0099	NO2	1.34
Greenville	National Electric Carbon	1200-0121	NO2	1.16
Greenville	Kemet:Greenville	1200-0018	NO2	0.77
Greenville	Panagakos Asphalt Paving	9900-0362	NO2	0.77
Greenville	BellSouth:Greenville-College St	1200-0231	NO2	0.76
Greenville	Stevens Aviation:Donaldson Park	1200-0311	NO2	0.75
Greenville	Holly Oak Chemical	1200-0191	NO2	0.55
Greenville	American Woodworks	1200-0346	NO2	0.52
Greenville	Sherwin Williams:Fountain Inn	1200-0163	NO2	0.31
Greenville	Zupan & Smith:Simpsonville	9900-0158	NO2	0.26

Table D-1: MSA Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons / Year)**
Greenville	Cognis Corporation	1200-0067	NO2	0.20
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	NO2	0.19
Greenville	Excalibur Tool:Poinsett	1200-0277	NO2	0.13
Greenville	RMAX	1200-0345	NO2	0.13
Greenville	Mita South Carolina	1200-0207	NO2	0.09
Greenville	Ernst Winter & Sons	1200-0179	NO2	0.03
Greenville	Gateway Mfg:Plant #2 - Greenville	1200-0317	NO2	0.01
Greenville	Metromont:Paris Mountain	1200-0150	NO2	0.01
	1999 Greenville Co. Total			**552.51**
Pickens	Clemson University	1880-0010	NO2	74.18
Pickens	BASF:Clemson	1880-0007	NO2	73.56
Pickens	Greenwood Mills:Liberty Plants	1880-0005	NO2	16.36
Pickens	Easley Combined Utilities:Utility Street	1880-0051	NO2	7.01
Pickens	Sloan Construction:Liberty	9900-0098	NO2	5.70
Pickens	Alice Manufacturing:Ellison	1880-0019	NO2	3.83
Pickens	Alice Manufacturing:Airal	1880-0018	NO2	3.67
Pickens	Alice Manufacturing:EllJean	1880-0020	NO2	3.63
Pickens	Alice Manufacturing:Foster	1880-0021	NO2	2.10
Pickens	Hollingsworth Saco Lowell	1880-0011	NO2	1.56
Pickens	One World Industries:Pickens	1880-0006	NO2	1.14
Pickens	McKechnie:Highway 93 Plant	1880-0052	NO2	0.65
Pickens	Flexiwall:208 Carolina Drive	1880-0040	NO2	0.02
	1999 Pickens Co. Total			**193.41**

Table D-2 lists the VOC point sources that are in operation in Spartanburg County and the other four MSA counties based on the 1999 VOC point source emissions inventory, which is routinely submitted to the National Emissions Inventory database. Spartanburg County has 64 VOC point sources in operation and 55 of these point sources are located within the proposed nonattainment area. Facilities in Spartanburg County that are notated with an asterisk are located outside of the proposed boundary; all other facilities in Spartanburg County are located within the proposed boundary. Spartanburg County accounts for 36.92% of the total MSA VOC point source emissions.

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	Michelin: Spartanburg	2060-0065	VOC	537.00
Spartanburg	* National Starch & Chemical Company	2060-0085	VOC	231.43
Spartanburg	Goodyear: Spartanburg	2060-0035	VOC	224.44
Spartanburg	Kohler Co: Plastics Plant	2060-0071	VOC	204.41
Spartanburg	Exopack LLC	2060-0075	VOC	170.71
Spartanburg	Crown Cork & Seal: Spartanburg	2060-0077	VOC	152.00
Spartanburg	Transcontinental Gas Pipe Line	2060-0179	VOC	144.34
Spartanburg	Donnelley, RR & Sons	2060-0081	VOC	137.49
Spartanburg	Intelicoat Technologies	2060-0182	VOC	126.34
Spartanburg	American Fast Print	2060-0026	VOC	73.35
Spartanburg	Kosa: Arteva Specialties	2060-0345	VOC	72.81
Spartanburg	Mack Molding Co	2060-0061	VOC	62.75
Spartanburg	BMW Manufacturing Corp	2060-0230	VOC	58.05
Spartanburg	Reeves Brothers: Fairforest	2060-0019	VOC	49.99
Spartanburg	Motiva Enterprises LLC	2060-0097	VOC	46.91
Spartanburg	Springs Industries: Lyman	2060-0018	VOC	41.63
Spartanburg	Saxon Fibers LLC	2060-0039	VOC	39.34
Spartanburg	Transmontaigne: Spartanburg-SE	2060-0134	VOC	33.29
Spartanburg	Dot Packaging-Printpak	2060-0215	VOC	30.49
Spartanburg	Citgo: Spartanburg	2060-0101	VOC	26.60
Spartanburg	Transmontaigne: Spartanburg-PD	2060-0098	VOC	26.41
Spartanburg	Tietex International Ltd	2060-0147	VOC	25.72
Spartanburg	Phillips Pipeline: Spartanburg	2060-0056	VOC	24.81
Spartanburg	Lubrizol Form Control Additives	2060-0069	VOC	22.79
Spartanburg	Milliken Chemical: Dewey	2060-0001	VOC	19.31
Spartanburg	* Conocophillips Company	2060-0096	VOC	13.38
Spartanburg	Crown Central Petroleum	2060-0094	VOC	12.65
Spartanburg	Michelin: Duncan	2060-0183	VOC	10.41
Spartanburg	Palmetto Landfill & Recycling Ctr	2060-0221	VOC	9.86
Spartanburg	Color Converting Ind	2060-0199	VOC	7.93
Spartanburg	Bayer Corp: Wellford	2060-0055	VOC	7.35
Spartanburg	* Bommer Industries: Landrum	2060-0119	VOC	5.91
Spartanburg	Blackman Uhler Chemical	2060-0029	VOC	3.72
Spartanburg	* Piedmont Dielectrics	2060-0108	VOC	3.02
Spartanburg	Steris-Isomedix Services	2060-0180	VOC	2.68
Spartanburg	Mohawk: Landrum	2060-0012	VOC	2.20
Spartanburg	Cooper Standard Automotive	2060-0088	VOC	2.02
Spartanburg	* Inman Mills: Ramey Plant	2060-0271	VOC	2.01
Spartanburg	Spartanburg Regional Medical Center	2060-0142	VOC	2.00

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Spartanburg	King Asphalt: # 4 - New	9900-0352	VOC	1.85
Spartanburg	BASF: Spartanburg	2060-0068	VOC	1.35
Spartanburg	Milliken: Cotton Blossom-Plant	2060-0288	VOC	1.26
Spartanburg	TNS Mills: Spartanburg	2060-0079	VOC	0.94
Spartanburg	Engelhard: Duncan	2060-0266	VOC	0.92
Spartanburg	Inman Mills: Saybrook	2060-0042	VOC	0.64
Spartanburg	Spartanburg Stainless Products	2060-0348	VOC	0.59
Spartanburg	MEMC Electronic Materials	2060-0070	VOC	0.45
Spartanburg	Asphalt Associates	9900-0023	VOC	0.43
Spartanburg	Reeves Brothers: Spartanburg	2060-0262	VOC	0.29
Spartanburg	* ISG Resources Inc	2060-0025	VOC	0.17
Spartanburg	Milliken: Research	2060-0022	VOC	0.17
Spartanburg	Mary Black Memorial Hospital	2060-0121	VOC	0.13
Spartanburg	* Appalachian Engineered Hardwood Flooring	2060-0299	VOC	0.11
Spartanburg	Mount Vernon Mills: Arkwright	2060-0028	VOC	0.08
Spartanburg	Spartanburg Automotive Products	2060-0007	VOC	0.08
Spartanburg	* Palmetto Vermiculite	2060-0181	VOC	0.07
Spartanburg	Phelps Dodge	2060-0086	VOC	0.05
Spartanburg	Hoke Inc	2060-0175	VOC	0.03
Spartanburg	* Sloan Construction: Pacolet	9900-0091	VOC	0.03
Spartanburg	Asphalt Contractors LLC	9900-0152	VOC	0.02
Spartanburg	F & R Asphalt: Plant #1	9900-0090	VOC	0.02
Spartanburg	Sloan Construction: Lyman	9900-0115	VOC	0.02
Spartanburg	Spartanburg Hospital Restoration Care	2060-0128	VOC	0.02
Spartanburg	Eastman Chemical Company	2060-0051	VOC	0.01
	1999 Spartanburg Co. Total			**2,677.28**
	Emissions in Nonattainment Area-Total			**2,418.95**
	Emissions in Nonattainment Area-Percent			**90.4%**
Anderson	Plastic Omnium	0200-0117	VOC	216.89
Anderson	Owens Corning:Anderson	0200-0031	VOC	175.05
Anderson	Vytech	0200-0050	VOC	136.83
Anderson	Michelin:Sandy Spring	0200-0018	VOC	124.50
Anderson	Isola Laminate Systems Pendleton	0200-0058	VOC	113.32
Anderson	Hydro Aluminum North America	0200-0127	VOC	81.37
Anderson	BASF:Anderson	0200-0005	VOC	76.05
Anderson	Milliken:Pendleton	0200-0011	VOC	58.14
Anderson	Apache Products:Anderson	0200-0048	VOC	50.75
Anderson	Goodman Conveyor	0200-0093	VOC	46.95
Anderson	Hexcel Schwebel Inc	0200-0036	VOC	42.89

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Anderson	Transmontaigne:Belton-PD	0200-0057	VOC	40.93
Anderson	Marathon Ashland:Belton	0200-0052	VOC	33.16
Anderson	Ryobi Technologies Inc	0200-0043	VOC	25.86
Anderson	Transmontaigne:Belton-SE	0200-0056	VOC	18.51
Anderson	Duke Energy:Lee	0200-0004	VOC	14.40
Anderson	Maxxim Medical	0200-0033	VOC	13.87
Anderson	Springs Industries:Wamsutta	0200-0014	VOC	9.20
Anderson	Fibertech Corp	0200-0095	VOC	7.58
Anderson	Griffin Thermal Products	0200-0147	VOC	6.96
Anderson	Rockwell Automation/Dodge	0200-0119	VOC	4.56
Anderson	Blair Mills LP	0200-0034	VOC	3.37
Anderson	Clemson University:ARF	0200-0096	VOC	3.04
Anderson	Milliken:Cushman	0200-0032	VOC	2.73
Anderson	Darby Metal Works	0200-0129	VOC	2.04
Anderson	Frigidaire:Anderson	0200-0084	VOC	1.05
Anderson	Pickens Construction Inc	9900-0041	VOC	0.46
Anderson	Chiquola Industrial Products:Chiquola	0200-0047	VOC	0.33
Anderson	Anderson Medical Center	0200-0061	VOC	0.29
Anderson	Ashmore:#2	9900-0045	VOC	0.13
Anderson	LaFrance:Mt Vernon	0200-0009	VOC	0.11
Anderson	Mount Vernon Mills:Williamston	0200-0045	VOC	0.05
Anderson	Sloan Construction:Anderson	9900-0113	VOC	0.04
Anderson	F&R Asphalt:Plant #2	9900-0107	VOC	0.02
	1999 Anderson Co. Total			**1,311.43**
Cherokee	Alcoa Building Products	0600-0016	VOC	145.00
Cherokee	Milliken:Magnolia	0600-0007	VOC	133.60
Cherokee	IFCO ICS-South Caorlina Inc	0600-0055	VOC	55.00
Cherokee	Milliken Chemical:Cypress	0600-0040	VOC	31.69
Cherokee	Hamrick Industries:Plant 5	0600-0036	VOC	13.31
Cherokee	Core Materials Corp	0600-0068	VOC	9.91
Cherokee	Cherokee Cogeneration	0600-0060	VOC	5.48
Cherokee	Sanders Bros Metals	0600-0052	VOC	5.07
Cherokee	Linpac Paper	0600-0044	VOC	4.33
Cherokee	Springfield LLC:Limestone	0600-0014	VOC	3.03
Cherokee	TNS Mills:Gaffney	0600-0054	VOC	1.90
Cherokee	Timken Co	0600-0009	VOC	1.23
Cherokee	Freightliner Custom Chassis	0600-0049	VOC	0.79
Cherokee	Boren Clay Products-Blacksburg Plant	0600-0005	VOC	0.74
Cherokee	Hamrick Mills:Musgrove	0600-0062	VOC	0.73

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Cherokee	Broad River Energy LLC	0600-0076	VOC	0.71
Cherokee	Hamrick Mills:Hamrick Plant	0600-0004	VOC	0.66
Cherokee	Nestle Frozen Foods	0600-0033	VOC	0.45
Cherokee	SC Pipeline:Blacksburg	0600-0065	VOC	0.15
Cherokee	Industrial Minerals	0600-0039	VOC	0.03
	1999 Cherokee Co. Total			**413.81**
Greenville	3M:Tape Plant	1200-0148	VOC	641.15
Greenville	Michelin:Greenville	1200-0039	VOC	423.60
Greenville	Cryovac-Simpsonville (Sealed Air Corp)	1200-0024	VOC	407.78
Greenville	Mitsubishi Polyester Film LLC	1200-0026	VOC	224.22
Greenville	US Finishing	1200-0009	VOC	107.03
Greenville	Hitachi Electronic	1200-0203	VOC	97.74
Greenville	Engineered Products:Furman Hall Rd Plant	1200-0181	VOC	76.92
Greenville	Nutricia:Greenville	1200-0127	VOC	66.37
Greenville	3M:Film Plant	1200-0073	VOC	55.34
Greenville	Kemet:Mauldin	1200-0104	VOC	53.57
Greenville	Kemet:Fountain Inn	1200-0147	VOC	46.19
Greenville	National Electrick Carbon	1200-0121	VOC	40.97
Greenville	Milliken:Gayley Mill	1200-0029	VOC	40.35
Greenville	Bob Jones University	1200-0245	VOC	34.41
Greenville	SC Steel Corp	1200-0362	VOC	32.60
Greenville	Gateway Mfg:Plant #2-Greenville	1200-0317	VOC	26.65
Greenville	JPS:Slater	1200-0017	VOC	26.28
Greenville	Reynolds Chemical:Greenville	1200-0247	VOC	25.23
Greenville	Kemet:Greenville	1200-0018	VOC	22.57
Greenville	GE:Greenville	1200-0094	VOC	22.02
Greenville	Para-Chem Southern Inc	1200-0099	VOC	21.71
Greenville	Lockheed Martin Aircraft Center	1200-0149	VOC	21.01
Greenville	Stevens Aviation:Donaldson Park	1200-0311	VOC	20.07
Greenville	Messer Industries	1200-0269	VOC	19.53
Greenville	Rudco Products Inc	1200-0194	VOC	17.93
Greenville	Milliken:Enterprise Plant	1200-0060	VOC	15.76
Greenville	Excalibur Tool:Poinsett	1200-0277	VOC	14.41
Greenville	Sherwin Williams:Fountain Inn	1200-0163	VOC	12.83
Greenville	RMAX	1200-0345	VOC	9.55
Greenville	Parthenon Marble	1200-0260	VOC	7.12
Greenville	Cognis Corporation	1200-0067	VOC	7.11
Greenville	American Woodworks	1200-0346	VOC	6.94
Greenville	Crown Metro:Plant #1	1200-0034	VOC	6.03

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Greenville	Delta Mills:Estes	1200-0016	VOC	5.74
Greenville	St Francis Hospital	1200-0139	VOC	5.55
Greenville	Woven Electronics	1200-0252	VOC	5.16
Greenville	King Asphalt:# 3	9900-0283	VOC	4.50
Greenville	Dan River:White Horse	1200-0196	VOC	4.12
Greenville	Milliken:Judson Mill	1200-0028	VOC	4.09
Greenville	Air Products:Piedmont	1200-0075	VOC	4.08
Greenville	Greenville Finishing	1200-0217	VOC	2.20
Greenville	National Cabinet Lock	1200-0107	VOC	2.01
Greenville	Geschmay Corp	1200-0315	VOC	1.97
Greenville	Greenville News	1200-0226	VOC	1.35
Greenville	Panagakos Asphalt Paving	9900-0362	VOC	1.19
Greenville	Thermo Kinetics	1200-0313	VOC	1.01
Greenville	Standard Motor Products Inc	1200-0132	VOC	0.88
Greenville	Rexroth:Southchase Court	1200-0326	VOC	0.87
Greenville	Greenville Hospital System:Energy Plant	1200-0145	VOC	0.83
Greenville	Carustar:Taylors	1200-0013	VOC	0.65
Greenville	Ethox Chemicals	1200-0171	VOC	0.52
Greenville	Specialty Shearing	1200-0123	VOC	0.27
Greenville	Ashmore:#1	9900-0013	VOC	0.13
Greenville	Transflo Terminal SVCS:Greenville	1200-0337	VOC	0.12
Greenville	Columbia Farms:Greenville	1200-0232	VOC	0.06
Greenville	Scotts Sierra:Travelers Rest	1200-0033	VOC	0.06
Greenville	Blythe Construction:Plant 4	9900-0169	VOC	0.05
Greenville	BellSouth:Greenville-College St	1200-0231	VOC	0.04
Greenville	Holly Oak Chemical	1200-0191	VOC	0.03
Greenville	Mita South Carolina	1200-0207	VOC	0.01
Greenville	Zupan & Smith:Simpsonville	9900-0158	VOC	0.01
	1999 Greenville Co. Total			**2,698.49**
Pickens	McKechnie:Hwy 93 Plant	1880-0052	VOC	42.38
Pickens	BASF:Clemson	1880-0007	VOC	39.87
Pickens	One World Industries:Pickens	1880-0006	VOC	22.71
Pickens	Flexiwall:208 Carolina Drive	1880-0040	VOC	18.58
Pickens	Greenwood Mills:Liberty Plants	1880-0005	VOC	14.12
Pickens	Hollingsworth Saco Lowell	1880-0011	VOC	3.10
Pickens	Alice Manufacturing:Elljean	1880-0020	VOC	2.81
Pickens	Alice Manufacturing:Ellison	1880-0019	VOC	2.43
Pickens	Alice Manufacturing:Arial	1880-0018	VOC	2.04
Pickens	Alice Manufacturing:Foster	1880-0021	VOC	2.02

Table D-2: MSA Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons / Year)**
Pickens	Clemson University	1880-0010	VOC	0.61
Pickens	Easley Combined Utilities:Utility Street	1880-0051	VOC	0.18
Pickens	Sloan Construction:Liberty	9900-0098	VOC	0.03
	1999 Pickens Co. Total			**150.88**

Table D-3 lists the NO_x on-road emissions for Spartanburg County and Table D-4 lists the VOC on-road emissions for Spartanburg County.

Table D-3: Spartanburg County On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons / Year)**
Spartanburg	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	4,150.00
Spartanburg	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,287.00
Spartanburg	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	604.00
Spartanburg	11-Highway Vehicles	04-Diesels	5,427.00
	1999 Spartanburg Co. Total		**12,468.00**

Table D-4: Spartanburg County On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons / Year)**
Spartanburg	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	4,425.00
Spartanburg	11-Highway Vehicles	02-Light-Duty Gas Trucks	2,516.00
Spartanburg	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	595.00
Spartanburg	11-Highway Vehicles	04-Diesels	340.00
	1999 Spartanburg Co. Total		**7,876.00**

E. Traffic and Commuting Patterns

Spartanburg County retains 88.64% of Spartanburg County residents that work within the county, and 22.08% of the entire MSA commuter flow is contained within Spartanburg County.

Estimates of the Daily Vehicle Miles Traveled (DVMT) were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor

Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows the 2000 and 2025 DVMT data for the Greenville-Spartanburg-Anderson MSA.

Table E-1:
DVMT for Greenville-Spartanburg-Anderson MSA

County	2000 DVMT	2025 DVMT	DVMT Change (2000-2025)
Anderson	5,207,194	8,687,689	3,480,495
Cherokee	2,063,088	3,303,158	1,240,070
Greenville	9,421,709	14,705,492	5,283,783
Pickens	2,224,743	3,613,182	1,388,439
Spartanburg	8,041,582	13,086,740	5,045,158
Statewide	**123,805,748**	**199,789,677**	**75,983,929**

Figure E-1 below, shows the Interstates that are located within the Greenville-Spartanburg-Anderson MSA. There two interstates (I-85 and I-385). I-85 is the major corridor of travel between Spartanburg and Greenville, SC, and I-385 is the interstate spur between I-26 and Greenville. This figure also shows the 2000 traffic counts for the interstates. The highest traffic occurs near the intersection of I-85 and I-385 and also in Greenville County. The further away from Greenville County the road section is located, the lower the traffic count.

