South Carolina Ozone Nonattainment Boundary Recommendations

South Carolina Department of Health and Environmental Control – Bureau of Air Quality

March 12, 2009

Contents

South Carolina 2008 8-Hour Ozone National Ambient Air Quality Standard Boundary Recommendations

Introduction

I. 2008 Boundary Recommendations

The South Carolina Department of Health and Environmental Control (Department) submits the following boundary recommendations for the 2008 8-hour ground-level ozone National Ambient Air Quality Standard (Ozone NAAQS). This submittal is made in accordance with the requirements of Section 107(d) of the Clean Air Act (CAA) and the United States Environmental Protection Agency (EPA) suggested guidance pertaining to the Ozone NAAQS. These recommendations, listed in Table 1, are based on 2006 - 2008 air quality data, planning and control considerations, and other air quality-related information. These recommendations also take into consideration comments received at public meetings, via the web page developed for this purpose, and through various other forums.

Table 1: South Carolina Recommended 8-hour Ozone Designations

Designated Area	Designation	Classification
	Type	Type
Abbeville County	Attainment	*
Aiken (partial county)	Nonattainment	*
Greenville/Pickens (partial county)	Nonattainment	*
Lexington/Richland (partial county)	Nonattainment	*
Spartanburg (partial county)	Nonattainment	*
York (partial county)	Nonattainment	*
Remainder of State	Attainment	*

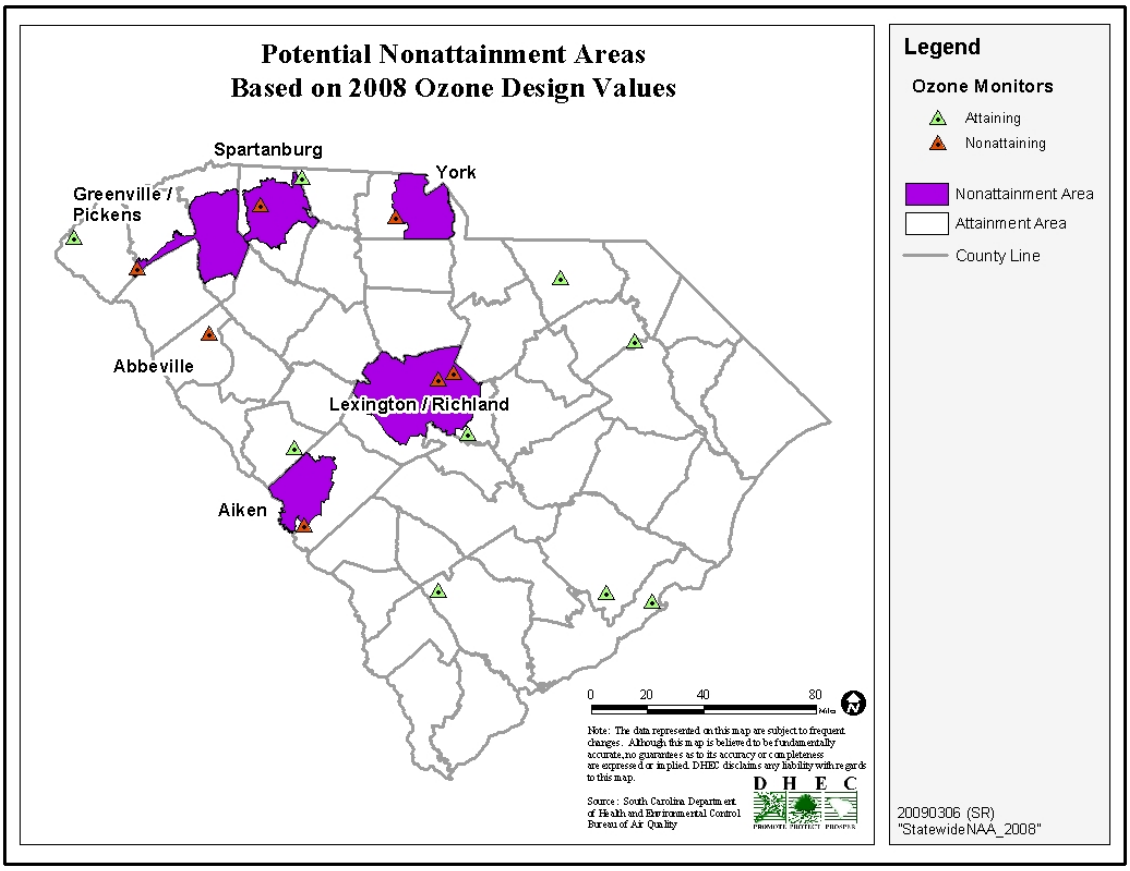
*Classification cannot be determined due to the fact that EPA has not released the Ozone NAAQS implementation rule. The Department respectfully requests that EPA not finalize designations until at least six months after the implementation rule and any associated guidance has been finalized. States and the areas impacted should be provided the opportunity to fully understand what implementation of the Ozone NAAQS means. South Carolina relies on EPA to provide timely and appropriate final guidance and EPA should be reasonable when stressing "consistency" when guidance is too late to assist the states.