Figure E-1:

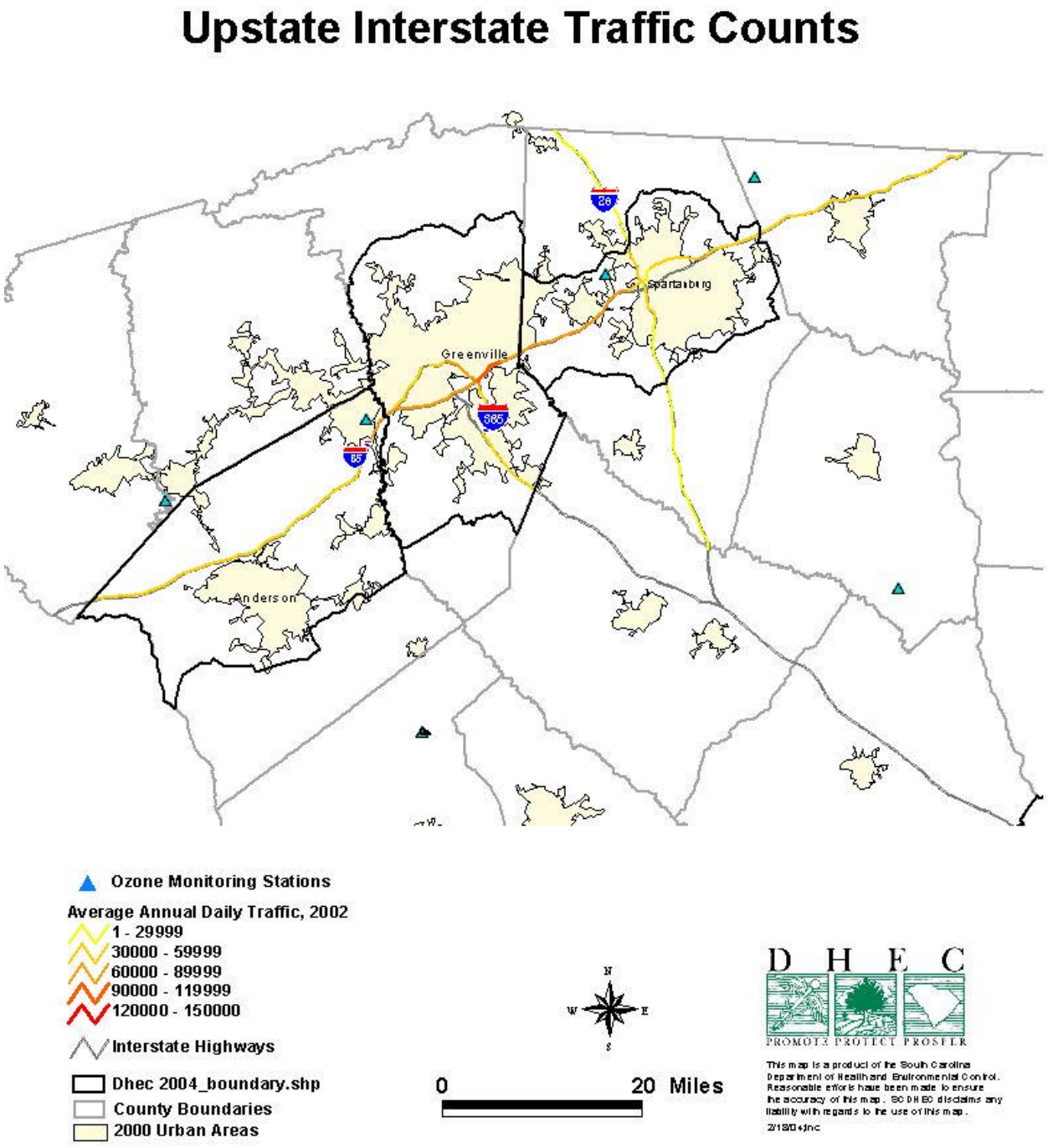


Table E-2 shows the DVMT for each classification of road for 2000, 2007, 2012 and 2025 for the Greenville-Spartanburg-Anderson MSA.

Table E-2:
DVMT Data for the Greenville-Spartanburg-Anderson MSA

	2000	Projected 2007	Projected 2012	Projected 2025
Anderson County				
Rural Interstate (01)	1,600,864	1,968,809	2,231,627	2,914,954
Rural Principal Arterial (02)	292,648	341,872	377,032	468,448
Rural Minor Arterial (03)	706,739	825,614	910,524	1,131,293
Rural Major Collector (04)	1,030,719	1,204,088	1,327,924	1,649,895
Rural Minor Collector (05)	70,663	82,549	91,039	113,113
Rural Local (09)	306,263	357,777	394,573	490,242
Rural Total	*4,007,896*	*4,780,709*	*5,332,719*	*6,767,945*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	607,982	710,246	783,292	973,211
Urban Minor Arterial (14)	320,296	374,170	412,652	512,704
Urban Collector (15)	193,409	225,941	249,178	309,595
Urban Local (18)	77,612	90,666	99,991	124,235
Urban Total	*1,199,298*	*1,401,023*	*1,545,113*	*1,919,745*
Grand Total DVMT	**5,207,194**	**6,181,733**	**6,877,832**	**8,687,689**
Cherokee County				
Rural Interstate (01)	1,022,864	1,248,380	1,409,462	1,828,277
Rural Principal Arterial (02)	44,911	50,318	53,215	63,677
Rural Minor Arterial (03)	235,062	263,364	278,527	333,281
Rural Major Collector (04)	315,400	353,375	373,721	447,189
Rural Minor Collector (05)	31,875	35,713	37,769	45,194
Rural Local (09)	187,725	210,327	222,437	266,164
Rural Total	*1,837,837*	*2,161,478*	*2,375,132*	*2,983,782*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	-	-	-	-
Urban Minor Arterial (14)	97,669	109,429	115,729	138,479
Urban Collector (15)	67,539	75,671	80,028	95,760
Urban Local (18)	60,043	67,272	71,145	85,131
Urban Total	*225,251*	*252,372*	*266,902*	*319,371*
Grand Total DVMT	**2,063,088**	**2,413,849**	**2,642,034**	**3,303,152**
Greenville County				
Rural Interstate (01)	605,987	755,682	862,607	1,140,612
Rural Principal Arterial (02)	470,166	534,064	568,524	691,096
Rural Minor Arterial (03)	543,348	617,191	657,015	798,665

Table E-2: DVMT Data for the Greenville -Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Rural Major Collector (04)	930,573	1,057,042	1,125,247	1,367,847
Rural Minor Collector (05)	50,942	57,865	61,599	74,880
Rural Local (09)	309,140	351,154	373,812	454,404
Rural Total	*2,910,155*	*3,372,998*	*3,648,804*	*4,527,504*
Urban Interstate (11)	1,604,349	1,985,303	2,257,413	2,964,899
Urban Freeway/Expressway (12)	46,581	52,912	56,326	68,469
Urban Principal Arterial (13)	1,743,223	1,980,136	2,107,902	2,562,360
Urban Minor Arterial (14)	1,797,160	2,041,403	2,173,123	2,641,641
Urban Collector (15)	1,036,576	1,177,451	1,253,426	1,523,660
Urban Local (18)	283,665	322,217	343,008	416,959
Urban Total	*6,511,554*	*7,559,421*	*8,191,197*	*10,177,988*
Grand Total DVMT	**9,421,709**	**10,932,419**	**11,840,001**	**14,705,492**
Pickens County				
Rural Interstate (01)	-	-	-	-
Rural Principal Arterial (02)	303,647	358,369	388,825	493,150
Rural Minor Arterial (03)	449,827	530,892	576,011	730,559
Rural Major Collector (04)	465,085	548,900	595,549	755,340
Rural Minor Collector (05)	46,606	55,006	59,680	75,693
Rural Local (09)	214,650	253,333	274,863	348,610
Rural Total	*1,479,815*	*1,746,499*	*1,894,928*	*2,403,353*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	44,814	52,890	57,385	72,782
Urban Principal Arterial (13)	286,329	337,930	366,649	465,024
Urban Minor Arterial (14)	255,655	301,728	327,370	415,207
Urban Collector (15)	106,750	125,988	136,695	173,371
Urban Local (18)	51,380	60,639	65,793	83,445
Urban Total	*744,928*	*879,174*	*953,892*	*1,209,829*
Grand Total DVMT	**2,224,743**	**2,625,674**	**2,848,820**	**3,613,182**
Spartanburg County				
Rural Interstate (01)	2,395,210	3,044,958	3,509,064	4,715,740
Rural Principal Arterial (02)	137,290	152,821	160,853	188,254
Rural Minor Arterial (03)	984,884	1,096,301	1,153,919	1,350,484
Rural Major Collector (04)	1,194,093	1,329,176	1,399,034	1,637,353
Rural Minor Collector (05)	177,077	197,109	207,468	242,809
Rural Local (09)	264,722	294,669	310,155	362,989
Rural Total	*5,153,275*	*6,115,034*	*6,740,494*	*8,497,628*
Urban Interstate (11)	524,281	754,792	919,442	1,347,534
Urban Freeway/Expressway (12)	162,742	181,152	190,673	223,154
Urban Principal Arterial (13)	871,282	969,847	1,020,819	1,194,711
Urban Minor Arterial (14)	657,734	732,141	770,620	901,892
Urban Collector (15)	565,477	629,448	662,530	775,389

Table E-2: DVMT Data for the Greenville-Spartanburg-Anderson MSA				
	2000	**Projected 2007**	**Projected 2012**	**Projected 2025**
Urban Local (18)	106,791	118,872	125,119	146,433
Urban Total	*2,888,307*	*3,386,253*	*3,689,204*	*4,589,111*
Grand Total DVMT	**8,041,582**	**9,501,287**	**10,429,698**	**13,086,740**
Statewide				
Rural Interstate (01)	23,146,274	28,309,862	31,998,139	41,587,660
Rural Principal Arterial (02)	12,905,947	14,916,454	16,175,569	20,131,432
Rural Minor Arterial (03)	17,145,253	19,735,411	21,341,306	26,491,890
Rural Major Collector (04)	15,569,699	17,893,702	19,330,816	23,911,717
Rural Minor Collector (05)	2,061,800	2,372,015	2,565,610	3,178,012
Rural Local (09)	7,634,920	8,763,106	9,471,020	11,703,697
Rural Total	*78,463,892*	*91,990,550*	*100,882,461*	*127,004,409*
Urban Interstate (11)	9,470,591	12,063,075	13,914,850	18,729,464
Urban Freeway/Expressway (12)	2,039,115	2,311,200	2,483,836	2,991,347
Urban Principal Arterial (13)	14,308,881	16,393,798	17,631,864	21,720,541
Urban Minor Arterial (14)	11,057,992	12,630,175	13,565,185	16,623,891
Urban Collector (15)	5,611,026	6,401,102	6,857,898	8,403,840
Urban Local (18)	2,854,251	3,267,188	3,511,242	4,316,185
Urban Total	*45,341,855*	*53,066,538*	*57,964,874*	*72,785,268*
Grand Total DVMT	**123,805,748**	**145,057,088**	**158,847,335**	**199,789,677**

Tables E-3[8] and E-4 present the 2000 worker flow data from each of the counties and the percent commute for the MSA. Some counties that are listed on this table are not being considered for boundary recommendations, and are being included on this chart to account for all workers in each county. The above tables show that there is very little commuting outside of the MSA within the state of South Carolina.

Table E-3: Where People Living in the Greenville-Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	591	0	47	26	0	664
Aiken	0	6	54	39	20	119
Anderson	52,133	31	3,367	3,648	480	59,659
Barnwell	8	0	7	0	0	15
Beaufort	0	0	33	9	16	58
Berkeley	35	30	0	9	15	89
Charleston	59	52	104	100	70	385
Cherokee	61	16,052	203	63	2,029	18,408

8 Data provided from US Census: 2000

Table E-3: Where People Living in the Greenville -Spartanburg-Anderson MSA Work						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Chester	5	17	11	0	27	60
Colleton	0	0	12	8	25	45
Darlington	0	4	6	11	8	29
Dorchester	0	20	29	11	0	60
Edgefield	0	0	0	3	0	3
Fairfield	0	0	0	0	33	33
Florence	0	8	27	0	0	35
Georgetown	8	0	0	0	8	16
Greenville	13,766	431	161,906	15,095	14,586	205,784
Greenwood	520	18	381	64	226	1,209
Hampton	7	0	0	8	0	15
Horry	42	0	14	5	31	92
Kershaw	0	6	0	7	0	13
Lancaster	24	25	36	6	20	111
Laurens	268	26	1,613	112	703	2,722
Lee	0	0	18	0	0	18
Lexington	40	12	127	21	23	223
Marion	0	0	14	6	0	20
McCormick	2	0	6	0	0	8
Newberry	12	0	58	20	22	112
Oconee	1,274	11	396	2,331	112	4,124
Orangeburg	3	0	0	0	6	9
Pickens	4,300	16	2,566	28,951	198	36,031
Richland	88	8	193	110	71	470
Saluda	3	0	6	0	0	9
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Sumter	0	0	22	0	7	29
Union	40	141	130	37	522	870
York	38	274	73	33	130	548
Grand Total	74,591	21,125	182,664	51,517	114,884	444,781

Table E-4: Where People Living in the Greenville -Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Abbeville	0.13%	0.00%	0.01%	0.01%	0.00%	0.15%
Aiken	0.00%	0.00%	0.01%	0.01%	0.00%	0.03%
Anderson	11.72%	0.01%	0.76%	0.82%	0.11%	13.41%
Barnwell	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Beaufort	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%

Table E-4: Where People Living in the Greenville-Spartanburg-Anderson MSA Work (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Berkeley	0.01%	0.01%	0.00%	0.00%	0.00%	0.02%
Charleston	0.01%	0.01%	0.02%	0.02%	0.02%	0.09%
Cherokee	0.01%	3.61%	0.05%	0.01%	0.46%	4.14%
Chester	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Colleton	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Darlington	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Dorchester	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Edgefield	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fairfield	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
Florence	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
Georgetown	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Greenville	3.10%	0.10%	36.40%	3.39%	3.28%	46.27%
Greenwood	0.12%	0.00%	0.09%	0.01%	0.05%	0.27%
Hampton	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Horry	0.01%	0.00%	0.00%	0.00%	0.01%	0.02%
Kershaw	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lancaster	0.01%	0.01%	0.01%	0.00%	0.00%	0.02%
Laurens	0.06%	0.01%	0.36%	0.03%	0.16%	0.61%
Lee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Lexington	0.01%	0.00%	0.03%	0.00%	0.01%	0.05%
Marion	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
McCormick	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Newberry	0.00%	0.00%	0.01%	0.00%	0.00%	0.03%
Oconee	0.29%	0.00%	0.09%	0.52%	0.03%	0.93%
Orangeburg	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pickens	0.97%	0.00%	0.58%	6.51%	0.04%	8.10%
Richland	0.02%	0.00%	0.04%	0.02%	0.02%	0.11%
Saluda	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Spartanburg	0.28%	0.89%	2.52%	0.18%	21.47%	25.34%
Sumter	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Union	0.01%	0.03%	0.03%	0.01%	0.12%	0.20%
York	0.01%	0.06%	0.02%	0.01%	0.03%	0.12%
Grand Total	16.77%	4.75%	41.07%	11.58%	25.83%	100.00%

Table E-5 shows that in the Greenville-Spartanburg-Anderson MSA, 81.96% of all people work in the same county they live in. There are 112,789 (or 26.07%) workers that live in Spartanburg County and work in the Greenville-Spartanburg-Anderson MSA. There are 112,686 (or 26.05%) people that work in Spartanburg County. This results in a net decrease of 103 workers in the county. Table E-6 also shows that when all commuting in the MSA is taken into account, only 3.99% of the intercounty flow comes from Spartanburg County.

Table E-5: County of Residence for the Greenville-Spartanburg-Anderson MSA						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	52,133	31	3,367	3,648	480	59,659
Cherokee	61	16,052	203	63	2,029	18,408
Greenville	13,766	431	161,906	15,095	14,586	205,784
Pickens	4,300	16	2,566	28,951	198	36,031
Spartanburg	1,264	3,937	11,205	784	95,496	112,686
Grand Total	71,524	20,467	179,247	48,541	112,789	432,568

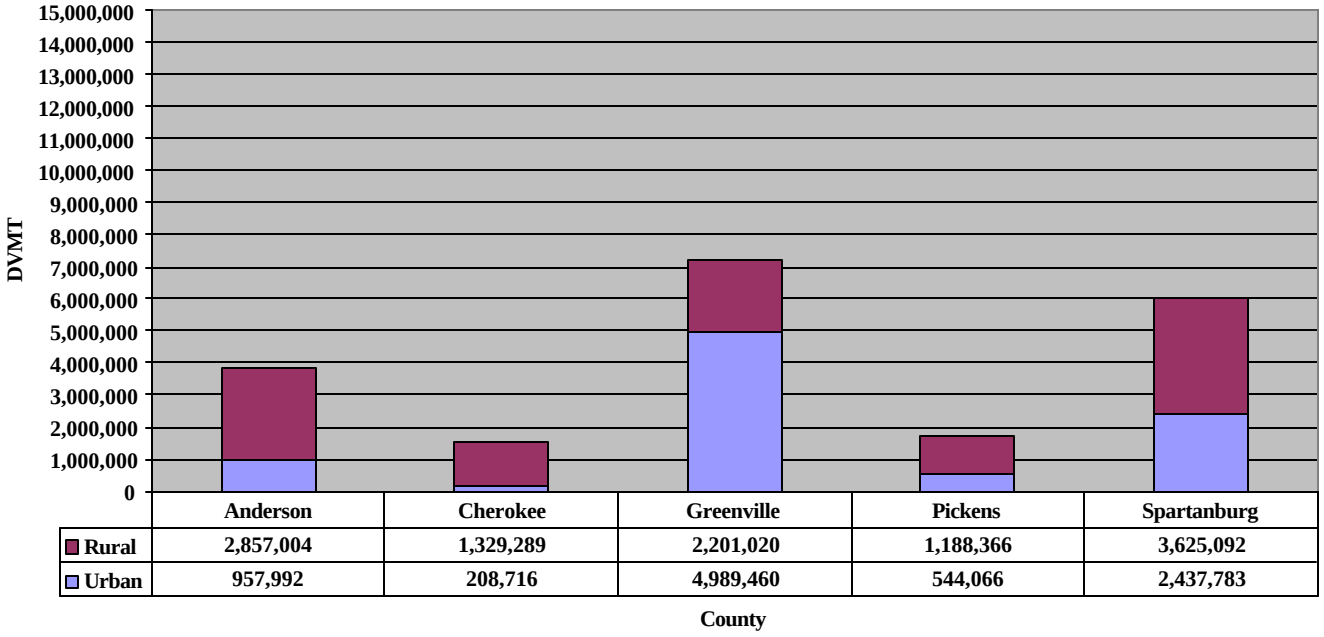
Table E-6: County of Residence for the Greenville-Spartanburg-Anderson MSA (Percentage Table)						
County Worked In	**County of Residence**					
	Anderson	**Cherokee**	**Greenville**	**Pickens**	**Spartanburg**	**Grand Total**
Anderson	**12.05%**	0.01%	0.78%	0.84%	0.11%	13.79%
Cherokee	0.01%	**3.71%**	0.05%	0.01%	0.47%	4.26%
Greenville	3.18%	0.10%	**37.43%**	3.49%	3.37%	47.57%
Pickens	0.99%	0.00%	0.59%	**6.69%**	0.05%	8.33%
Spartanburg	0.29%	0.91%	2.59%	0.18%	**22.08%**	26.05%
Grand Total	16.53%	4.73%	41.44%	11.22%	26.07%	100.00%
Intercounty Flow	4.48%	1.02%	4.01%	4.53%	3.99%	

Table E-7 shows the mobile source emissions in Spartanburg County in relation to the other counties in the MSA. Even though Spartanburg County has high onroad mobile source NO_x and VOC emissions, Federal fuel and engine standards will help lower these emissions in Spartanburg County.

Table E-7: Percent Mobile Source NO_x and VOC Emissions in the Greenville-Spartanburg-Anderson MSA					
County	**NO_x tons / day**	**Percent NO_x**	**County**	**VOC tons / day**	**Percent VOC**
Anderson	19.11	19.85%	Anderson	11.82	18.52%
Cherokee	7.33	7.61%	Cherokee	3.87	6.06%
Greenville	28.87	29.99%	Greenville	22.39	35.07%
Pickens	9.33	9.69%	Pickens	6.00	9.41%
Spartanburg	31.64	32.87%	Spartanburg	19.76	30.95%
Grand Total	96.28	100.00%	Grand Total	63.84	100.00%

Figures E-2 – E-6 show the urban and rural DVMT for the Greenville-Spartanburg-Anderson MSA. While the DVMT increases in Spartanburg County by 86.3% from 1990-2025, the character of the miles traveled changes very little. For example, in 1990, the DVMT is 59.8% rural and 40.2% urban, while in 2025, the DVMT is projected to be 64.9% rural and 35.1% urban.

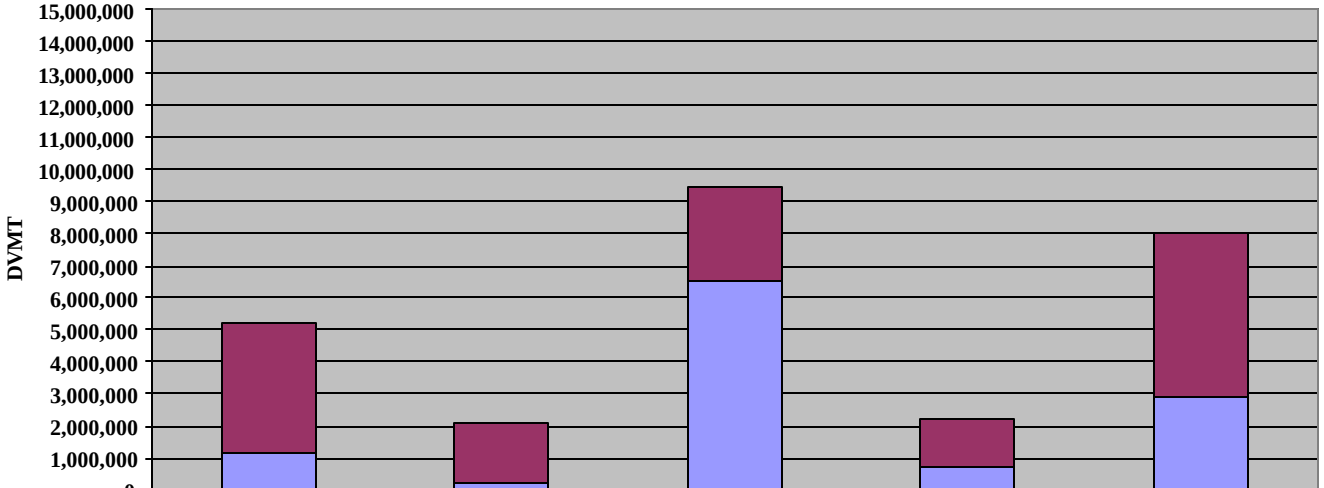
Figure E-2:
1990 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	2,857,004	1,329,289	2,201,020	1,188,366	3,625,092
Urban	957,992	208,716	4,989,460	544,066	2,437,783

County

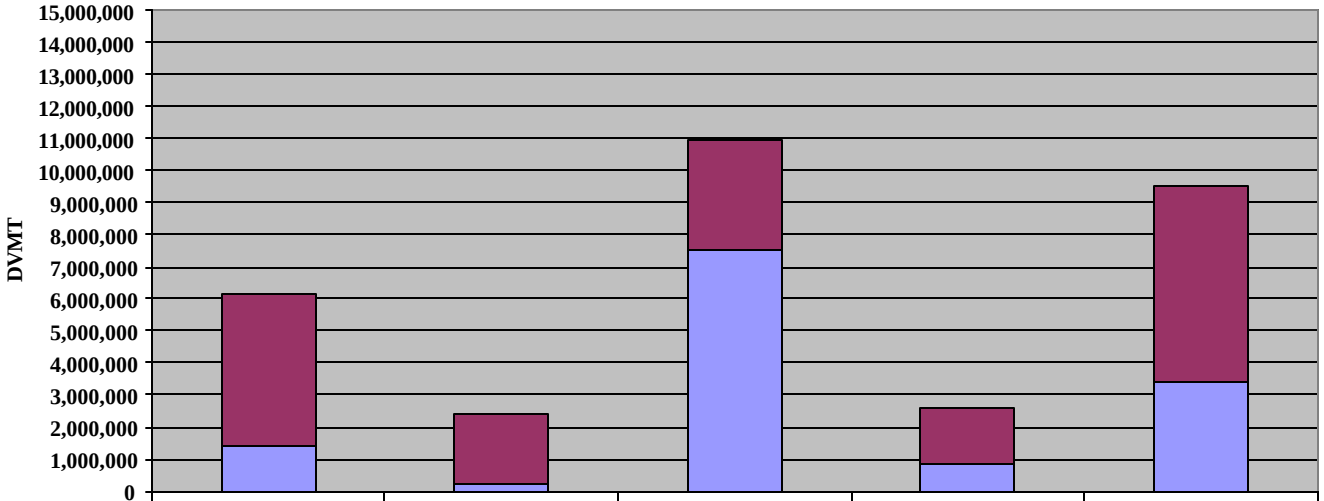
Figure E-3:
2000 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	4,007,896	1,837,837	2,910,155	1,479,815	5,153,275
Urban	1,199,298	225,251	6,511,554	744,928	2,888,307

County

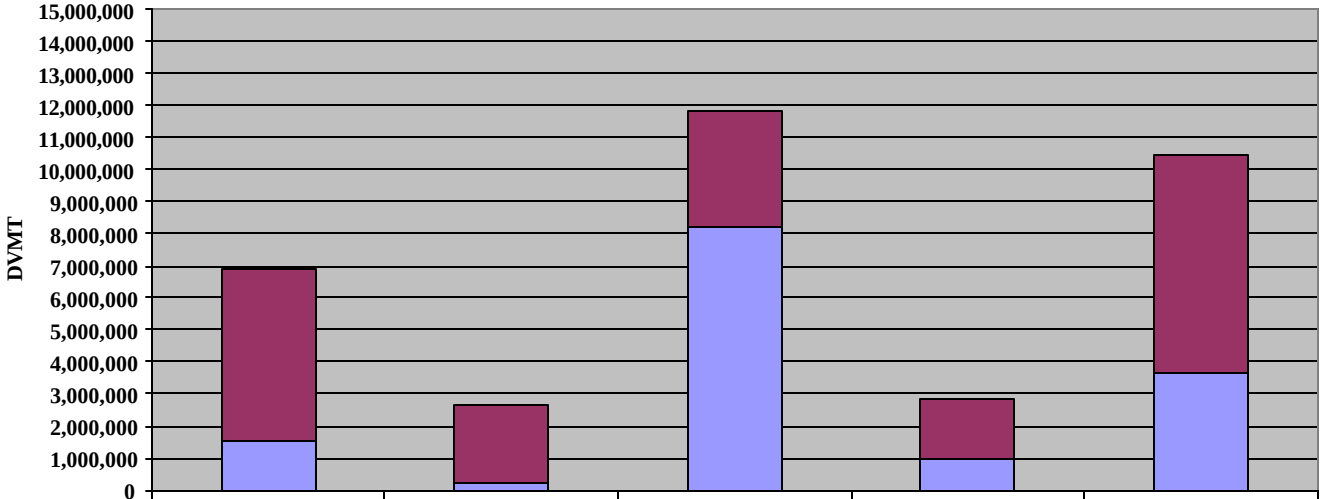
Figure E-4:
2007 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	4,780,709	2,161,478	3,372,998	1,749,499	6,115,034
Urban	1,401,023	252,372	7,559,421	879,174	3,386,253

County

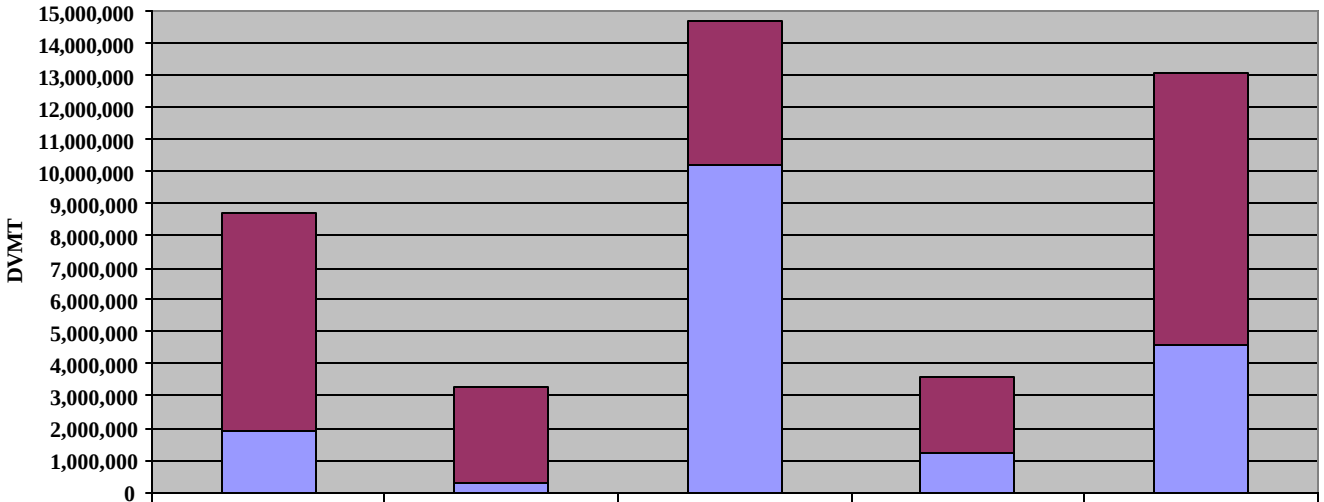
Figure E-5:
2012 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	5,332,719	2,375,132	3,648,804	1,894,928	6,740,494
Urban	1,545,113	266,902	8,191,197	953,892	3,689,204

County

Figure E-6:
2025 Greenville-Spartanburg-Anderson MSA Urban vs. Rural DVMT



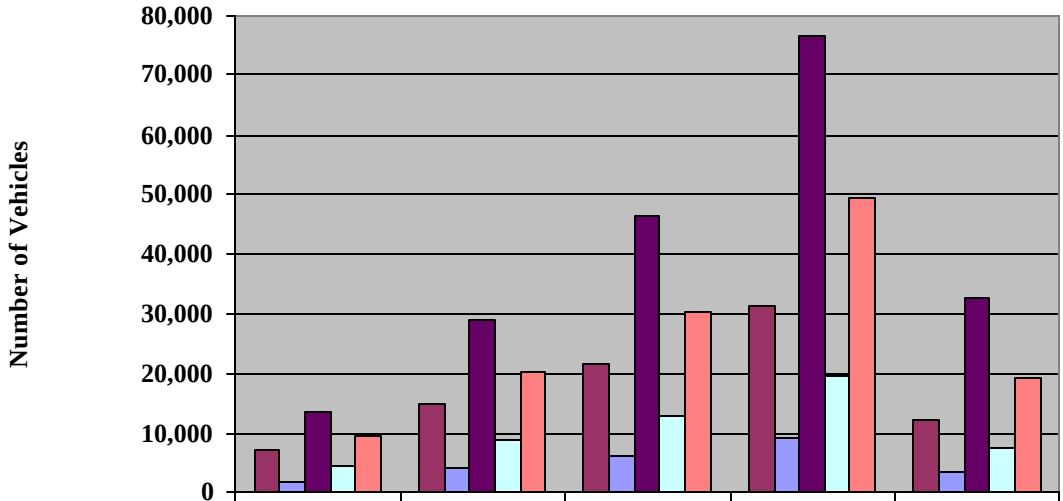
	Anderson	Cherokee	Greenville	Pickens	Spartanburg
Rural	6,767,945	2,983,782	4,527,504	2,403,353	8,497,628
Urban	1,919,745	319,371	10,177,988	1,209,829	4,589,111

County

Figure E-7[9] presents the motor vehicle registration data for the Greenville-Spartanburg-Anderson MSA. Only a small portion of the vehicles are pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 models.

[9] Data provided from SC Department of Public Safety, Division of Motor Vehicles

Figure E-7:
2000 Motor Vehicle DatGreenville-Spartanburg-Anderson MSA



	<1979	1980-1986	1987-1990	1991-1995	1996-2001
Anderson	7,121	14,896	21,425	31,432	12,024
Cherokee	1,863	4,265	6,049	9,255	3,512
Greenville	13,423	28,947	46,387	76,720	32,652
Pickens	4,495	8,745	12,989	19,573	7,447
Spartanburg	9,461	20,262	30,312	49,393	19,183

This data reflects 2000 registration figures, and many of the older vehicles will probably have been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Refueling Vapor Recovery (ORVR), systems will help to offset any potential impacts from the increased emissions from mobile sources in this area.

F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for Spartanburg County, and no data is available for assessing future growth within the recommended area. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur. It is reasonable to expect the majority of that growth to be located inside, or at least near, the recommended area boundary.

Table F-1: Historical and Projected Population and Population Density for Spartanburg and Cherokee Counties	
	Spartanburg County
Population, 1990[10]	226,793
Population, 2000[11]	253,791
Projected Population, 2020[12]	302,500
County Growth Rate, 2000 - 2020	19.19%

Spartanburg County's growth rate from 2000-2020 is 19.19%. Assuming the county growth is equally distributed throughout the county, the projected population of the recommended area for the year 2020 is 195,186 (163,761 in 2000 x 19.19% growth). However, equal distribution of growth is unlikely, particularly given that the northern part of the county is mountainous, the southern part of the county is rural, and the majority of the densely populated areas and businesses are contained within the recommended area.

Additionally, since the boundary includes the majority of Spartanburg County and already captures the area's urban population, it is reasonable to conclude that the boundary at least approximates, if not contains, the expected population growth, and hence the economic growth, for the area in the coming years.

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South

[10] Data provided by US Census: 2000.
[11] Data provided by US Census: 2000.
[12] Data provided by EPA.

Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

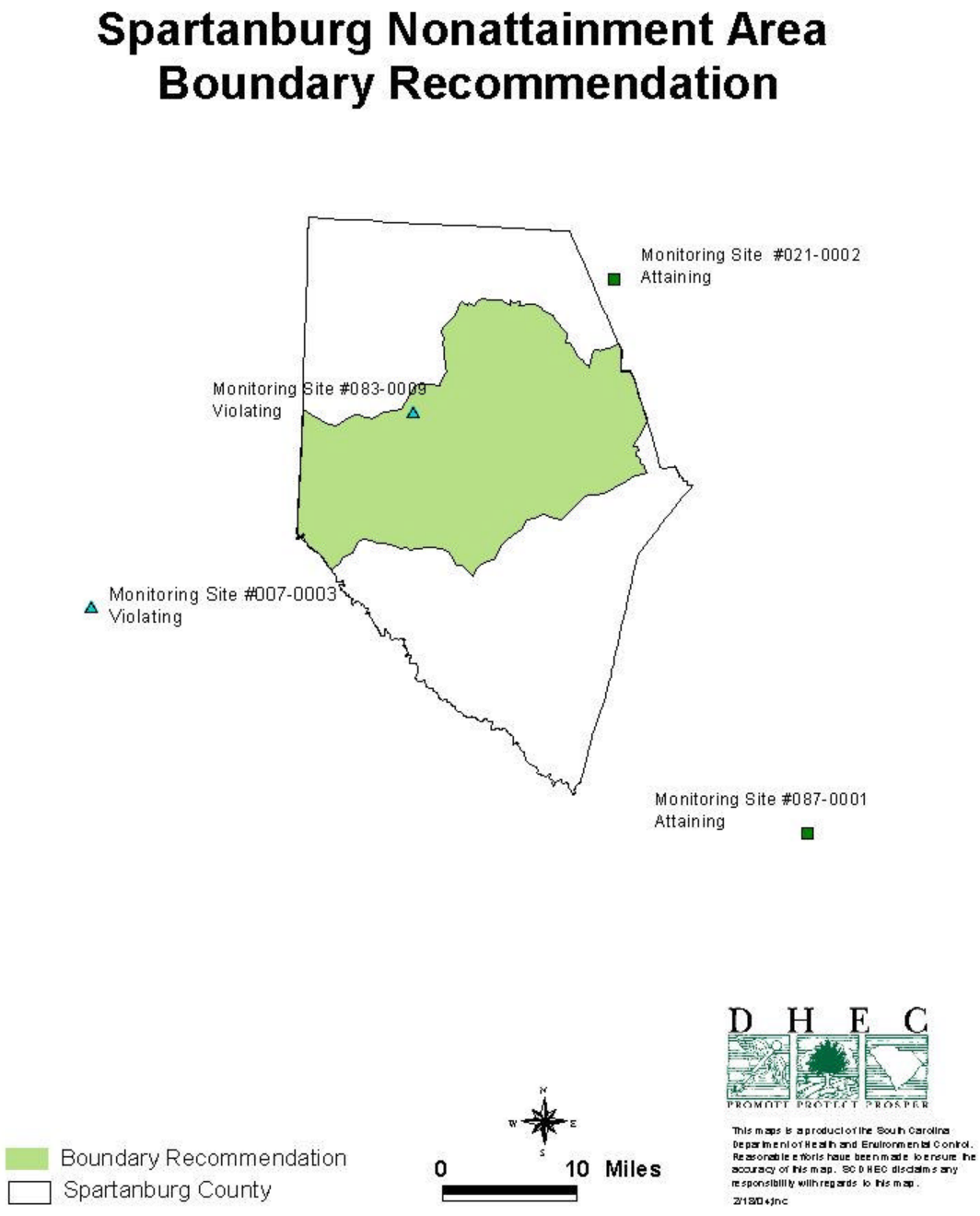
The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. Spartanburg County is located in the Piedmont Area. The line of demarcation runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional Boundaries

Figure I-1 shows the Department's recommended Spartanburg nonattainment area boundary.

Figure I-1



Starting Point is at the Greenville - Spartanburg County Line at SC 296 and the Enoree River.
Follows Greenville - Spartanburg County Line north to Beaverdam Creek.
Follows Beaverdam Creek southeast for 1.7 miles to SC 357.
Follows SC 357 northeast for 1.7 miles to Holly Springs Road (SC 358) and Greer Road.
Follows Greer Road northeast for 1.0 mile to Hampton Road.
Follows Hampton Road north for 0.2 miles to Montgomery Road.
Follows Montgomery Road east for 0.8 miles to North Tyger River.
Follows North Tyger River southeast for 2.3 miles to Inman Road (SC 292).
Follows Inman Road (SC 292) North for 1.5 miles to Little Mountain Road (S-217).
Follows Little Mountain Road (S-217) southeast for 0.3 miles to Israel Drive.
Follows Israel Drive northeast for 0.5 miles to Lake Cooley.
Follows Lake Cooley northeast for 0.1 miles to Waterford Drive.
Follows Waterford Drive northeast for 1.0 mile to Lismore Drive.
Follows Lismore Drive east for 0.8 miles to Blackstock Road (S-40).
Follows Blackstock Road (S-40) northwest for 0.3 miles to Old Settle Road.
Follows Old Settle Road northeast for 1.2 miles to Lawson Fork Road.
Follows Lawson Fork Road north for 0.2 miles to Lawsons Fork Creek.
Follows Lawsons Fork Creek east for 1.8 miles to I-26.
Follows I-26 north for 1.0 mile to Greene Creek.
Follows Greene Creek east for 0.1 miles to Meadow Creek.
Follows Meadow Creek north for 2.2 miles to Calvery Road (S-977).
Follows Calvery Road (S-977) northeast for 0.1 miles to Gate Road.
Follows Gate Road north for 1.7 miles to Chapman Road (S-54).
Follows Chapman Road (S-54) east for 0.3 miles to SC 9.
Follows SC 9 southeast for 0.3 miles to Lake Bowen Dam Road (S-213).
Follows Lake Bowen Dam Road (S-213) northeast for 1.9 miles to Municipal Reservoir.
Follows Municipal Reservoir east for 3.4 miles to Pacolet River.
Follows Pacolet River southeast for 3.4 miles to Taylor Blaylock Lake.
Follows Taylor Blaylock Lake southeast for 5.9 miles to the Pacolet River.
Follows Pacolet River southeast to US 221.
Follows the Spartanburg Metropolitan Planning Organization Boundary to the Spartanburg and Cherokee line
Follows Cherokee / Spartanburg County Line southeast to Mill Branch
Follows Mill Branch southwest for 1.8 miles to Pacolet River
Follows Pacolet River southeast for 2.5 miles to Richland Creek
Follows Richland Creek southwest for 2.6 miles to Pine St (US 176)
Follows Pine St (US 176) southeast 1.2 miles to Southport Road (SC 295)
Follows Southport Road (SC 295) northeast for 2.7 miles to Dairy Ridge Road
Follows Dairy Ridge Road southwest for 2.4 miles to S-321
Follows S-321 southwest for 0.3 miles to SC 56
Follows SC 56 south for 1.1 miles to Fairforest Creek
Follows Fairforest Creek west for 1.3 miles to Foster Creek
Follows Foster Creek southwest for 2.2 miles to Freedom Trail
Follows Freedom Trail northwest for 0.4 miles to Independence Drive
Follows Independence Drive southwest for 0.4 miles to Patriot Road
Follows Patriot Road west for 0.3 miles to Stone Station Road (SC 215)
Follows Stone Station Road (SC 215) northwest for 1.0 mile to US 221
Follows US 221 southwest for 5.0 miles to South Tyger River
Follows South Tyger River northwest for 5.1 miles to SC 417
Follows SC 417 southwest for 0.1 miles to Lightwood Knot Road

Follows Lightwood Knot Road northwest for 2.5 miles to Greenpond Road (S-62)
Follows Greenpond Road (S-62) north for 0.3 miles to Gaston Drive
Follows Gaston Drive north for 0.3 miles to John B White Sr Boulevard (SC 296)
Follows John B White Sr Boulevard (SC 296) southwest for 5.4 miles back to the starting point on the Greenville - Spartanburg County Line at the Enoree River.

J. Level of Control of Emission Sources

Local Controls

In December 2002, Spartanburg County entered into an Early Action Compact (EAC) with the Department and EPA, Region 4. Each of the Upstate Counties (Spartanburg, Anderson, and Greenville) recognizes the value and importance of the health of the citizens and the related need for clean air; however, each recognizes that individual county planning is the quickest way to achieve results. Through its participation with the EAC, Spartanburg County is exploring countywide local control strategies to be implemented no later than April 2005. These strategies include designating an ozone action coordinator; encouraging the use of hybrid vehicles and alternative fuels; evaluating the use of high occupancy vehicle lanes; implementing open burning restrictions; and supporting Department statewide efforts. A complete listing of the emission reduction strategies for Spartanburg County was included in their December 2003 Progress Report and will be updated in March 2004.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department must submit, for EPA approval, state implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed R.61-62.5, Standard 5.2, Control of Oxides of Nitrogen (NOx) on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NO_x from these sources.