Additional data to support the recommendations found in Table 1 are provided herein, evaluating each recommended nonattainment area separately. Also note that Abbeville County is listed separately in the table with a recommendation of "Attainment." While the monitor in Abbeville County has a 2008 design value above the Ozone NAAQS, the Department believes the air quality issue is due to transport. This will be discussed further in the section for Abbeville.

The criteria and data provided to justify the Department's recommendations are specific to each individual area and are consistent with the boundary guidance provided by EPA for the Ozone NAAQS. Further, the supplementary information provided for each area substantiates how these recommendations are consistent with the definition of nonattainment in Section 107(d)(1) of the CAA and why these nonattainment areas are appropriate. These separate and distinct boundaries will promote greater

efficiency in the administration of control strategies and facilitate implementation of the various State plans developed to ensure attainment and maintenance of the air quality standards. If additional control measures are required to attain the Ozone NAAQS, the Department has the statutory authority under S. C. Code Sections 48-1-20 and 48-1-50(23) to promulgate and implement regulations and to require more stringent controls anywhere in South Carolina to realize appropriate emissions reductions.

Figure 1: South Carolina Nonattainment Areas



These separate and distinct boundaries will encompass the urbanized areas of the respective Core Based Statistical Areas (CBSA) and will include portions of seven counties to allow the State better coordination of the requirements for nonattainment areas. Each area, with the exception of Abbeville County, has a single Metropolitan Planning Organization (MPO) to facilitate the transportation conformity process. Further, Section 182(h) of the CAA states that EPA may treat an ozone nonattainment area as a rural transport area if EPA finds that sources of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) emissions within the area do not make a significant contribution to the ozone concentrations measured in the area or in other areas. Detailed discussion concerning rural transport will follow in the Abbeville section.

The Department respectfully requests the opportunity to update this recommendation with the latest quality assured air quality monitoring data prior to EPA issuing final designations in March 2010.

II. Background and General Requirements

On April 30, 1971, EPA promulgated air quality standards for photochemical oxidants under Section 109 of the CAA (36 FR 8186). Identical primary and secondary air quality standards were set at an hourly average of 0.08 parts per million (ppm) total photochemical oxidants not to be exceeded more than one hour per year. By law, EPA is required to review pollutant criteria every five years, so as to integrate new health developments into the regulatory process. A reevaluation of the human health studies prompted EPA into altering the photochemical oxidants air quality standard and establishing identical primary and secondary ozone air quality standard of 0.12 ppm in 1979 (43 FR 16962). The 1979 air quality standard defined attainment of the standards as occurring when the expected number of days per calendar year with maximum hourly average concentrations greater than 0.12 ppm is equal to or less than one. A violation of this standard would occur if there were four or more exceedances of the standard in a three-year period. On July 18, 1997 (62 FR 38856), based on its review of the available scientific evidence linking exposures to ambient ozone to adverse health and welfare effects at levels allowed by the 1-hour standard, EPA again promulgated revisions to the air quality standard for ozone. EPA revised the standards to establish the more stringent 8-hour standard at a level of 0.08 ppm. Compliance with the standard is determined based on the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area as the new evaluation criteria. The 1-hour secondary standard was also replaced by an 8-hour secondary standard identical to the new primary standard.