As part of the Early Action Compact (EAC) process another regulation that the Department is revising in an effort to reduce NO_x emissions statewide is R. 61-62.2, *Prohibition of Open Burning*. The most

significant revisions to this regulation are as follows: deleting the exception for the burning of household trash, modifiying the exception for the burning of construction waste, and revising the exception for fires set for the purpose of firefighter training. The burning of household trash and construction waste presents health and environmental concerns for many communities. Elimination of the burning of household trash will result in a statewide reduction of 2,379 tons per year of NO_x and 11,896 tons per year VOC. While the revisions to the burning of construction waste and fires set for the purpose of firefighter training are more difficult to quantify, these revisions will decrease NO_x and VOC emissions from these activities.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing "fail-safe" provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina's forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard and yet are still willing to plan and work with other areas to implement controls to ensure early attainment of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the Early Action Compact (EAC), EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. We have implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts, distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995. In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's Title V permit program. EPA's review of South Carolina's program found that it was operating at a very high level of proficiency.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers, and power plants are modified or added. In areas with unhealthy air, NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

South Carolina has a SIP approved NSR program with its own NSR rules. Therefore, South Carolina has full authority to issue both major and minor NSR permits. Because there are no nonattainment areas in South Carolina at present, the only applicable major NSR permitting regulations are the Prevention of Significant Deterioration (PSD) regulations.

In July 2003, EPA Region 4 conducted a comprehensive review of South Carolina's NSR program. The EPA determined that South Carolina has a thorough and well-organized process for permitting sources and a good comprehension of regulatory requirements and policies.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998)*. The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan. [13]

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies use alternative fuels when operating alternative fuel vehicles.

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

[13] South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile. [14]

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road. [12]

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

[14] U.S. EPA Office of Transportation and Air Quality

To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of 156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.

York County, South Carolina
Attainment Area
Summary

Upon review of the ozone nonattainment area boundary recommendations submitted by the South Carolina Department of Health and Environmental Control (Department) on July 14, 2003, the United States Environmental Protection Agency (EPA), in a letter dated December 3, 2003, notified the Department of its intent to promulgate designations of nonattainment areas in South Carolina with modifications to the State's recommendations. Specifically, EPA responded that York County should be included as a nonattainment area due to its affiliation with the Charlotte-Gastonia-Rock Hill Metropolitan Statistical Area (MSA). The Department wishes to take this opportunity to demonstrate why EPA's proposed modifications are inappropriate.

The Clean Air Act's requirement of MSAs or Consolidated MSAs as the nonattainment boundary applies only to areas designated as serious and above. Based on the latest draft proposal by EPA concerning implementation of the 8-hour ozone standard, the Charlotte-Gastonia-Rock Hill MSA would be classified as moderate. Designating the entire MSA would, by default, include York County and bind it to the extended attainment date, as well as a significantly higher design value regardless of the fact that the York County air quality monitor shows attainment with the standard. The Office of Management and Budget (OMB) has defined metropolitan areas for statistical purposes to include the collection, tabulation, and publication of data by Federal agencies for geographic areas to facilitate the uniform use and comparability of data on a national scale. The OMB does not consider the MSA a reliable tool for nonstatistical purposes. This opinion was recently confirmed in the December 27, 2000, *Federal Register* notice concerning *Standards for Defining Metropolitan and Micropolitan Statistical Areas* by the OMB. The Department asserts that designating areas under the National Ambient Air Quality Standards is indeed a nonstatistical program. For EPA to default to a presumptive boundary for "consistency" purposes stifles the creativity to improve air quality as expeditiously as possible to bring clean air to its citizens and rewards those who choose to wait. EPA's broad-brush approach discourages initiatives by local areas, counties, and states to be proactive. Further, for EPA to default to its presumptive boundaries rather than allowing the use of its published criteria significantly changes Congressional intent and EPA's guidelines to a "presumptive norm."

Throughout this summary of the York County attainment area recommendation, any statistical analysis or evaluation of the York County data will be conducted in comparison to the area that EPA has stated it's intention to declare as a nonattainment area, which includes Cabarrus, Gaston, Lincoln, Mecklenburg, Rowan, and Union Counties in North Carolina; and York County in South Carolina (Charlotte-Gastonia-Concord, NC-SC MSA).

Based on South Carolina's commitment to "Cleaner Air Sooner," a designation of attainment for York County is appropriate. The South Carolina General Assembly passed, and our Governor signed, a concurrent resolution that endorses Early Action Compacts and encourages state agencies to develop programs that focus on efforts that state government can take to reduce ground-level ozone. At the end of 2002, 45 of South Carolina's 46 counties entered into Early Action Compacts to implement ozone reduction strategies earlier than federally required. These counties, along with other government entities, industry, environmental groups, and other stakeholders have worked together both at the local level and state level to develop strategies to reduce ozone pollution. The few counties that have been identified by EPA as potential nonattainment areas are actively participating in the Early Action Compact process and are developing local plans to bring cleaner air sooner to their citizens. Most importantly to our future air quality, the 45 counties continue to embrace strategies that are best for improving air quality on a statewide level and not just where boundary lines are proposed to be drawn. Additionally, the

Department entered into a specific memorandum of understanding with North Carolina's Department of Environment and Natural Resources confirming the agreements reached between the two agencies with regard to ozone attainment matters, an Early Action Compact for counties in South Carolina (including York) and in the locally led Sustainable Environment and Quality of Life (SEQL) effort for the Charlotte, NC area. These efforts demonstrate a commitment by all involved to protect and improve air quality for the public.

Based on South Carolina's statutory authority to require controls on sources regardless of location, a designation of attainment for York County is appropriate. The Department has the legal authority to seek emission reductions from any source regardless of where it is located if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. Further, our recent actions such as addressing NO_x emissions from stationary sources demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

Based on state and EPA modeling, a designation of attainment for York County is appropriate. Preliminary results show that all areas of South Carolina will attain the 8-hour ozone standard by 2007 with the reductions attributed to the NO_x SIP Call and the Tier 2/Low Sulfur Fuel regulations. Additionally, a modeling analysis for the year 2012 demonstrates attainment as well. The results of this modeling verify the regional modeling completed by EPA, which also demonstrated attainment for all South Carolina areas with implementation of the above programs.

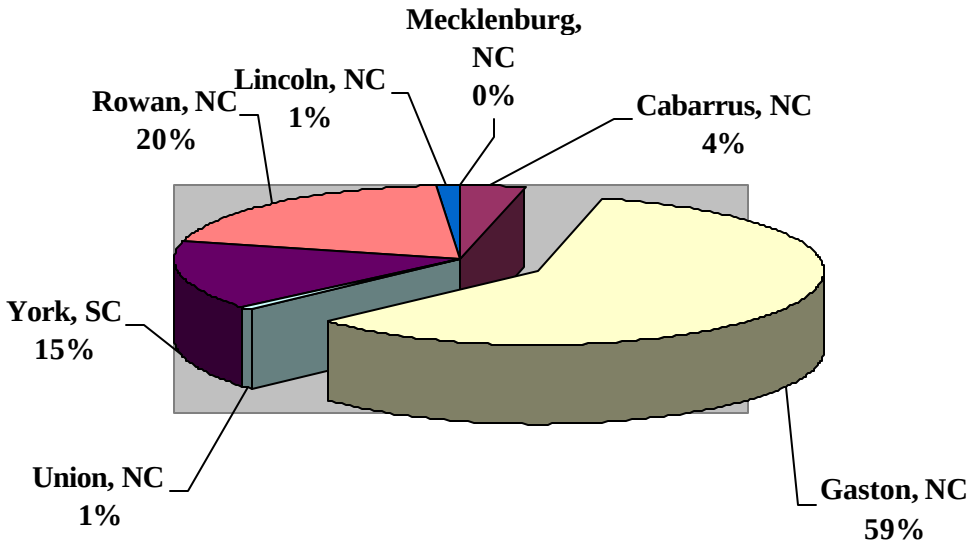
Based on the 2001-2003 quality assured data, a designation of attainment for York County is appropriate. The monitor in York County is attaining the 8-hour standard with a design value (DV) of 0.083 ppm. York County experienced **no** exceedances of the standard value (0.085ppm or higher) in 2003. The monitors in York, as well as the monitors in Union (SC), Cherokee (SC), Chester (SC), and Arrowood (Mecklenburg County, NC), all attain the standard. Furthermore, these surrounding monitors bound York County. By defaulting to the MSA/CMSA presumptive boundary EPA may actually skew the population information when comparing to actual air quality monitoring results. By designating York County as nonattainment, the citizens would be told that their air quality does not meet the standard when the monitoring data confirms that it does.

Based on a comprehensive ozone-forecasting program that covers twenty-nine (29) counties in our state, including York County, a designation of attainment for York County is appropriate. South Carolina citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions they believe appropriate to better protect their health. The Department has expended and will continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register.*

Based on low population and low population density, a designation of attainment for York County is appropriate. In 2000, York County had a population of 164,614, which accounted for only 10.98 percent of the MSA population. York County's population is significantly lower than the adjacent MSA counties of Gaston and Mecklenburg, North Carolina. Gaston County had a population of 190,365 and Mecklenburg County had a population of 695,454. At 241.37 persons per square mile, York County had the fifth lowest population density in the MSA.

Based on the lower MSA point source emissions, a designation of attainment for York County is appropriate. York County comprises 15 percent of the MSA NO_x point source emissions. (See figure 1.)

Figure 1: Charlotte-Gastonia-Rock Hill MSA
Point Source NO_x Emissions



Based on the lower MSA area source emissions, a designation of attainment for York County is appropriate. York County comprised only 13.31 and 19.57 percent of the MSA daily NO_x and VOC area source emissions, respectively. (See figures 2 & 3.)

Figure 2: Charlotte-Gastonia-Rock Hill MSA
Area Source NO_x Emissions

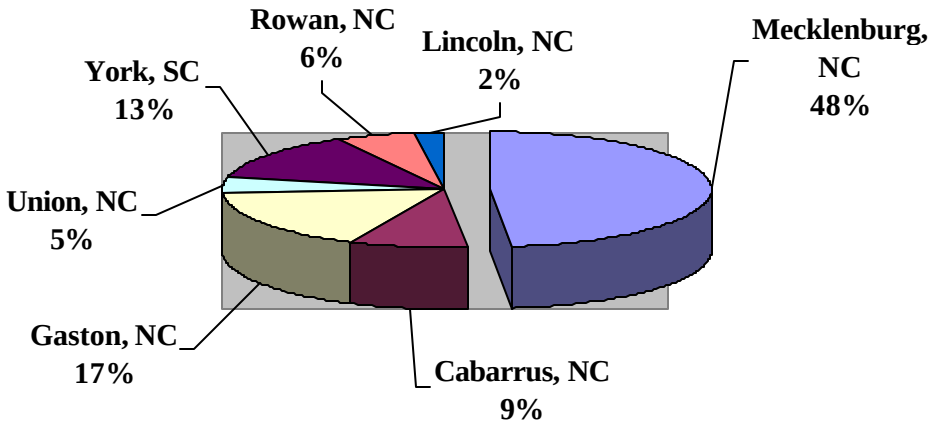
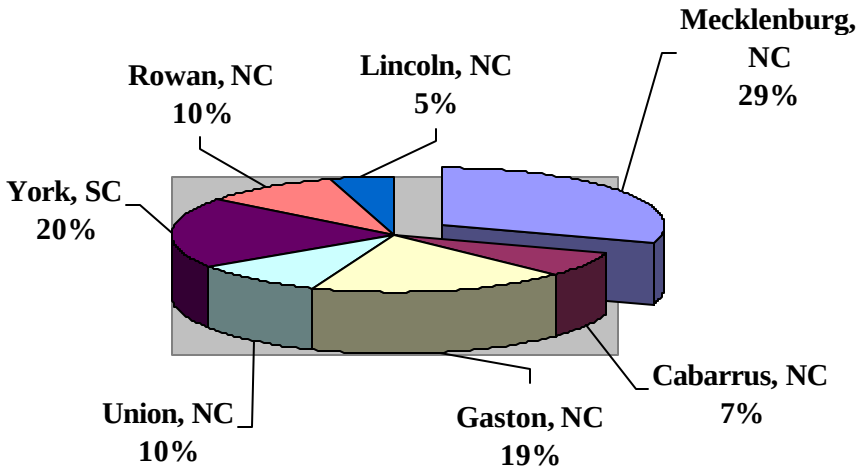


Figure 3: Charlotte-Gastonia-Rock Hill MSA
Area Source VOC Emissions



Based on the lower MSA mobile source emissions, a designation of attainment for York County is appropriate. York County contributed only 11.53 percent of the MSA mobile source NO_x emissions and 10.54 percent of the MSA mobile source VOC emissions. (See figures 4 & 5.)

Figure 4: Charlotte-Gastonia-Rock Hill MSA
Daily On-Road Mobile Source NO_x Emissions

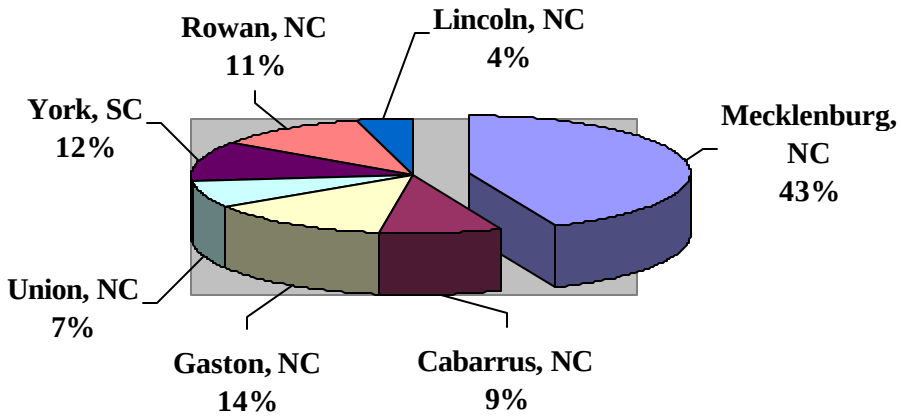
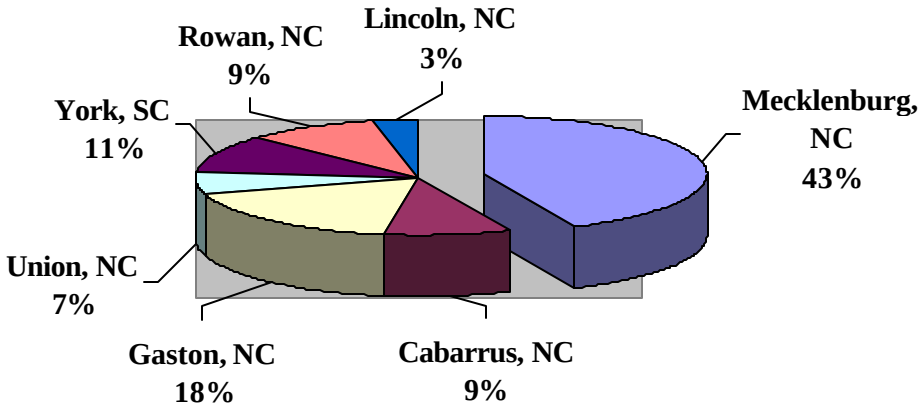


Figure 5: Charlotte-Gastonia-Rock Hill MSA
Daily On-Road Mobile Source VOC Emissions



Based on commuter flow in York County, a designation of attainment for York County is appropriate. According to the U.S. Census Bureau 78.13 percent of workers in the MSA, work in the same county they live in. York County accounts for 10.57 percent of the working population in the MSA, workers living in York and commuting to other counties in the MSA accounts for only 3.86 percent of the entire MSA worker flow.

	Table 1: County of Residence for Charlotte-Gastonia-Rock Hill MSA							
	County of Residence							
CountyWorked In	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)	Grand Total
Cabarrus (NC)	**4.91%**	0.06%	0.03%	0.94%	1.14%	0.08%	0.04%	7.20%
Gaston (NC)	0.06%	**7.90%**	0.44%	0.55%	0.03%	0.03%	0.35%	9.36%
Lincoln (NC)	0.01%	0.26%	**2.14%**	0.10%	0.01%	0.00%	0.02%	2.55%
Mecklenburg (NC)	3.18%	3.24%	0.92%	**46.19%**	0.69%	3.49%	3.35%	61.06%
Rowan (NC)	0.56%	0.15%	0.04%	0.18%	**5.71%**	0.01%	0.03%	6.69%
Union (NC)	0.07%	0.03%	0.01%	0.68%	0.03%	**4.57%**	0.06%	5.46%
York (SC)	0.04%	0.22%	0.01%	0.59%	0.02%	0.09%	**6.71%**	7.69%
Grand Total	8.84%	11.86%	3.60%	49.24%	7.63%	8.26%	10.57%	100.00%
Out of County Flow	3.93%	3.96%	1.46%	3.05%	1.92%	3.69%	3.86%	

1. Legislative and County support for the Department's "Cleaner Air Sooner" concept.
2. The Department's statutory authority to require controls on sources regardless of location.
3. State and EPA modeling indicating attainment with the ozone standard in 2007 and 2012.
4. Quality assured ozone-monitoring data indicating attainment.
5. Comprehensive ozone forecasting program.
6. Low population and low population density.

7. Low MSA point, area, and mobile source emissions.
8. Low MSA commuter flow.

The above eight factors represent the most compelling reasons why the Department believes York County should be designated attainment. Additional data to support these factors, as well as other supporting information to address EPA's eleven criteria, is attached.

Supporting Documentation for
York County, South Carolina
Attainment Area

York County, South Carolina
Attainment Area

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

To evaluate the emissions in York County and adjacent areas, South Carolina utilized the estimated annual 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, and on-road and off-road mobile sources.

Figures A-1 and A-2 show a comparison of emission levels from each source category for York and surrounding counties. Additional emissions inventory information is provided in Section D.

Figure A-1: NO_x Sources for York and Adjacent Counties*
*** Order of bars corresponds with order of counties in legen**

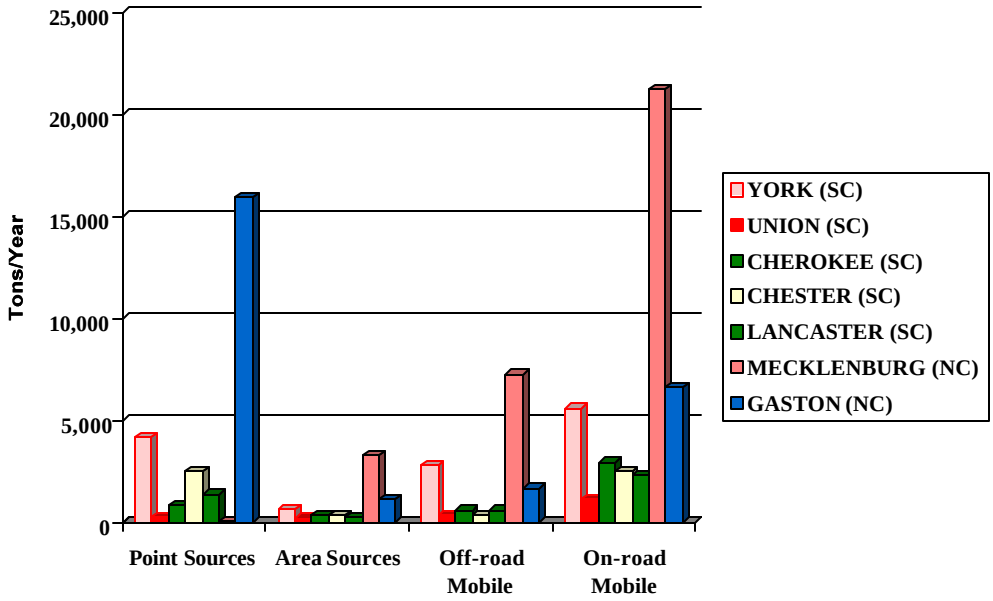
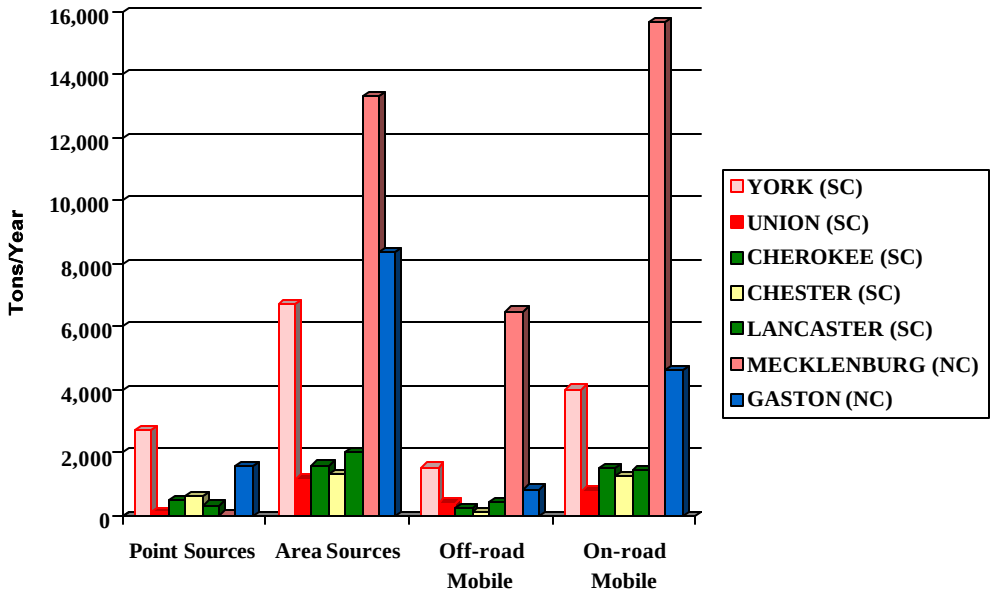


Figure A-2: VOC Sources for York and Adjacent Counties*

*** Order of bars corresponds with order of counties in legend**



The Department currently has one ozone-monitoring site in York County; the monitor indicates attainment of the air quality standard. York County is part of the Charlotte-Gastonia-Rock Hill MSA. Additional air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

In 2000, York County had a population of 164,614, which accounted for 10.98% of the total MSA population (1,499,293). The more populated counties of Gaston (NC) and Mecklenburg (NC) accounted for 12.70% and 46.39% of the MSA population, respectively. Even though four counties were less populated than York County, the counties of Cabarrus, Rowan, and Union, North Carolina, still contained a substantial portion of the MSA population: 8.74%, 8.69%, and 8.25%, respectively.

Containing 682 square miles, York County is the largest county in the MSA. In fact, 20.21% of the total MSA land area is in York County. In other words, over **one-fifth** of the MSA land area is contained in York County, yet only a little more than **one-tenth** of the MSA population (10.98%) lived in York County in 2000. In contrast, Gaston County contained 10.55% of the land area but 12.70% of the MSA population and Mecklenburg contained 15.59% of the land area but 46.39% of the MSA population.

York County's population density also distinguishes it from the other MSA counties. A population density of 241.37 persons per square mile, York was the third least densely populated county in the MSA. The three most densely populated MSA counties are Cabarrus, Gaston, and Mecklenburg. With population densities of 360.06, 534.73, and 1,322.16, respectively, Cabarrus, Gaston, and Mecklenburg Counties are about 1.5, 2, and 5.5, respectively, times more densely populated than York County.

Table B-1 contains population and population density data for York County and the other six MSA counties.

Table B-1:
Population, Land Area, and Urban/Rural Population, 2000

	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)	MSA Total
Population[1]	131,063	190,365	63,780	695,454	130,340	123,677	164,614	1,499,293
% MSA Population	8.74%	12.70%	4.25%	46.39%	8.69%	8.25%	10.98%	100%
Land Area (Square Miles)[2]	364	356	299	526	511	637	682	3,375
% MSA Land Area	10.79%	10.55%	8.86%	15.59%	15.14%	18.87%	20.21%	100%
Persons per Square Mile[3]	360.06	534.73	213.31	1,322.16	255.07	194.16	241.37	444.23
Urban Population	94,890	147,533	24,173	669,027	76,640	62,086	105,847	1,180,196
% Urban Population[4]	72.40%	77.50%	37.90%	96.20%	58.80%	50.20%	64.30%	
% MSA Urban Population	8.04%	12.50%	2.05%	56.69%	6.49%	5.26%	8.97%	100%
Rural Population	36,173	42,832	39,607	26,427	53,700	61,591	58,767	319,097
% Rural Population[5]	27.6%	22.5%	62.1%	3.80%	41.2%	49.80%	35.70%	
% MSA Rural Population	11.34%	13.42%	12.41%	8.28%	16.83%	19.30%	18.42%	100%

Figure B-1 below, outlines the York County urban areas for the year 2000. Accordingly, the urban areas covered only 12.7% of the land area in York County. In other words, 105,847 people in York County, or the entire urban population, lived in an 86.6 square mile area (12.7% of 682 square miles).

[1] Data provided by the US Census: 2000.
[2] Data provided by the US Census: 2000.
[3] Data provided by the US Census: 2000.
[4] Data provided by the South Carolina Statistical Abstracts.
[5] Data provided by the South Carolina Statistical Abstracts.

Figure B-1

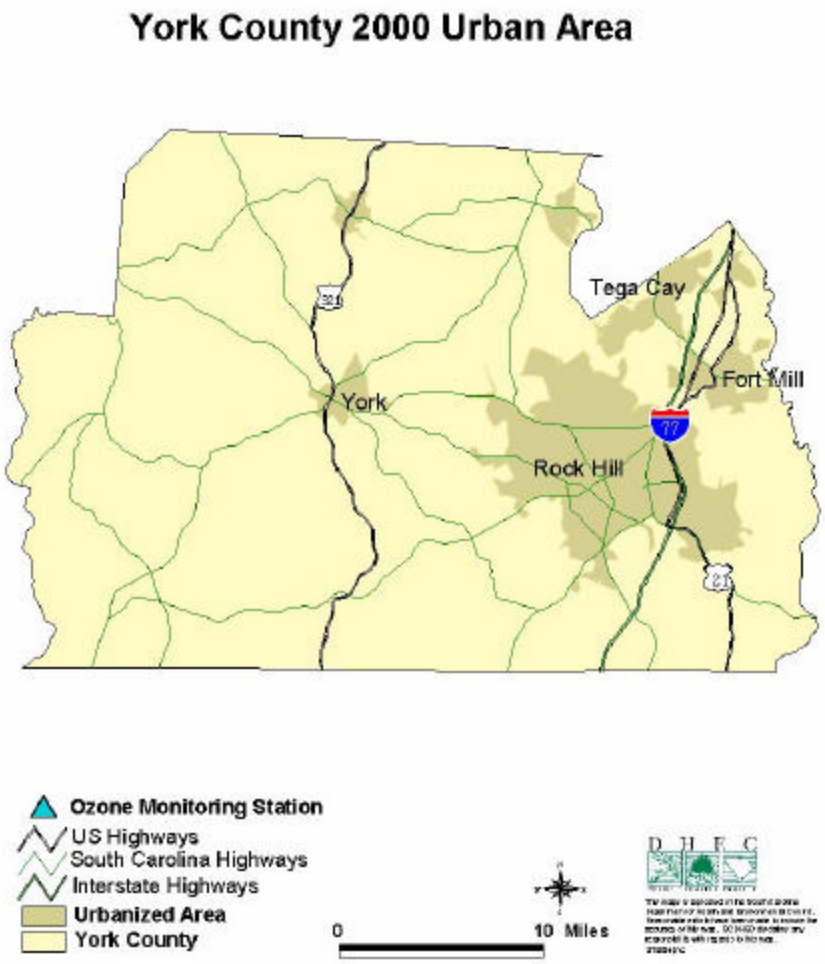
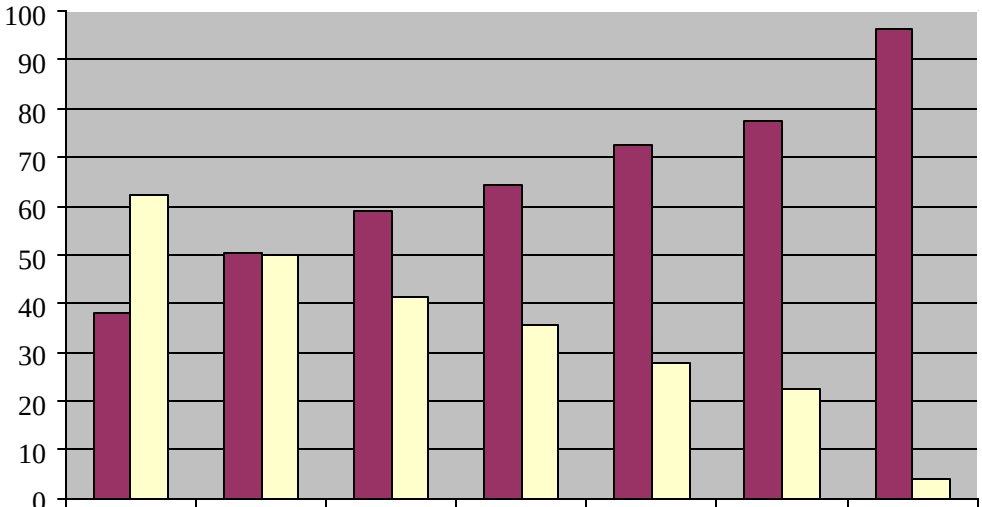


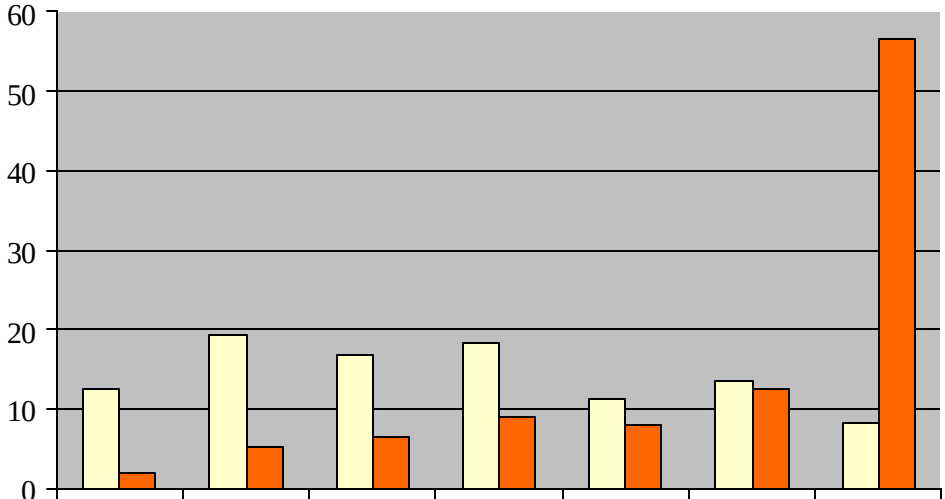
Figure B-2 below, depicts the urban and rural population of each county in the MSA whereas Figure B-3 depicts urban and rural population in each county as a percentage of the MSA urban and rural population. In 2000 York was 64.30% urban and ranked fourth in terms of urban population as seen in Figure B-2. York also contained about 8.97% of the MSA urban population. However, based on Figure B-3, York contained the second highest rural population relative to the MSA rural population. In summary, the population of York County - the largest county in the MSA – was somewhat more urban than rural (64.30% to 35.70%), yet that urban population accounted for only 8.97% of the MSA's total urban population. Furthermore, York contained more of the MSA's total rural population than the other counties, excluding the county of Union, North Carolina. Consequently, a portion of York County has an urbanized center, the remainder of the county is rural in nature, and significant disparities in population distribution exist across York County, and to some degree the other MSA counties.

Figure B-2:
Percent Urban and Rural, 2000



	Lincoln (NC)	Union (NC)	Rowan (NC)	York (SC)	Cabarrus (NC)	Gaston (NC)	Mecklenburg (NC)
% Urban Population	37.9	50.2	58.8	64.3	72.4	77.5	96.2
% Rural Population	62.1	49.8	41.2	35.7	27.6	22.5	3.8

Figure B-3 : Percent Rural and Urban Population relative to the MSA, 2000



	Lincoln (NC)	Union (NC)	Rowan (NC)	York (SC)	Cabarrus (NC)	Gaston (NC)	Mecklenburg (NC)
% of MSA Rural Population	12.41	19.3	16.83	18.42	11.34	13.42	8.28
% of MSA Urban Population	2.05	5.26	6.49	8.97	8.04	12.5	56.69

Table B-2 contains the number of employees per county, based on data taken from the Census 2000 and using the North American Industry Classification System (NAICS) for year 2001. In 2001 the number of employees working in the seven MSA counties totaled 803,742. Only 7%, or 52,745, of the total employees in the MSA worked in York County. Furthermore, adjacent Mecklenburg County contained roughly 10 times more employees (534,526) than York County.

Table B-2:
MSA Employees, NAICS, 2001

Area	Total Employees	% Total workers
Mecklenburg (NC)	534,526	67%
Gaston (NC)	62,657	8%
York (SC)	52,745	7%
Cabarrus (NC)	51,523	6%
Rowan (NC)	43,025	5%
Union (NC)	39,581	5%
Lincoln (NC)	19,685	2%
Total MSA	**803,742**	**100%**

Table B-3 contains the number of MSA employees per classification for 2001, based on the NAICS Industry Code Description. For example, the Accommodation & Food Services classification in 2001 accounted for 7.25% of the employees in the MSA, and 62.84% of those employees worked in Mecklenburg County while 9.07% of those employees worked in York County. The largest three employment classifications in the MSA were in manufacturing (14.32%), retail trade (10.70%), and Finance and Insurance (10.17%); of those classifications York County employed only 10.86%, 8.92%, 1nd 1.85%, respectively. In fact, Mecklenburg County employed the vast majority of employees in the Finance and Insurance classification. Moreover, York County employed less than 10.0% of the employees in each industry code description, excluding Manufacturing (10.86% of the employees).

Table B-3:
MSA Employees per Classification, NAICS, 2001

Industry Code Description	% in MSA	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	York (SC)
Accommodation & food services	7.25	7.55%	8.95%	2.01%	62.84%	5.39%	4.19%	9.07%
Admin, support, waste mgt, remediation services	8.15	2.49%	4.68%	1.24%	77.98%	5.96%	2.54%	5.11%
Arts, entertainment & recreation	1.43	11.40%	4.23%	1.30%	68.33%	4.80%	1.81%	8.12%
Construction	7.03	6.74%	6.31%	2.48%	62.23%	3.88%	12.53%	5.83%
Educational services	1.42	4.21%	8.06%	0.61%	71.16%	8.00%	6.38%	1.58%
Finance & insurance	10.17	1.25%	2.08%	0.37%	92.58%	1.04%	0.83%	1.85%

Table B-3: MSA Employees per Classification, NAICS, 2001								
Industry Code Description	**% in MSA**	**Cabarrus (NC)**	**Gaston (NC)**	**Lincoln (NC)**	**Mecklenburg (NC)**	**Rowan (NC)**	**Union (NC)**	**York (SC)**
Forestry, fishing, hunting, and agriculture support	0.03	19.64%	*	8.93%	10.27%	*	61.16%	*
Health care and social assistance	8.92	8.68%	10.26%	2.38%	58.11%	8.73%	3.92%	7.91%
Information	3.48	3.98%	2.36%	0.52%	86.78%	1.13%	0.99%	4.25%
Management of companies & enterprises	2.60	4.39%	4.76%	0.26%	71.37%	10.90%	*	8.32%
Manufacturing	14.32	10.17%	17.81%	6.33%	33.78%	10.18%	10.87%	10.86%
Mining	0.02	*	*	*	100.00%	*	*	*
Other services (except public administration)	4.67	6.73%	10.52%	2.09%	63.10%	5.25%	4.21%	8.09%
Professional, scientific & technical services	5.57	3.58%	3.28%	2.42%	82.58%	1.73%	2.20%	4.21%
Real estate & rental & leasing	1.70	6.68%	5.15%	2.13%	77.45%	1.95%	2.18%	4.45%
Retail trade	10.70	10.26%	10.80%	2.81%	55.79%	5.53%	5.89%	8.92%
Transportation & warehousing	4.67	7.25%	1.85%	1.60%	83.57%	2.62%	1.81%	1.30%
Unclassified establishments	0.05	3.71%	8.82%	2.55%	65.20%	3.48%	16.24%	*
Utilities	0.78	1.54%	*	2.00%	90.37%	3.89%	2.21%	*
Wholesale trade	7.04	3.83%	3.60%	2.22%	77.07%	3.32%	3.93%	6.01%
** The number of employees not available or the number of employees was reported as a range.*								

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

York is surrounded by attaining monitors in Chester, Union, and Cherokee Counties in South Carolina and by the Arrowood monitor in North Carolina. With the exception of 2002, York County experienced **no** exceedances of the eight-hour ozone standard value of 0.085 ppm. Wind analyses (see figure C-1) on high ozone days in **York County** indicate that the winds are more likely to be from the **northeast** from 1:00am to 6:00pm. In contrast, wind analyses (see figure C-2) on high ozone days in Mecklenburg County indicate the winds are out of the northwest in the morning hours, and the winds are out of the southeast, southwest, and northeast during the afternoon hours. For all wind analyses of high ozone days, the percentage of calm or variable winds range from 40-50 percent meaning that the majority of the time there is very little transport of pollutants across counties.

The York County ozone monitoring station (York CMS 45-091-0006) is located off US Highway 321.

The site has been in operation since 1993. Ozone concentrations are measured from mid-March through mid-November. The area surrounding the monitoring site is agricultural and it is located approximately 222 meters above sea level. According to the South Carolina Department of Transportation (SCDOT) traffic count for 1993, one thousand (1,000) vehicles per day accessed the road next to the monitor. The monitoring objective for the York County site is to measure extreme downwind ozone concentrations relative to the Charlotte Area, particularly when the predominate winds are out of the northeast.

The Cherokee County ozone monitoring station (Cowpens National Battle Ground 045-021-0002) is located off Highway 11. The site has been in operation since 1988 and measurement of ozone concentrations has run continuously since April of that year. The area surrounding the monitoring site is forest and it is located approximately 296 meters above sea level. According to SCDOT traffic count for 1993, one thousand (1,000) vehicles per day accessed the road. The monitoring objective for Cowpens National Battle Ground is to measure concentrations for upwind background.

The Chester County ozone monitoring station (Chester 045-023-0002) is located off Highway 909. The site has been in operation since 1980 and measurement of ozone concentrations are measured from mid-March through mid-November. The area surrounding the monitoring site is rural and it is located approximately 201 meters above sea level. According to SCDOT traffic count for 1992, one thousand (1,000) vehicles per day accessed the road. The monitoring objective for Chester is to measure concentrations for general background.

The Union County (SC) ozone monitoring station (Delta 45-087-0001) is located off Highway 121. The site has been in operation since 1983 but the ozone monitoring station only runs mid-March through mid- November. The area surrounding the monitoring site is rural, and is located approximately 113 meters above sea level. According to SCDOT traffic count for the year 1993, twenty-five (25) vehicles per day accessed the road. The monitoring objective for the Delta site is to measure ozone concentrations for general background.

The Mecklenburg County ozone monitoring station (Arrowood 037-119-1005), operated by the North Carolina Department of Environment and Natural Resources (NCDENR), is located off of I-77. The site has been in operation since 1977 and measurement of ozone concentrations are measured from April 1 through October 31 of each year. The area surrounding the monitoring site is industrial and is located approximately 195 meters above sea level. This data was obtained from the NCDENR website, and the monitoring objective was not identified.

The Union County (NC) ozone monitoring station (Monroe 037-179-0003), operated by the NCDENR, is located in the town of Monroe. The site has been in operation since 1999 and measurement of ozone concentrations are measured from April 1 through October 31 of each year. The area surrounding the monitoring site is suburban and is located approximately 200 meters above sea level. The monitoring objective for the Monroe monitoring site is population exposure. This data was obtained from the NCDENR website.

Table C-1 presents the 2001 through 2003 quality assured 8-hour ozone monitoring date for Chester, Cherokee, Union and York Counties in South Carolina and ozone monitoring data for Mecklenburg, and Union Counties in North Carolina. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. The 2003 design values for the York CMS, Chester, Delta, Cowpens National Battle Ground, and Arrowood monitors indicate attainment with the 8-hour ozone standard.

Table C-1: York Area Ozone Monitoring Data						
County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2001	2002	2003	
York (SC)	45-091-0006	York CMS	0.080	0.096	0.075	0.083
Chester (SC)	45-023-0002	Chester	0.083	0.093	0.078	0.084
Cherokee (SC)	45-023-0002	Cowpens National Battle Ground	0.080	0.093	0.079	0.084
Union (SC)	45-087-0001	Delta	0.079	0.085	0.078	0.080
Mecklenburg (NC)	37-119-1005	Arrowood	0.086	0.094	0.073	0.084
Union (NC)	37-179-0003	Monroe	0.081	0.100	0.083	0.088

Table C-2 contains the previous three years daily maximum ozone concentrations above 0.084 ppm. A period in the box indicates no exceedance occurred on that date.