On July 14, 2000, the Department, on behalf of the Governor of South Carolina, in accordance with the requirements of Section 107 of the CAA and as requested by EPA, submitted initial boundary recommendations for the 1997 8-hour ozone standard based upon 1997 through 1999 monitored ozone data. The Department recommended that the jurisdictional boundaries of seven MPOs be designated nonattainment areas. Upon receipt of the Department's recommendations, EPA proposed modifications, recommending that whole counties be designated nonattainment, and requested more information and further documentation to adequately support the Department's partial county recommendations.

On July 14, 2003, the Department, on behalf of the Governor of South Carolina, submitted a revised proposal to EPA for nonattainment area designations. In April 2004, the EPA designated three areas in South Carolina as nonattainment but deferred the effective date for two of these areas because of their participation in the Early Action Compact process. In 2007, all ozone monitors in South Carolina were in compliance with the 1997 standard. In December 2007, the Department petitioned the EPA to redesignate the Columbia Area and the Greenville-Spartanburg-Anderson Area to attainment for the 1997 8-hour Ozone standard. These areas were redesignated as attainment in April 2008.

In March 2008, based upon scientific evidence and human health studies, the EPA lowered the ozone standard to 0.075 ppm for both the primary and secondary standards while keeping the same evaluation criteria used for the 1997 standard. Promulgation of the Ozone NAAQS triggered the requirement under Section 107 of the CAA for EPA to designate areas as attainment/unclassifiable or nonattainment for the revised air quality standard. The process for designations provides each state an opportunity to recommend area designations including appropriate boundaries to EPA. The Department is taking this opportunity to submit to EPA this updated list of all areas in the State, designating as:

> 1. Nonattainment, any area that does not meet (or contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant;
>
> 2. Attainment, any area (other than an area identified in clause (1)) that meets the national primary or secondary ambient air quality standard for the pollutant; or

3. Unclassifiable, any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard.

On December 4, 2008, EPA published a memorandum to identify important factors for making recommendations for area designations. In that memorandum, EPA recommended the Core Based Statistical Area (CBSA) be the presumptive boundary for designating areas as nonattainment for the Ozone NAAQS.

Section 107 of the CAA allows the Governor, in consultation with state and local air pollution control agencies, to undertake a study to evaluate monitoring data and recommend nonattainment area boundaries. Whenever a Governor finds and demonstrates to the satisfaction and concurrence of EPA that with respect to a portion of EPA's recommended boundaries that sources in that portion do not contribute significantly to violation of the NAAQS, EPA shall approve the Governor's request to exclude such portion from the nonattainment area. In making such finding, the Governor and EPA shall consider how each of the following factors provided in EPA's December 4, 2008, guidance affect the drawing of nonattainment boundaries and how the resulting recommendation is consistent with the definition of nonattainment in Section 107(d)(1) of the CAA:

A. Air Quality Data

B. Emissions Data (location of sources and contribution to ozone concentrations)

C. Population Density and Degree of Urbanization (including commercial development)

D. Traffic and Commuting Patterns

E. Growth Rates and Patterns

F. Meteorology (weather/transport patterns)

G. Geography/Topography (mountain ranges or other air basin boundaries)

H. Jurisdictional Boundaries (e.g., counties, air districts, existing nonattainment areas, Reservations, metropolitan planning organizations)

I. Level of Control of Emission Sources

The Department also considered the following additional factors:

J. Regional/National Emission Reductions

K. Statewide Education and Outreach Efforts

L. Public Participation

The Department will address factors A through H in each recommended nonattainment area and for Abbeville County in separate attachments and demonstrate how the resulting recommendations are consistent with the definition of nonattainment in Section 107(d)(1) of the CAA. Factors F through L contain information common to all areas and are included in Section V of this Introduction. Factors F, G and H are addressed in the Introduction; however, additional specific information is provided in each separate attachment.

Each attachment will be divided into sections, with consideration given to the factors listed above, and will address how these factors affect the creation of nonattainment area boundaries.

III. 2008 Design Values

Table 2 lists the ambient ozone monitoring sites located in South Carolina and associated 2008 design values (three consecutive years of annual fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor and reported in ppm). These calculated design values were utilized in formulating the Department's current designation recommendations. The location, scale, and objective of each monitoring site will be discussed in more detail in each of the Department's recommended nonattainment areas.