Table C-2: York County Attainment Area Ozone Values						
Date of Exceedance	York (SC) Exceeding Value	Chester (SC) Exceeding Value	Cherokee (SC) Exceeding Value	Union (SC) Exceeding Value	Arrowood (NC) Exceeding Value	Monroe (NC) Exceeding Value
05/05/01	.	.	.	.	0.086	.
05/11/01	.	.	.	.	.	.
05/15/01	.	.	.	.	.	.
05/18/01	.	.	.	.	.	.
05/19/01	.	.	.	.	.	.
06/18/01	.	.	.	.	.	.
06/19/01	.	.	.	.	0.086	.
06/20/01	.	.	.	.	0.086	.
06/21/01	.	.	.	.	.	.
07/10/01	.	.	.	.	.	.
07/11/01	.	.	.	.	.	0.096
07/12/01	.	.	.	.	.	.
07/16/01	.	.	.	.	0.103	.
07/17/01	.	.	.	.	.	.
07/18/01	.	.	.	.	.	0.085
08/03/01	.	.	.	.	.	.
08/08/01	.	.	.	.	0.099	.
08/09/01	.	.	.	.	.	.
08/10/01	.	.	.	.	.	.
08/14/01	.	0.091	.	.	.	.
08/23/01	.	.	0.096	.	.	0.085

Table C-2: York County Attainment Area Ozone Values						
Date of Exceedance	**York (SC) Exceeding Value**	**Chester (SC) Exceeding Value**	**Cherokee (SC) Exceeding Value**	**Union (SC) Exceeding Value**	**Arrowood (NC) Exceeding Value**	**Monroe (NC) Exceeding Value**
08/25/01	.	0.085	.	.	.	.
08/27/01	.	.	.	.	.	.
08/29/01	.	.	.	.	.	.
09/13/01	.	.	.	.	.	.
2001 Total Hits	**0**	**2**	**1**	**0**	**5**	**3**
05/24/02	.	.	0.085	0.088	.	.
05/25/02	0.087	.	.	.	0.090	0.090
06/03/02	0.085	.	0.085	.	.	0.085
06/04/02	.	.	.	.	.	.
06/05/02	.	.	.	.	.	.
06/10/02	0.096	0.091	0.086	.	0.089	0.090
06/11/02	.	.	0.099	.	0.085	0.086
06/12/02	0.092	0.086	.	.	.	0.088
06/13/02	0.089	0.090	0.089	0.096	.	0.091
06/29/02	.	0.085	.	.	.	.
07/01/02	.	.	.	.	.	.
07/02/02	.	0.089	.	.	0.102	0.086
07/03/02	.	0.088	.	.	0.086	.
07/04/02	.	.	.	.	.	.
07/05/02	.	.	.	.	0.097	0.100
07/06/02	.	0.085	0.089	.	.	.
07/08/02	0.089	0.093	.	.	0.088	0.091
07/09/02	.	.	.	.	.	.
07/16/02	.	.	.	.	.	0.100
07/17/02	0.101	0.102	.	.	0.104	0.116
07/18/02	.	0.085	.	.	.	0.092
07/29/02	.	.	.	.	.	.
07/31/02	0.088	0.090	.	.	.	.
08/01/02	0.086	.	0.086	.	.	.
08/02/02	0.098	0.090	.	.	0.085	.
08/05/02	0.095	0.096	.	.	.	.
08/06/02	.	.	.	.	.	0.085
08/09/02	0.086	0.087	0.093	.	0.094	.
08/10/02	0.085	.	0.085	.	0.093	.
08/11/02	.	.	0.086	.	0.089	0.089
08/12/02	.	.	0.093	.	.	0.088
08/13/02	.	.	.	.	.	.
08/21/02	0.098	0.098	.	0.085	.	.
08/22/02	.	.	.	.	.	.
08/23/02	0.087	0.085	.	0.086	.	0.109
09/04/02	.	.	.	.	.	.

Table C-2: York County Attainment Area Ozone Values						
Date of Exceedance	**York (SC) Exceeding Value**	**Chester (SC) Exceeding Value**	**Cherokee (SC) Exceeding Value**	**Union (SC) Exceeding Value**	**Arrowood (NC) Exceeding Value**	**Monroe (NC) Exceeding Value**
09/05/02	.	.	0.106	.	.	.
09/06/02	.	.	0.097	.	.	.
09/11/02	.	.	.	.	.	0.087
2002 Total Hits	**15**	**16**	**13**	**4**	**12**	**17**
06/10/03	.	.	.	.	.	.
06/24/03	.	.	.	.	0.099	.
06/25/03	.	.	.	.	.	0.106
06/26/03	.	.	0.087	.	.	.
06/27/03	.	.	.	.	.	.
07/17/03	.	.	.	.	.	.
08/26/03	.	.	.	.	.	.
08/27/03	.	.	.	.	.	.
09/20/03	.	.	.	.	.	.
2003 Total Hits	**0**	**0**	**1**	**0**	**1**	**1**

Figures C-1 and C-2 present the wind roses generated from meteorological data at the York and Mecklenburg County airports on days with peak 8-hour ozone readings greater than 0.084ppm. On high ozone days in York County, the winds tend to be from the northeast with 43% of the observations having calm or variable winds. On high ozone days in Mecklenburg County, NC, the winds tend to be from the northwest in the early morning hours, and then switch over to a north, northeast, or southwest direction. Approximately 51% of the observations in Mecklenburg County had calm or variable winds.

The high number of calm or variable winds lends evidence to the fact there is very little transport of pollutants across Mecklenburg. The majority of the time the winds were light and in essence, the counties are being affected by emissions within the county lines.

Figure C-1:

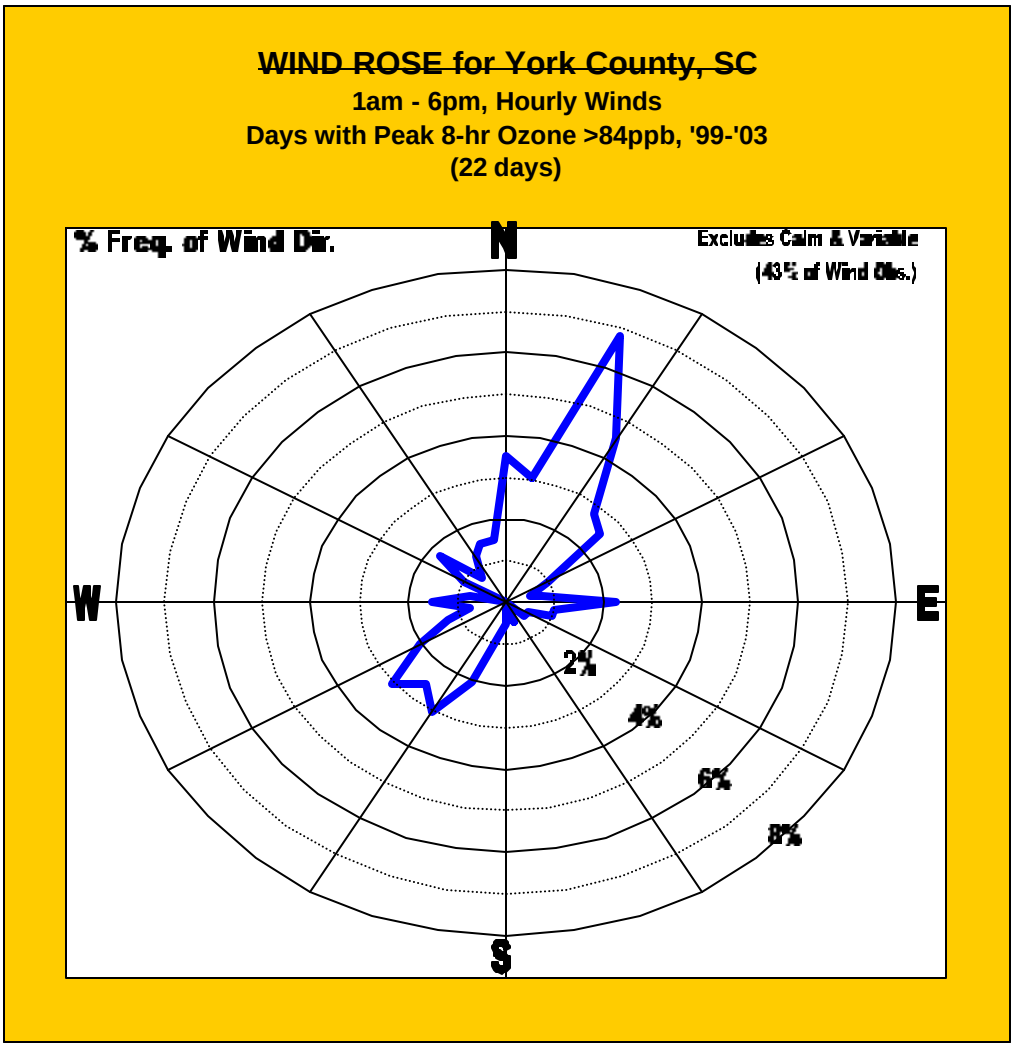
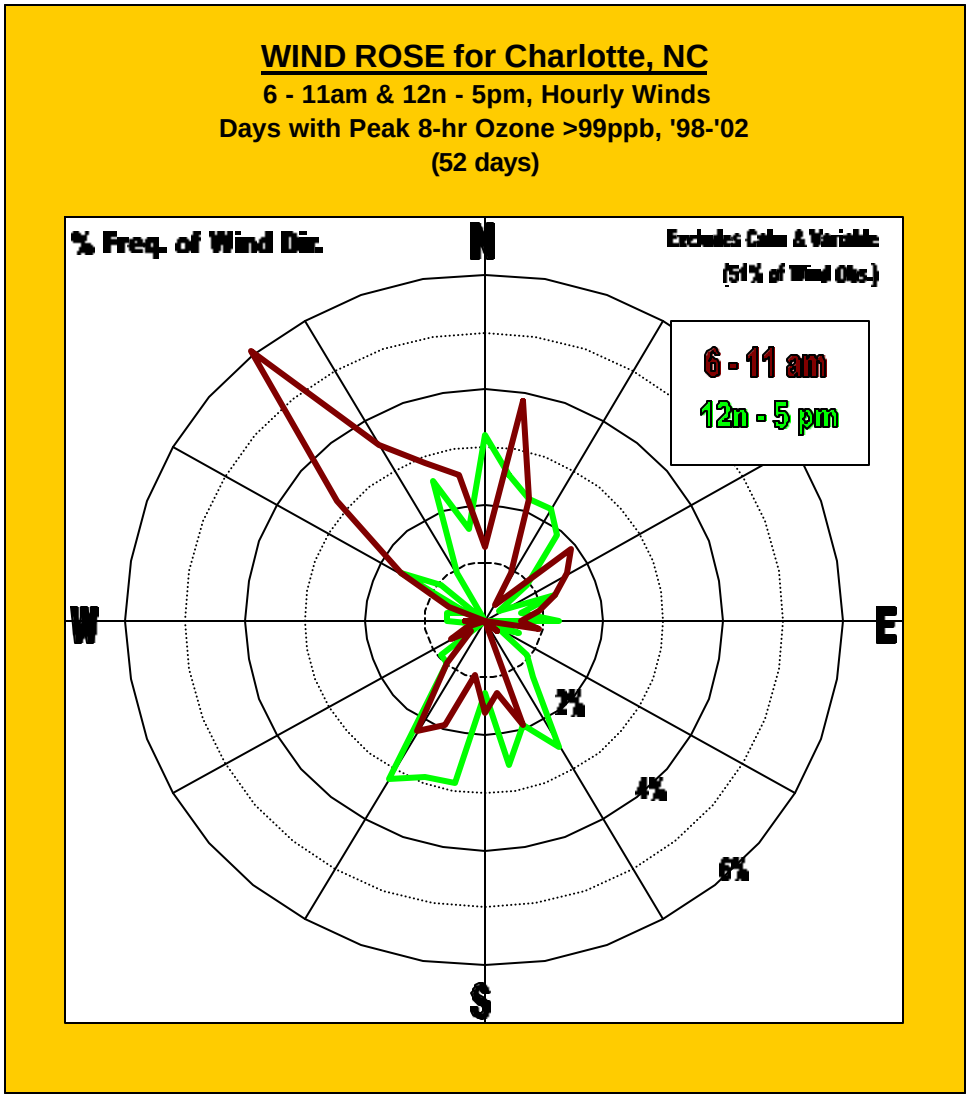


Figure C-2:



D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation in York County based on the 1999 NO_x point sources emissions inventory, which is routinely submitted to the National Emissions Inventory database. York County has 24 NO_x point sources in operation.

Table D-1: York County Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons/Year)**
York	Celanese Acetate Rock Hill	2440-0010	NO2	2,493.49
York	Bowater Inc Paper/Pulp	2440-0005	NO2	1,423.29
York	Champion Laboratories	2440-0096	NO2	40.11
York	Duke Energy:Catawba	2440-0070	NO2	26.01
York	GP: Catawba	2440-0026	NO2	15.83
York	Inchem Corp	2440-0062	NO2	11.18
York	Springs Industries:White	2440-0009	NO2	7.90
York	Winthrop:University	2440-0084	NO2	4.79
York	Nation Ford Chemical	2440-0039	NO2	4.39
York	Cytec Carbon Fibers LLC: Rock Hill	2440-0097	NO2	4.23
York	Rea Construction:Plant 67	9900-0033	NO2	4.02
York	Pharr Yarns Clover	2440-0002	NO2	3.60
York	Leiner Health Products	2440-0122	NO2	3.54
York	Clariant LSM (America): Rock Hill	2440-0044	NO2	2.50
York	Boggs Materials	9900-0338	NO2	2.29
York	North Safety Products	2440-0027	NO2	1.88
York	Adplex Rhodes	2440-0095	NO2	1.60
York	Arvin Meritor	2440-0059	NO2	1.23
York	Piedmont Medical Center	2440-0054	NO2	0.65
York	Performance Friction Corp	2440-0078	NO2	0.51
York	Trico	2440-0080	NO2	0.04
York	Baldor Electric Co	2440-0088	NO2	0.02
York	Metromont:Rock Hill	2440-0047	NO2	0.01
York	Paxar Corporation	2440-0103	NO2	0.01
	1999 York Co Total			**4,053.12**

Table D-2 lists the VOC point sources that are in operation in York County based on the 1999 VOC emissions inventory, which is routinely submitted to the National Emissions Inventory database. York County has 24 VOC point sources in operation.

Table D-2: York County Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons/Year)**
York	Celanese Acetate Rock Hill	2440-0010	VOC	1,686.16
York	Bowater Inc Paper/Pulp	2440-0005	VOC	505.54
York	GP:Catawba	2440-0026	VOC	320.08
York	North Safety Products	2440-0027	VOC	96.80

Table D-2: York County Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons/Year)**
York	Nation Ford Chemical	2440-0039	VOC	32.14
York	Trico	2440-0080	VOC	31.43
York	Clariant LSM (America): Rock Hill	2440-0044	VOC	24.89
York	Adplex Rhodes	2440-0095	VOC	18.58
York	Arvin Meritor	2440-0059	VOC	15.70
York	Duke Energy:Catawba	2440-0070	VOC	15.61
York	Champion Laboratories	2440-0096	VOC	15.44
York	Baldor Electric Co	2440-0088	VOC	12.58
York	Inchem Corp	2440-0062	VOC	11.97
York	Cytec Carbon Fibers LLC:Rock Hill	2440-0097	VOC	9.08
York	Pharr Yarns Clover	2440-0002	VOC	7.66
York	Piedmont Medical Center	2440-0054	VOC	2.64
York	Paxar Corporation	2440-0103	VOC	2.30
York	Boggs Materials	9900-0338	VOC	2.05
York	Performance Friction Corp	2440-0078	VOC	0.79
York	Springs Industries:White	2440-0009	VOC	0.43
York	Leiner Health Products	2440-0122	VOC	0.19
York	Winthrop:University	2440-0084	VOC	0.10
York	Rea Construction:Plant 67	9900-0033	VOC	0.08
	1999 York Co Total			**2,812.24**

Table D-3 lists the NO_x on-road emissions for York County and Table D-4 lists the VOC on-road emissions for York County.

Table D-3: York County On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons Per Year)**
York	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	1,903.00
York	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,061.00
York	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	283.00
York	11-Highway Vehicles	04-Diesels	2,338.00
	1999 York Co Total		**5,585.00**

Table D-4: York County On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons Per Year)**
York	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,262.00
York	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,288.00
York	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	304.00
York	11-Highway Vehicles	04-Diesels	165.00
	1999 York Co Total		**4,019.00**

E. Traffic and Commuting Patterns

Estimates of the Daily Vehicle Miles Traveled (DVMT) were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows the 2000 and 2025 DVMT for York County

Table E-1: DVMT for York County.[6]			
County	**2000 DVMT**	**2025 DVMT**	**DVMT Change (2000-2025)**
York	4,508,132	8,921,044	4,412,912

Figure E-1 below shows that there are three major routes of travel through York County. They include one interstate (I-77), and three US Highways (US 521, US 21 and US 321). There are also numerous state roads and secondary state roads in the county that connect the larger towns together. The traffic counts indicate that heaviest traffic in the area occurs on the north side of I-485 in Mecklenburg County. The traffic counts out of South Carolina drop just after the I-77/I-485 interchange, with the majority of the traffic appearing to head away from the Arrowood monitor into Mecklenburg County. This change of traffic counts at the junction of I-77/I-485 suggests that some York County commuters may not be working exclusively in urban center of Mecklenburg County.

[6] Data provided from SCDOT

Figure E-1:

Mecklenburg/York County Traffic Counts

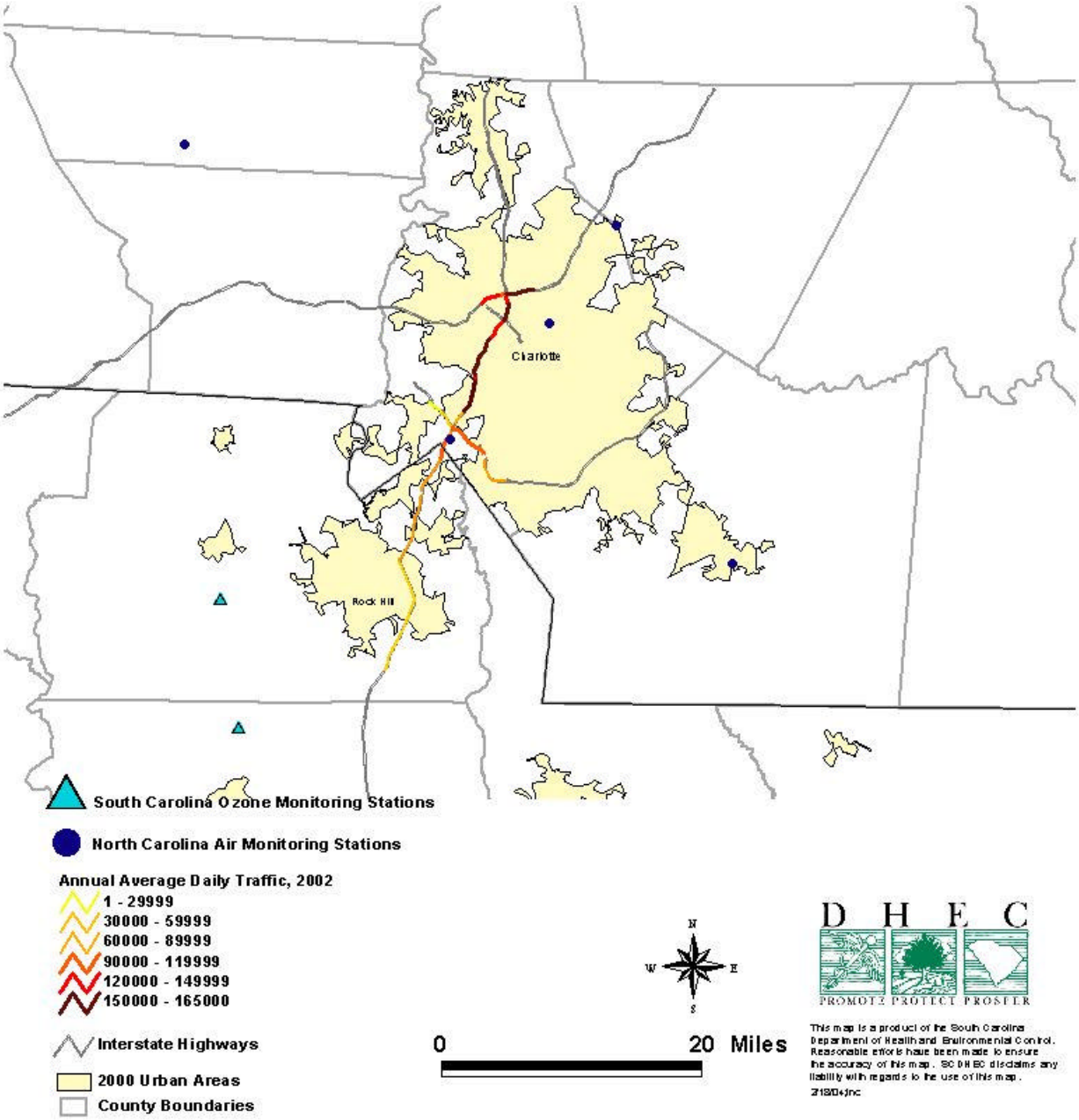


Table E-2 presents the DVMT breakdown by road classification for York County from 2000 and projected out to 2025. Similar information for North Carolina was not available. York County's DVMT consists of 57.27% rural travel and 42.73% urban travel in 2000 and is projected to be 57.18% rural and 42.82% rural in 2025.

Table E-2:
DVMT Data for York Area

	2000	Projected 2007	Projected 2012	Projected 2025
York County				
Rural Interstate (01)	649,338	818,560	939,433	1,253,702
Rural Principal Arterial (02)	206,981	256,632	282,299	412,058
Rural Minor Arterial (03)	890,725	1,104,393	1,214,847	1,773,254
Rural Major Collector (04)	498,002	617,464	679,218	991,422
Rural Minor Collector (05)	86,646	107,431	118,176	172,495
Rural Local (09)	250,317	310,364	341,405	498,332
Rural Total	2,582,009	3,214,844	3,575,377	5,101,263
Urban Interstate (11)	541,238	687,262	791,565	1,062,753
Urban Freeway/Expressway (12)	30,528	37,851	41,637	60,775
Urban Principal Arterial (13)	691,455	857,322	943,066	1,376,549
Urban Minor Arterial (14)	356,183	441,624	485,793	709,088
Urban Collector (15)	234,147	290,315	319,350	466,140
Urban Local (18)	72,572	89,981	98,980	144,476
Urban Total	1,926,123	2,404,355	2,680,391	3,819,781
Grand Total DVMT	4,508,132	5,619,199	6,255,768	8,921,044

Table E-3 presents the DVMT for 1995 and 2005 for the counties in the North Carolina portion of the Charlotte-Gastonia-Rock Hill MSA. Mecklenburg County made up 48.34% of this DVMT in 1995 and is projected to make up 49.78% of this DVMT in 2005.

Table E-3:
DVMT for NC Counties in the Charlotte-Gastonia-Rock Hill MSA

County	1995	2005
Cabarrus	2,880,000	4,065,000
Gaston	4,298,000	5,324,000
Lincoln	1,242,000	1,793,000
Mecklenburg	13,103,000	17,822,000
Rowan	2,995,000	3,964,000
Union	2,587,000	3,836,000

Tables E-4 and E-5 present the commuter flow across the entire Charlotte-Gastonia-Rock Hill MSA. It shows that 78.13% of the workers that live in the MSA remain in their home county to work. York County commuter flow into the North Carolina portion of the MSA makes up 3.86% of the total

commuter flow in the MSA. Table E-5 shows the county-to-county worker flow for the Charlotte-Gastonia-Rock Hill MSA. When the number of commuters for the entire MSA is considered, York County comprises 10.6% of the total MSA workers, making it the third most populous worker county in the MSA. However, when worker flow is considered in the North Carolina portion of the MSA, only 3.86% of the workers in this portion of the MSA come from York County. When examining the worker flow in the South Carolina portion of the MSA, York County comprises 86.5% of the workers. This data shows that even though York County has a high population of workers, it contributes only a small portion of the workforce to the North Carolina portion of the MSA.

Table E-4:
Where People Living in the Charlotte-Gastonia-Rock Hill MSA Work

	County of Residence							
County Worked In	**Cabarrus**	**Gaston**	**Lincoln**	**Mecklenburg**	**Rowan**	**Union**	**York**	**Grand Total**
Cabarrus (NC)	35,032	423	195	6,694	8,155	551	279	51,329
Gaston (NC)	400	56,321	3,166	3,948	232	184	2,526	66,777
Lincoln (NC)	92	1,868	15,249	748	99	7	155	18,218
Mecklenburg (NC)	22,693	23,101	6,545	329,498	4,942	24,892	23,907	435,578
Rowan (NC)	4,025	1,046	320	1,284	40,721	87	228	47,711
Union (NC)	525	226	93	4,853	181	32,613	439	38,930
York (SC)	282	1,602	99	4,217	122	608	47,898	54,828
Grand Total	63,049	84,587	25,667	351,242	54,452	58,942	75,432	713,371

Table E-5:
Where People Living in the Charlotte-Gastonia-Rock Hill MSA Work (Percentage Table)

	County of Residence							
County Worked In	**Cabarrus**	**Gaston**	**Lincoln**	**Mecklenburg**	**Rowan**	**Union**	**York**	**Grand Total**
Cabarrus (NC)	**4.91%**	0.06%	0.03%	0.94%	1.14%	0.08%	0.04%	7.20%
Gaston (NC)	0.06%	**7.90%**	0.44%	0.55%	0.03%	0.03%	0.35%	9.36%
Lincoln (NC)	0.01%	0.26%	**2.14%**	0.10%	0.01%	0.00%	0.02%	2.55%
Mecklenburg (NC)	3.18%	3.24%	0.92%	**46.19%**	0.69%	3.49%	3.35%	61.06%
Rowan (NC)	0.56%	0.15%	0.04%	0.18%	**5.71%**	0.01%	0.03%	6.69%
Union (NC)	0.07%	0.03%	0.01%	0.68%	0.03%	**4.57%**	0.06%	5.46%
York (SC)	0.04%	0.22%	0.01%	0.59%	0.02%	0.09%	**6.71%**	7.69%
Grand Total	8.84%	11.86%	3.60%	49.24%	7.63%	8.26%	10.57%	100.00%
Intercounty flow-NC	3.89%	3.74%	1.45%	2.46%	1.90%	3.60%	3.86%	18.03%
Intercounty flow-SC	0.04%	0.22%	0.01%	0.59%	0.02%	0.09%	0.00%	0.98%

Table E-6 presents the mobile source emissions for the Charlotte-Gastonia-Rock Hill MSA. York County accounts for only 11.53% and 10.54% of the mobile source NO_x and VOC, respectively. At 15.36 and 10.43 tons per day of NO_x and VOC, respectively, York County has approximately one-fourth the mobile source emissions of Mecklenburg County.

Table E-6:
Charlotte-Gastonia-Rock Hill MSA Mobile Source Emissions

County	NO_x tons per day	NO_x percent of MSA	VOC tons per day	VOC percent of MSA
Mecklenburg (NC)	58.23	43.72%	42.89	43.32%
Gaston (NC)	18.11	13.60%	17.63	17.81%
York (SC)	15.36	11.53%	10.43	10.54%
Rowan (NC)	14.47	10.87%	9.37	9.46%
Cabarrus (NC)	11.85	8.90%	9.05	9.14%
Union (NC)	9.71	7.29%	6.44	6.50%
Lincoln (NC)	5.46	4.10%	3.19	3.22%
Grand Total	133.20	100.00%	98.99	100.00%

Figure E-2[7] presents the motor vehicle registration data for York County. Only a small portion of the vehicles is pre-1981 model years. In 1981, new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 model year vehicles.

This data reflects 2000 registration figures, and many of the older vehicles will probably have been replaced with newer vehicles. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Vapor Recovery (ORVR) systems, will help to offset any potential impacts from the increased emissions from mobile sources in this area.

[7] Data provided from SC Department of Public Safety, Division of Motor Vehicles

Figure E-2: 2000 Motor Vehicle Registration Data for York County

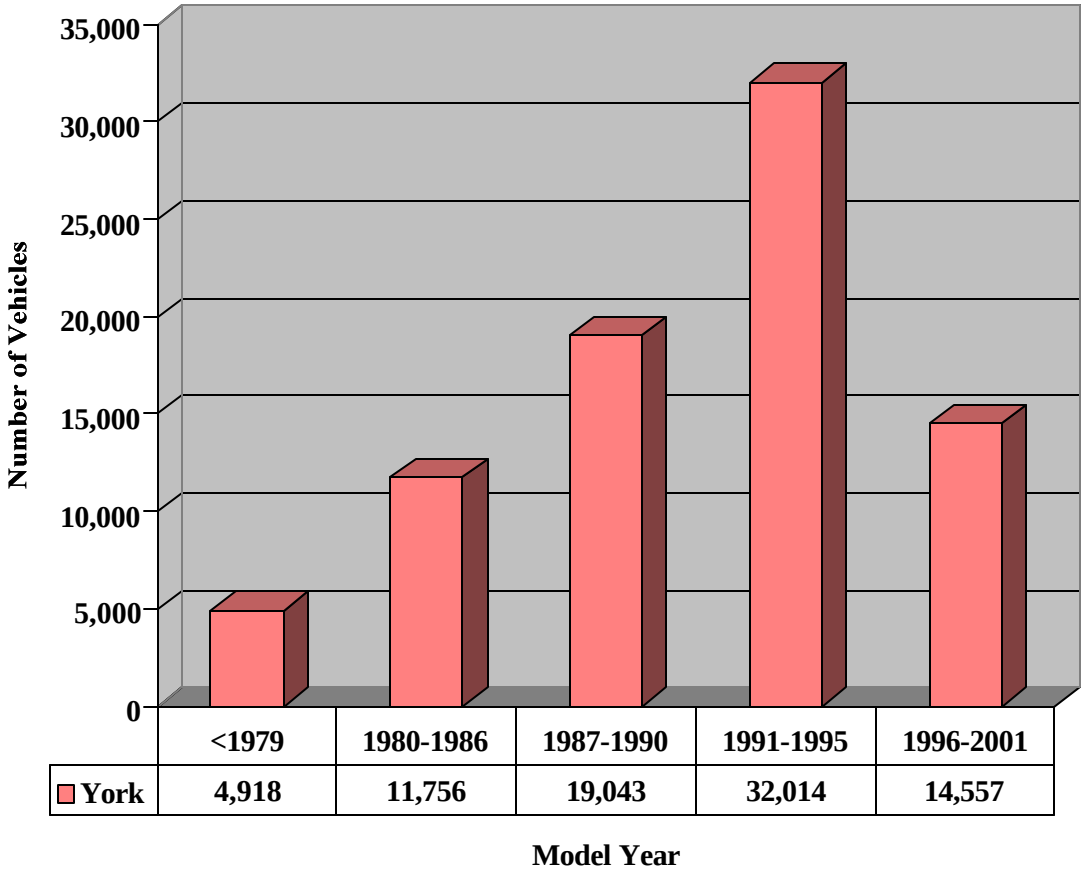
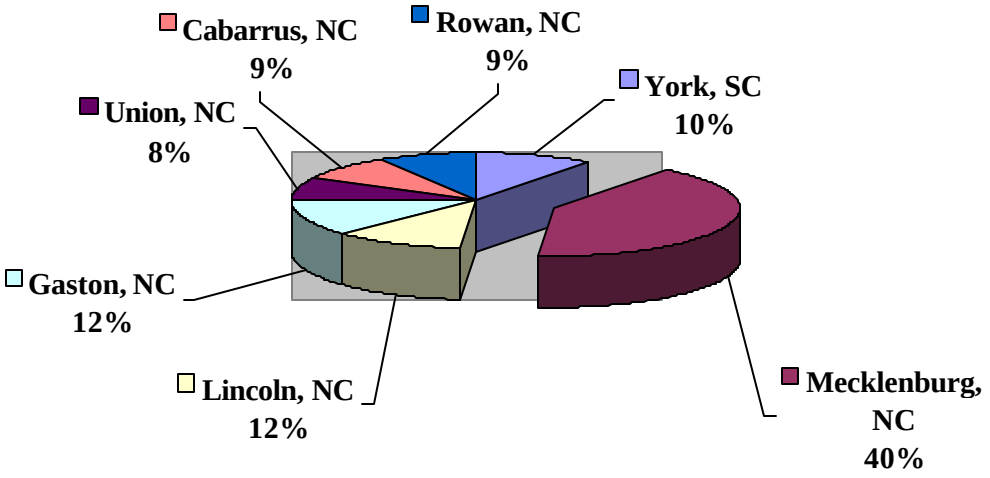


Figure E-3[8], below presents the distribution of vehicles within the Charlotte-Gastonia-Rock Hill MSA. This chart shows that the majority of the cars are located in the North Carolina counties and only a small portion come from York County.

[8] Data provided from US Census: 2000

Figure E-3: Vehicles per County in the Charlotte-Gastonia-Rock Hill MSA from US Census (1999)



F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for York County and the counties surrounding it. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. The data for Table F-1 was taken from the Census and the respective state's demographic websites. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur.

Table F-1:
Historical and Projected Population and Population Density per County

	York (SC)	Cabarrus (NC)	Gaston (NC)	Lincoln (NC)	Mecklenburg (NC)	Rowan (NC)	Union (NC)	MSA Total
Population, 1990	131,497	98,935	174,769	50,319	511,211	110,605	84,210	1,161,546
Population, 2000	164,614	131,063	190,365	63,780	695,454	130,340	123,677	1,499,293
% MSA Population, 2000	10.98%	8.74%	12.70%	4.25%	46.39%	8.69%	8.25%	100%
Projected Population, 2020	211,500	205,495	216,822	91,525	1,102,003	173,269	212,811	2,213,425
% MSA Population, 2020	9.56%	9.28%	9.80%	4.13%	49.79%	7.83%	9.61%	100%
County Growth from 2000 - 2020	28.48%	56.79%	13.90%	43.50%	58.46%	32.94%	72.07%	

In 2000, the population of York County was 164,614, which accounted for 10.98% of the total MSA population (1,499,293). The projected population for York County for the year 2020 is 211,500, or 9.56% of the total MSA projected population (2,213,425). While York County's growth from 2000 to 2020 represents a county-wide increase of 28.48%, York County's population growth relative to the MSA is a slight decrease (10.98% to 9.5%).

G. Climatology / Meteorology

The overall climatology of an area is paramount to the formation and mass movement of secondary pollutants such as ozone throughout the lowest layers of the troposphere. As a result, though the overall emission volume may remain constant across a given monitoring site, the ambient concentration of ozone at that site may change according to even the most subtle shift in the overall weather pattern. This is indeed the rule across the whole of the State of South Carolina.

The "Ozone Season" in South Carolina runs from April 1 through October 31 of each year, roughly parallel to that experienced in most areas of the Southeastern United States. The main climatological feature influencing the overall weather pattern during this period is a large ridge of stable, sinking air known as the "Bermuda High." This semi-permanent feature is normally situated just off the South Atlantic Seaboard, with its core of anticyclonic circulation centered due east of South Carolina. The average strength and position of this ridge provides a steady southwesterly flow of moist, tropical air from the Gulf of Mexico that, under normal circumstances, keeps the lower atmosphere well mixed and quite humid. These are two main factors that normally provide conditions non-conducive to the formation of elevated levels of ozone.

When the Bermuda High becomes anomalously shifted from its normal position, conditions conducive to the formation of elevated ozone may occur in many areas of South Carolina. This is mainly the case in the months during the Ozone Season immediately following an El Nino winter. During this period, which only occurs once every 4 or 5 years, the Bermuda High flattens out and builds southwestward well into the Gulf of Mexico. This shifts the moist flow out of the Gulf to the west, well away from the South Atlantic Coast. With the core of the ridge virtually parked on top of South Carolina, air stagnation can occur.

The three main underlying causes of air stagnation under this shifted Bermuda High are lack of horizontal wind flow, a stable boundary layer, and, most importantly, reduced availability of ambient moisture. In such a situation, the lower atmosphere dries out considerably, with less cloud coverage available to absorb the incoming solar radiation (UV) needed for efficient conversion of ozone from its primary component pollutants. In addition, there is much less titration and/or deposition of the pollutant back to its basal components after nightfall, when the UV source is removed. Once ozone formation perpetuates, the stable air mass traps it, pooling it closer to the ground. With little horizontal wind flow available to mix the atmosphere, the pollutant takes much longer to disperse throughout the boundary layer.

Air stagnation under an anomalous Bermuda High occurs far too sparingly to account for every elevated ozone event in South Carolina. Frequently, elevated ozone readings have been monitored when conditions were not altogether favorable for its production in that particular area. It is in these cases where transport of ozone from upwind sources comes into play.

H. Geography / Topography

The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. York County is located in the Piedmont Area. The line of demarcation

runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. Along this line elevations begin at about 300 feet and increase in steps to over 1,000 feet in the extreme northwestern counties, culminating in isolated peaks of 2,000 to over 3,500 feet above mean sea level. East of the line, there are evidences of outcroppings from the lower Appalachians in a ridge of low hills and rather broken country between the Congaree River and the north fork of the Edisto River, and also in a rather hilly and rolling region in the upper Lynches River drainage basin between the Catawba-Wateree and the Great Pee Dee Rivers. In about one-third of the coastal plain (or what is commonly known as the upper coastal plain), the elevations decrease rather abruptly from 300 to 100 feet, thence to the coast. The major part of the coastal area is not over 60 feet above mean sea level. In this region of lower levels, to the eastward and southward, the great swamp systems of the State predominate.

The slope of the land from the mountains seaward is toward the southeast, and all of South Carolina's streams naturally follow that general direction to the Atlantic Ocean. The South Piedmont section of the State is on the eastern slope of the Appalachian Mountains with the main ridge of the mountains about 30 miles west. To some extent these mountains act as a barrier for the wind and tend to protect the area from the full force of the cold air masses during the winter months. The relatively flat areas of the Central Plains and the coastal region allow free air movement and are conducive to effective dispersion of pollutants.

I. Jurisdictional boundaries

The Department is proposing that York County be designated attainment for ozone.

J. Level of Control of Emission Sources

Through its participation with the Early Action Compact, York County is exploring not only countywide local control strategies to be implemented no later than April 2005, but also strategies that will cross county and state lines. These strategies include local option sales tax for road improvements; express bus service during peak hours to Charlotte; updating zoning regulations to address sidewalks and left-hand turn lanes in developments; prohibition on open burning during high ozone days; and a Sustainable Environment for Quality of Life (SEQL) resolution. A complete listing of the emission reduction strategies for York County was submitted to EPA in December 2003. This list will be updated in March 2004 upon submittal of the final York County Early Action Plan.

The Sustainable Environment for Quality of Life (SEQL) project calls upon government, business and community leaders from North and South Carolina to address environmental issues that impact the quality of life and economic viability of the Charlotte-metro area. SEQL invites leaders from 15 counties to work together on air quality, water quality, and sustainable growth issues. The program supports the region's efforts to develop integrated and long-term solutions to ensure economic development and a positive quality of life for its future. The project area includes fifteen counties populated by 2.1 million people and encompasses over 100 political jurisdictions. SEQL is funded by an EPA grant and led by the Centralina Council of Governments and the Catawba Regional Council of Governments.

For participation in the 8-hour ozone early action process, EPA required that North Carolina and South Carolina develop a specific memorandum of understanding (MOU) confirming the agreements reached between the two agencies with regard to ozone attainment matters, an Early Action Compact for counties in South Carolina (including York) and SEQL. This MOU, signed by the Department of Health and Environmental Control and the North Carolina Department of Environment and Natural Resources, became effective on March 14, 2003. Additionally, the Department entered into a specific memorandum of understanding with North Carolina's Department of Environment and Natural Resources confirming the agreements reached between the two agencies with regard to ozone attainment matters, an Early

Action Compact for counties in South Carolina (including York) and in the locally led Sustainable Environment and Quality of Life (SEQL) effort for the Charlotte, NC area. These efforts demonstrate a commitment by all involved to protect and improve air quality for the public. Furthermore, the MOU states that with respect to Early Action Compacts, both departments support the delivery of cleaner air sooner and agree to collectively and cooperatively seek additional support at appropriate federal, state and local levels for this proactive approach.

Emission Control Strategies

The Department is primarily responsible for ensuring attainment and maintenance of the air quality standards established by EPA. Under section 110 of the CAA and related provisions, the Department must submit, for EPA approval, State implementation plans that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department, in conjunction with EPA, also administers the prevention of significant deterioration (PSD) programs for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants under Title II of the CAA, which involves controls for automobile, truck, bus, motorcycle, off-road engine, and aircraft emissions. Since its inception in 1973, the Department has worked diligently to carry out the task of enforcing the CAA. The Department has also been delegated the authority to administer the new source performance standards under section 111 of the CAA and the national emission standards for hazardous air pollutants under section 112 of the CAA. During the past decade, the air quality in South Carolina has complied with all air quality standards, an accomplishment very few other States can claim.

If additional control measures are required to attain the air quality standard, the Department has the statutory authority to promulgate and implement regulations and to require more stringent controls on industrial and mobile sources to realize appropriate emissions reductions outside of nonattainment areas. Further, our recent actions, such as addressing NO_x emissions from stationary sources, demonstrate our ability and political will to implement controls to improve air quality statewide rather than on an area or county level basis.

The Department proposed R.61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NO_x)* on January 8, 2004. The purpose of this regulation is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007. When fully implemented as proposed, this new regulation has the potential to reduce 3,000 tons of NOx from these sources.

Early Action Plan

The health of the citizens of South Carolina is a primary concern and the Department continues to seek proactive measures to meet our commitment to public health and environmental protection. South Carolina has been in attainment of the 1-hour ozone standard for the past decade, and will make every effort to attain the new 8-hour ozone air quality standard in all areas of the State as expeditiously as possible.

EPA has provided an option for areas currently meeting the 1-hour ozone standard, like those in South Carolina, to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than Federally mandated. This option requires an expeditious time line for achieving emissions reductions sooner than expected under the 8-hour ozone implementation rulemaking, while providing "fail-safe" provisions for the area to revert to the traditional SIP process if specific milestones are not met. Forty-five of South Carolina's forty-six counties have entered into Early Action Compacts. This action indicates that the local governments in the State of South Carolina are very concerned with air quality. Many of the counties entering into the Early Action Compacts do not have problems meeting the air quality standard

and yet are still willing to plan and work with other areas to implement controls to ensure early attainment of the standards.

Interested stakeholders (i.e., local, State, and Federal government, citizens, public interest groups, and the business community) have been and will continue to be involved in the planning. By signing the Early Action Compact (EAC), EPA is agreeing to defer the effective date of the nonattainment designation for participating areas. However, areas that enter into an EAC but do not meet all of the terms of the EAC, including established milestones, will forfeit participation and be designated according to requirements within EPA's 8-hour ozone implementation rule. At a minimum, those requirements will include Transportation Conformity and nonattainment New Source Review.

Local areas are required to develop and implement a local early action plan that will promote the area's attainment by December 31, 2007, and maintenance of the standard until at least 2012. The local area must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. The final local plan is due to the Department in March 2004.

The Department is required to develop and implement a State early action SIP demonstrating the participating area's attainment by December 31, 2007, and maintenance until at least 2012. The Department is currently evaluating the possibility of projecting out to 2017 to evaluate the air quality ten years after the "attainment" date. The SIP is due to EPA by December 31, 2004. The State must adopt local control strategies necessary to demonstrate attainment of the 8-hour ozone standard. Potential control strategies were identified to EPA on June 16, 2003. Final strategies are to be implemented no later than April 1, 2005. If the monitors in the nonattainment areas reflect attainment by December 31, 2007, the area will be designated as attainment and no additional requirements will be imposed (i.e., Transportation Conformity and nonattainment New Source Review).