Table 2: 2008 Design Values

County	Site ID	Site Name	2008 Design Value (ppm)
Abbeville	45-001-0001	Due West	0.078
Aiken	45-003-0003	Jackson Middle School	0.076
Berkeley	45-015-0002	Bushy Park Pump	0.063
Charleston	45-019-0046	Cape Romain Wildlife Refuge	0.072
Cherokee	45-021-0002	Cowpens National Battle Ground	0.074
Chesterfield	45-025-0001	Chesterfield	0.073
Colleton	45-029-0002	Ashton	0.073
Darlington	45-031-0003	Pee Dee Exp. Station	0.075
Edgefield	45-037-0001	Trenton	0.070
Oconee	45-073-0001	Round Mt. Fire Tower (Long Creek)	0.071
Pickens	45-077-0002	Clemson	0.080
Richland	45-079-0007	Parklane - State Park Health Ctr.	0.078
Richland	45-079-0021	Congaree Bluff	0.071
Richland	45-079-1001	Sandhill	0.079
Spartanburg	45-083-0009	North Spartanburg Fire Station	0.084
York	45-091-0006	York	0.077

The 2008 design value is calculated using 2006 - 2008 ozone data. The 2008 data has been quality assured and was certified and submitted to EPA on February 20, 2009.

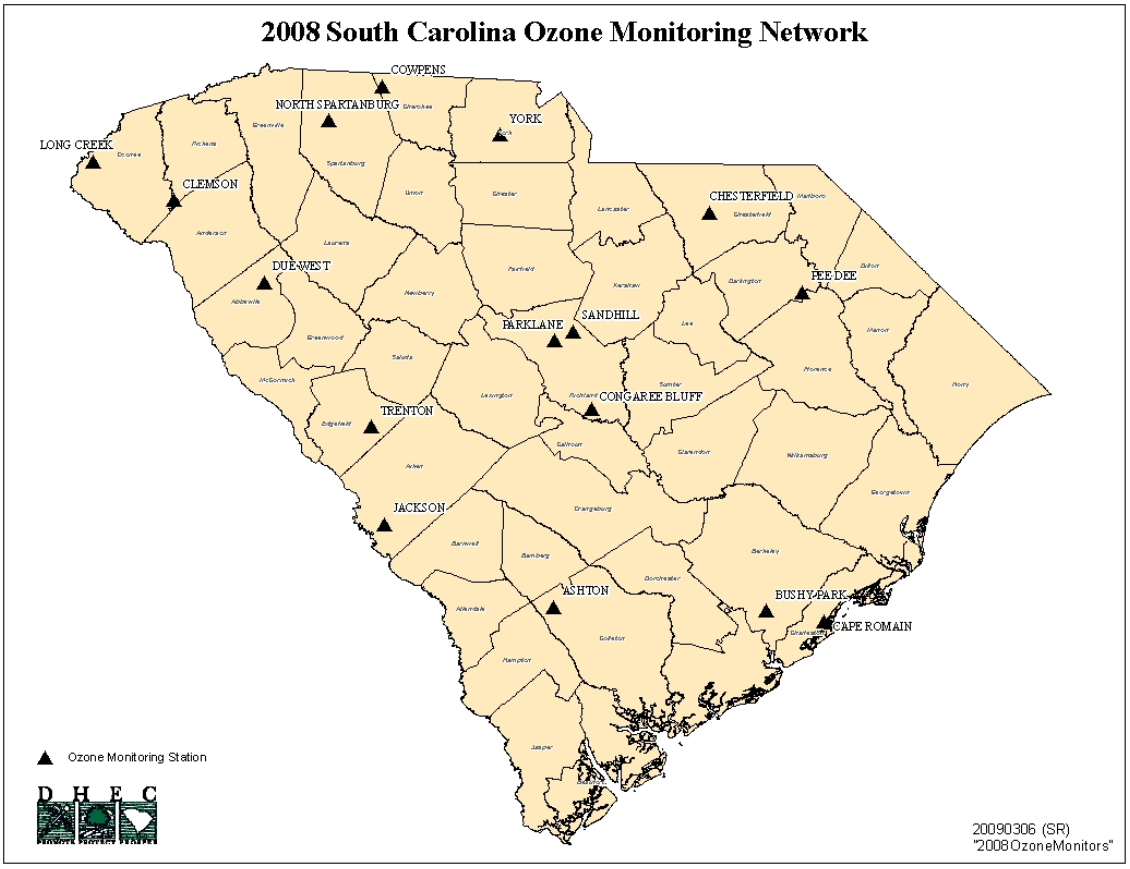
IV. Ozone Monitoring Network

The Department has developed an extensive ambient air quality monitoring network for ozone and other pollutants. The network is used to establish general or background information in rural areas, to determine the effects of NO_x and/or VOC emissions from specific sources on ozone formation, to monitor pollutant concentrations in suburban and urban areas, and to ascertain interstate and intrastate transport of pollutants. In 2008 there were 16 ozone monitors, strategically located throughout the State, having at least three years of quality assured data. These monitors were located in accordance with EPA monitor siting guidance. The most recent monitoring plan was conditionally approved by EPA in October 27, 2008.

The interstate and intrastate transport of ozone and its precursor pollutants demonstrates county lines are not the most appropriate boundary for nonattainment areas. As an example of this principle, Richland County has three ozone monitoring sites with at least three years of quality assured data. In Richland

County, one monitor indicates attainment of the standard while the other two monitors indicate design values above the standard.

Figure 1: 2008 South Carolina Ozone Monitoring Network



V. Factors Common to All Areas

The following factors contain information common to all six of the nonattainment areas. These factors will be addressed here. Additional information regarding factors F, G and H is included in each of the separate attachments where applicable.

F. Meteorology (weather/transport patterns)

G. Geography/Topography (mountain ranges or other air basin boundaries)

H. Jurisdictional Boundaries (e.g., counties, air districts, existing nonattainment areas, Reservations, Metropolitan Planning Organizations (MPOs))

I. Level of Control of Emission Sources

J. Regional/National Emission Reductions (e.g., the National Clean Diesel Rule and Tier Two automotive standards or other enforceable regional strategies)

K Statewide Education and Outreach Efforts

L. Public Participation

F. Meteorology

The meteorology 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 common across the whole 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 characteristics 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 during the Ozone Season immediately following an El Niño 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 a particular area. It is in these cases where transport of ozone from upwind sources comes into play.