Ozone Forecasting – Spare The Air

The South Carolina Spare the Air campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be elevated so that they can better protect their health as well as allow them the opportunity to take actions to reduce emissions from their own activities. During the period of May 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Pee Dee, and Central Savannah River area. The forecasts are provided utilizing the Air Quality Index (AQI) color scale to indicate levels of ozone in the air. Each category in the AQI is represented by a color and includes a cautionary statement for air quality conditions and the appropriate citizen response. Green represents the level being good, yellow for moderate conditions, orange for unhealthy to sensitive groups, and red for unhealthy to everyone.

South Carolina recognizes the importance of providing our citizens with information on air pollution levels where they live and work. We have implemented a comprehensive ozone-forecasting program that is not limited to a few areas but instead covers twenty-six of the forty-six counties in our state. We have partnered with North Carolina's Department of Environment and Natural Resources to provide a forecast for an additional three counties along the State border. Our citizens are alerted on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as they believe appropriate to better protect their health. We have expended and continue to expend significant resources to provide this service to our citizens. This daily forecast is a much better indication to the public of when they need to act to avoid exposure to high ozone levels than a nonattainment designation, which is a one-time publication in the *Federal Register*.

The forecasts are broadcast on local television and radio stations during the daily weather forecasts, distributed by email or fax to over 300 businesses, industries, organizations, and individuals, and through an agency-created website (www.scdhec.net/baq/ozone). In the high traffic areas surrounding Columbia and Greenville, warnings are also posted on Department of Transportation's message boards along the major interstates. To promote the efforts, Governor Mark Sanford declared the first week of May, 2003, "Ozone Awareness Week." The Department also hosts official "Ozone Season Kick-Off Events" around the state to annually review the warning system and ozone reduction opportunities within South Carolina.

Ozone Education and Outreach

Additionally, other elements that fall under the "Spare the Air" initiative involve education and outreach to school-aged youth and persons with chronic respiratory conditions. In cooperation with the Department's Bureau of Land and Waste Management, air quality training in the environmental curriculum titled "Action for a Cleaner Tomorrow" is provided to teachers across the state. To assist Department efforts in preventing future air pollution, the Bureau of Air Quality staff work with teachers and students through classroom resources such as prepared special lesson plans, presentations, and exhibits. Teachers are also encouraged to participate in the "Ozone Action Classroom" initiative to educate students on the dangers of ground-level ozone. Additional partners in the "Ozone Action Classroom" include the South Carolina Asthma Planning Alliance and the South Carolina Public Health Association. These groups are together, and individually, working to promote awareness of the link between ground-level ozone and air quality conditions that can trigger asthma attacks in persons with respiratory conditions.

Permitting Program

In South Carolina anyone who plans to construct, add to, or alter a source of air contaminants must first submit an application for a permit. Once a construction permit is issued (or construction approved), the applicant may then begin construction after waiting the required time period. Once construction has been completed, the applicant then requests a permit to operate. An operating permit can take several different forms based upon the quantity of the pollutant(s) to be emitted. In South Carolina permits are not only required for "major" sources (sources with emissions exceeding federal thresholds); they are also required for facilities emitting smaller quantities as well. This comprehensive permitting process allows more control over sources of emissions within South Carolina.

Title V Permitting Program

The Clean Air Act Amendments of 1990 included sweeping new revisions requiring all states to develop operating permit programs that meet certain federal criteria. The states, in turn, are to require sources to obtain permits that contain all of their Clean Air Act requirements.

On July 21, 1992, EPA issued a regulation outlining the specific minimum requirements that states must meet in their operating permits program. State and local agencies were required to submit programs to EPA by November 15, 1993, and EPA is required to approve or disapprove these programs within one year of their submittal.

EPA's operating permits regulation requires states to develop comprehensive operating permit programs that cover "major" sources of air pollution. Major sources include (1) those that emit 100 tons/year or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tons/year or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tons/year or more of a combination of toxic air pollutants. The primary purpose of the operating permits program is to improve

enforcement by issuing each source a permit that consolidates all of the Clean Air Act requirements into a federally enforceable document.

The State of South Carolina received full program approval of its Title V Program on June 26, 1995.

New Source Review Permitting

Congress established the New Source Review (NSR) Program as part of the 1977 Clean Air Act Amendments and modified it in the 1990 Amendments. NSR is a preconstruction permitting program that serves two purposes. First, it ensures the maintenance of air quality standards when factories, industrial boilers and power plants are modified or added. In areas with unhealthy air NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions fall within air quality standards. Second, the NSR program assures that state of the art control technology is installed at new plants or at existing plants that are undergoing a major modification.

Smoke Management Program

South Carolina has a Smoke Management Program (SMP) that is certified in accordance with EPA's *Interim Air Quality Policy on Wildland and Prescribed Fires (April 23, 1998).* The SMP involves coordination between the Department and the South Carolina Forestry Commission when addressing the impact of smoke on air quality by following guidelines that define smoke sensitive areas, amounts of vegetative debris that may be burned, and atmospheric conditions suitable for burning. The SMP can be used as a management tool for reducing ozone levels.

Government Fleets

In 1992 the U.S. Congress passed legislation to promote the use of alternative fuel vehicles (AFVs). This legislation was passed to improve air quality and reduce the nation's dependence on foreign oil. The new legislation became known as the Energy Policy Act (EPAct). This Act requires that all Federal and State fleets, as well as private sector fuel providers such as utilities, begin purchasing AFVs by 1994. Over a period of seven years, EPAct required a gradual phase-in of the purchase of AFVs. By 2001 EPAct required that 75% of Federal and State fleets be composed of AFVs. To date, South Carolina is in compliance with all EPAct requirements because of a cooperative effort within the State agencies and the operation of a unified State plan. [9]

On October 18, 2001, former Governor Hodges signed an Executive Order in strong support of the use of alternative fuels. The Order states that whenever practical and economically feasible, State agencies use alternative fuels when operating alternative fuel vehicles.

Currently, the State operates 1,370 alternative fuel vehicles. The types of alternative fuel vehicles that the State operates include the Bi-fuel Ford F-150, Flex Fuel Taurus, Dodge Caravan, and Chevrolet S-10 Pick-up. By purchasing alternative fuel vehicles, the State is making a viable effort to reduce mobile source emissions in South Carolina. An ethanol pump has been installed in the Columbia area so that the flex fuel vehicles can provide the designed benefits. The State fleet also operates hybrid vehicles such as the Honda Insight and Toyota Prius.

K. Regional/National Emission Reductions

[9] South Carolina State Budget and Control Board, General Services Division, Office of State Fleet Management

In addition to the initiatives and regulations that have been implemented to reduce the level of VOC emissions, standards to reduce NO_x levels have also been supported on the national level. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. Mobile source emissions contribute to air pollution in South Carolina. Strong national programs are the only way to adequately, economically, equitably, and reasonably address pollution from this source sector. The Department believes that the implementation of these regulations and reduction efforts will provide significant assistance towards statewide compliance with the air quality standards, especially in the areas where it is needed the most, our urbanized areas.

Standards For Tailpipe Emissions

Tier 2 is a tailpipe emissions rule that sets new and more stringent exhaust standards. This standard focuses on reducing emissions of ozone-forming gases (NO_x and PM) and applies to new passenger cars and light-duty trucks. The phase-in of the tailpipe emissions standards will begin in 2004 for passenger cars and light-duty trucks. This standard will be completely phased-in by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) begins in 2008. The standard will be completely phased-in for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile. [10]

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers will be required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard will then be reduced to 30 ppm with a cap of 80 ppm. Implementation of these standards will be the equivalent of taking 164 million cars off the road. [10]

Standards For Heavy-Duty Engines

The new standard for heavy-duty engines will also help to reduce mobile source emissions. This standard will become 100% effective for diesels beginning in the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The reduction requires a reduction of 0.20 gram/brake horse-power-hour (g/bhp-hr). The phase-in period for this requirement will be between 2007 and 2010 for diesel engines.

Highway Diesel Fuel Sulfur Standards

On June 1, 2006, refiners will be required to start producing diesel for use in highway vehicles with a sulfur content of no more than 15 ppm. Highway diesel fuel sold as low sulfur fuel at the terminals will be required to meet the 15 ppm sulfur standard by July 15, 2006. Highway diesel fuel sold as low sulfur fuel by retail station and fleets must meet the 15 ppm sulfur standard by September 1, 2006. By mid 2006, this standard will reduce sulfur levels in diesel by 97 percent.

Non-Road Diesel Engines and Fuel

EPA recently proposed emissions reductions from off-road diesel engines and low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully phased in, NO_x emissions from this equipment would be reduced by 825,000 tons. Beginning in 2007, the sulfur content in the diesel fuel used in these off-road engines would be reduced from an

[10] U.S. EPA Office of Transportation and Air Quality

uncontrolled 3,400 parts per million to 500 ppm in 2007 and then to 15 ppm in 2010. As non-road engines make up 5.21% of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

NO_x SIP Call

The NO_x State Implementation Plan (SIP) Call is the common name given to a final rule that EPA published on October 27, 1998 (63 FR 57355). The rule requires South Carolina and numerous other states to reduce their summertime emissions of NO_x in order to reduce the interstate transport of ozone and its precursors.

To facilitate these reductions, the rule establishes a NO_x budget trading program in which each applicable state is given a summertime NO_x budget which they cannot exceed. The budget for each state assumes certain reductions on specific types of units. The units involved in the trading program are units that serve a generator with a nameplate capacity greater than 25 MWe, referred to as electrical generating units (EGUs); and large boilers that have a maximum design heat input greater than 250 mm Btu/hr, referred to as non-EGUs. The budget for EGUs is based upon 85 percent reductions from uncontrolled levels while the budget for the non-EGU category is based on 60 percent reductions from uncontrolled levels. The rule also calls for controls on cement kilns and large internal combustion engines, but these units are not part of the trading program.

South Carolina's NO_x budget for sources subject to the NO_x SIP Call was reduced from a baseline of 156,137 tons to 128,524 tons. This reflects a drop in overall, summertime NO_x emissions of 18 percent.

The rule allows the regulated community a great deal of flexibility. Rather than dictate the types and levels of controls, sources subject to the rule have the ability to determine where it is most cost effective to apply pollution controls. As a result, there is less certainty for states in terms of predicting where NO_x reductions may occur. So for instance, sources may choose to install pollution control equipment and sell their surplus NO_x allowance or they may choose not to install controls and simply buy the NO_x allowances they need. One significant constraint is that from May 1 to September 30 of each year, units subject to the requirements of the NO_x SIP Call must have an allowance of NO_x for every ton of NO_x that they emit.

Clean Cities

The Clean Cities program, sponsored by the U.S. Department of Energy (DOE), supports public and private partnerships that deploy alternative fuel vehicles and build supporting infrastructure. The mission of the Clean Cities program is to enhance our nation's energy security and air quality by supporting public and private partnerships that deploy clean-burning alternative fuel vehicles (AFV) and build their associated fueling infrastructure.

Goals of Clean Cities include:

1. To have one million alternative fuel vehicles (AFV) operating exclusively on alternative fuels by 2010.
2. One billion gasoline gallon equivalents per year used in AFVs by 2010.
3. Seventy-five percent of Clean Cities coalitions self-sustaining by 2005.

In 1999, the South Carolina Energy Office (SCEO) partnered with the Catawba Regional Councils of Governments and the Central Midlands Regional Council of Governments to develop two Clean Cities Coalitions in South Carolina. These partnerships came after years of SCEO work with state fleet managers, York Technical College, the Department, and other agencies.

After working as separate entities for two years, the groups merged into the Palmetto State Clean Fuels Coalition, covering a nine county region bisecting the middle section of South Carolina. The nine counties include: Fairfield, Newberry, Richland, Lexington, Aiken, Chester, Lancaster, Union and York. These counties complete the potential "clean corridor" extending from Atlanta, Georgia to Raleigh, North Carolina through South Carolina along I-20, I-26, and I-77.

The official designation of the Palmetto State Clean Fuels Coalition as a member of the U.S. Department of Energy's National Clean Cities Program took place on January 28, 2004. (*www.state.sc.us/energy/cleancities.htm*).

L. Additional Technical Information

A study conducted by Texas A&M University[11] in 2001 looked at congestion in several cities across the United States. One of the supplements for this report was on Charlotte, NC[12]. In this study, they found that PM peak conditions (defined as 4:00pm to 7:00pm) were significantly more congested and less reliable than in the morning (defined as 6:00am to 9:00am), as seen in Table L-1.

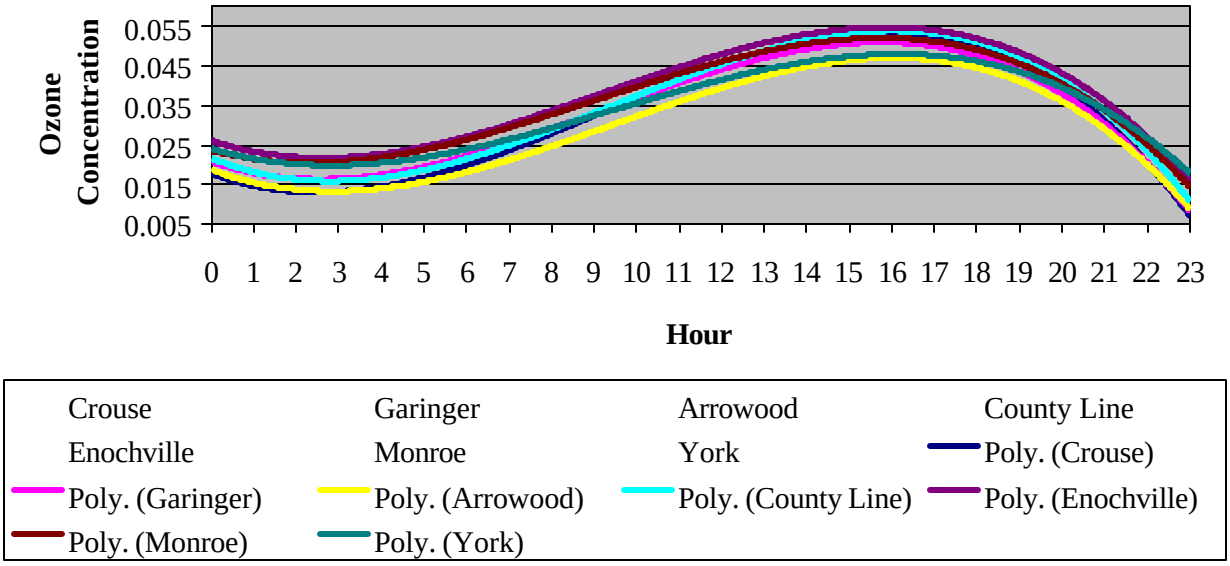
Table L-1:
Peak Names and Times

Peak Name	Time Range
Early AM	0000 – 0600
AM	0600 – 0900
Mid-day	0900 – 1600
PM	1600 – 1900
Late PM	1900 – 2400

These "peak times" became the basis for a statistical analysis of the ozone concentrations in the Charlotte-Gastonia-Rock Hill MSA. The purpose of the analysis was to see if there were any links between commuter peaks and elevated ozone concentrations. Figure L-1 presents an examination of the hourly ozone concentrations in the Charlotte-Gastonia-Rock Hill MSA and reveals that ozone typically peaks around 4:00pm which coincides with the PM peak that was referenced above.

[11] Monitoring Urban Roadways in 2001: Using Archived Operations Data for Reliability and Mobility Measurement. Texas Transportation Institute and Cambridge Systematics, Inc. April, 2003.
[12] www.mobility.tamu.edu/mmp/reports/monitoring_urban_roadways/appenicies/charlotte.pdf

Figure L-1: Charlotte MSA Hourly Ozone Readings
(2001-2003 3rd Order Polynomial Regression)



From 2001 to 2003, the number of monitors that the York monitor strongly correlates (defined as a correlational coefficient greater than or equal to 0.08) within the MSA increases as the number of hits for the year increases (see Tables L-2 through L-4). For example, in 2001, the York monitor experienced no hits, and was strongly correlated with the Garinger monitor in Charlotte. However, in 2002, the York monitor had 15 hits, and was strongly correlated with all of the other monitors in the MSA. This lends strong evidence that York County emissions do not normally affect the ozone monitors in the North Carolina portion of the Charlotte-Gastonia-Rock Hill MSA. If York County emissions were affecting Mecklenburg County monitors, then we would expect all monitors to correlate on a regular basis. However, they all correlate in 2002, suggesting that the events that transpired that year were most likely due to adverse meteorological conditions rather than significant contribution of pollutants from York County.

Table L-2: 2001 PM Peak Correlations (Pearson)						
	York (SC)	**Crouse (NC)**	**Garinger (NC)**	**Arrowood (NC)**	**County Line (NC)**	**Enochville (NC)**
Crouse (NC)	0.7853					
Garinger (NC)	0.8264	0.8186				
Arrowood (NC)	0.7873	0.7839	0.8855			
County Line (NC)	0.7786	0.7833	0.9363	0.8438		
Enochville (NC)	0.7775	0.8210	0.8770	0.7869	0.8864	
Monroe (NC)	0.7771	0.7428	0.8500	0.8149	0.8035	0.7929
Shaded values indicate a high level of correlation.						

Table L-3: 2002 PM Peak Correlations (Pearson)							
	York (SC)	**Crouse (NC)**	**Garinger (NC)**	**Arrowood (NC)**	**County Line (NC)**	**Rockwell (NC)**	**Enochville (NC)**
Crouse (NC)	0.8728						
Garinger (NC)	0.8839	0.8854					
Arrowood (NC)	0.8709	0.8685	0.9216				
County Line (NC)	0.8656	0.8689	0.9571	0.8855			
Rockwell (NC)	0.8550	0.8715	0.9152	0.8383	0.9337		
Enochville (NC)	0.8557	0.8925	0.9163	0.8626	0.9332	0.9245	
Monroe (NC)	0.8619	0.8311	0.9012	0.8688	0.8878	0.8656	0.8556
Shaded values indicate a high level of correlation.							

Table L-4: 2003 PM Peak Correlations (Pearson)							
	York (SC)	**Crouse (NC)**	**Garinger (NC)**	**Arrowood (NC)**	**County Line (NC)**	**Rockwell (NC)**	**Enochville (NC)**
Crouse (NC)	0.7892						
Garinger (NC)	0.7622	0.8515					
Arrowood (NC)	0.7107	0.8101	0.9016				
County Line (NC)	0.7365	0.8434	0.9350	0.8566			
Rockwell (NC)	0.7396	0.8303	0.8758	0.7968	0.9064		
Enochville (NC)	0.7257	0.8309	0.9031	0.8241	0.9101	0.9060	
Monroe (NC)	0.7737	0.7945	0.8622	0.8067	0.8390	0.8325	0.8218
Shaded values indicate a high level of correlation.							

An examination of the mean ozone concentration for 2001 to 2003 reveals that the York monitor is most highly related to the attaining Arrowood monitor during the PM peak and they both have the lowest readings in the entire MSA. This lends evidence to the fact that York County commuters have little impact on the overall mobile source emissions in the MSA due to the fact that in order to return to York

County, most of the drivers are in the vicinity of the Arrowood monitor during the PM commute.

From Tables L-5 through L-7, it is apparent that the York monitors are very similar to the Arrowood monitor. In fact, the p-values for York and Arrowood make this clear. The t-test with a significance level of 0.05 reveals p-values of 0.6544, 0.3193, and 0.6963, for 2001, 2002, and 2003, respectively. Therefore, we cannot reject the null hypothesis that states that the York and Arrowood monitors have equal mean ozone concentrations.

Table L-5:
PM Peak Tukey (HSD) Comparison of Means (2001)

Variable	Mean	Homogenous Groups			
Enochville (NC)	0.0504	**I**			
County Line (NC)	0.0496	**I**			
Crouse (NC)	0.0487	**I**	**I**		
Monroe (NC)	0.0482	**I**	**I**		
Garinger (NC)	0.0465	**..**	**I**	**I**	
York (SC)	0.0440	**..**	**..**	**I**	**I**
Arrowood (NC)	0.0436	**..**	**..**	**..**	**I**
"I" indicates monitors have statistically similar means					

Table L-6:
PM Peak Tukey (HSD) Comparison of Means (2002)

Variable	Mean	Homogenous Groups			
Rockwell (NC)	0.0521	**I**			
Enochville (NC)	0.0506	**I**	**I**		
County Line (NC)	0.0501	**I**	**I**		
Monroe (NC)	0.0493	**I**	**I**	**I**	
Crouse (NC)	0.0472	**..**	**I**	**I**	**I**
Garinger (NC)	0.0466	**..**	**..**	**I**	**I**
York (SC)	0.0450	**..**	**..**	**..**	**I**
Arrowood (NC)	0.0439	**..**	**..**	**..**	**I**
"I" indicates monitors have statistically similar means					

Table L-7:
PM Peak Tukey (HSD) Comparison of Means (2003)

Variable	Mean	Homogenous Groups			
Rockwell (NC)	0.0470	**I**			
Enochville (NC)	0.0422	**I**	**I**		
Crouse (NC)	0.0436	**..**	**I**		
County Line (NC)	0.0432	**..**	**I**		
Garinger (NC)	0.0398	**..**	**..**	**I**	
Monroe (NC)	0.0398	**..**	**..**	**I**	
Arrowood (NC)	0.0356	**..**	**..**	**..**	**I**
York (SC)	0.0353	**..**	**..**	**..**	**I**
"I" indicates monitors have statistically similar means					