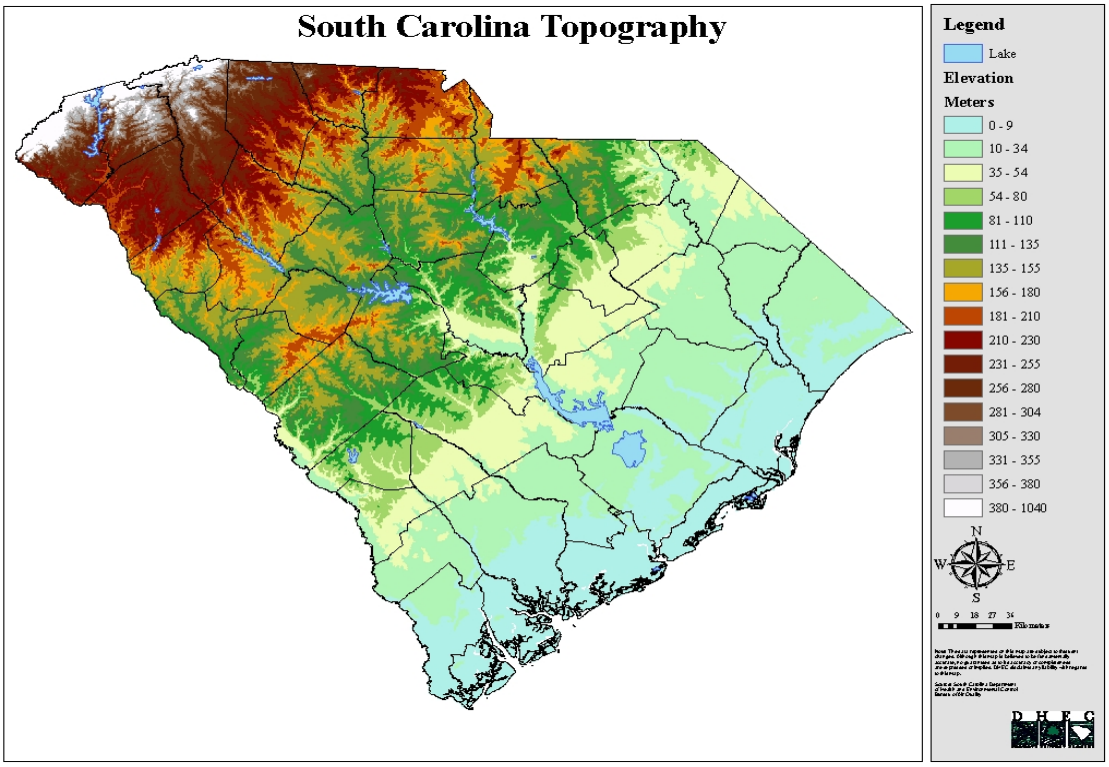
G. Geography/Topography

The topography of South Carolina is divided into two distinct areas, commonly known as the Piedmont and the Coastal Plain. The line of demarcation runs from the eastern boundary of Aiken County through central Chesterfield County to the North Carolina border. West of 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 and continue to decrease 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.

Figure 2: South Carolina Topography



H. Jurisdictional Boundaries

Metropolitan Planning Organizations

Metropolitan areas are the nation's economic engines. Almost three-quarters of United States citizens live and work in these urbanized areas. The MPOs are designated for each urbanized area with a population exceeding 50,000 as measured in the latest decennial census. There may be more than one MPO in each CBSA. The MPOs are required to develop a unified planning work program. The unified planning work program describes planning activities, discusses planning priorities facing the area, and describes all metropolitan transportation and transportation related air quality planning activities. The

quality of each metropolitan transportation infrastructure - highways, bridges, airports, transit systems, rails, and ports - is a primary factor in American economic competitiveness.

The Intermodal Surface Transportation Efficiency Act (ISTEA) was designed to put in place a framework to guide the operations, management and investment in a surface transportation system that is largely in place. The legislation strengthened the metropolitan planning process, enhanced the role of local elected officials, required stakeholder involvement, and encouraged movement toward integrated, modally mixed strategies for greater system efficiency, mobility and access. Highway funding levels since 1992 have provided for a state's dual goals of relieving congestion and reducing emissions. The Congestion Mitigation and Air Quality (CMAQ) Improvement program was established under the ISTEA. CMAQ was reauthorized in Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). As a condition for spending federal highway or transit funds in urbanized areas, the federal highway and transit statutes require the designation of MPOs, which have responsibility for planning, programming, and coordination of federal highway and transit investments. The various MPOs are responsible for predicting future growth and planning for development in their respective jurisdictional areas. Transportation Enhancement funds are allocated through these organizations. Proposed projects are evaluated and approved by the members of the MPO (primarily elected officials) and funded in the area's Transportation Improvement Program (TIP). Additionally, much of the detailed information needed for transportation planning and conformity determinations are based on data from within the MPO boundaries.

The area covered by each MPO includes the current urbanized areas and all contiguous areas likely to be urbanized within 20 years. Geographical boundaries for the MPO are established by the MPO itself in agreement with the governor of each state. These boundaries are defined by a distinct geographical area and are updated and reviewed every five years. States and MPOs annually certify to the Federal Highway Administration that their metropolitan transportation planning process is addressing the major issues facing their area and is being conducted in accordance with applicable federal requirements.

Based on air quality monitoring data from 2006 – 2008, areas that represent several of the existing South Carolina MPO jurisdictional boundaries are being recommended for designation as nonattainment areas for the Ozone NAAQS. Nonattainment area boundaries based on the jurisdictional boundaries of the MPOs will promote local solutions to local problems and facilitate development and implementation of more specific SIP elements to help each nonattainment area attain the air quality standard as expeditiously as possible.

Core Based Statistical Areas

The term "Core Based Statistical Area" (CBSA) is a collective term for both metropolitan and micropolitan statistical areas (metro and micro areas). Metro and micro areas are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing federal statistics**.**

According to the Office of Management and Budget (OMB), the definition of a metropolitan area for statistical purposes includes 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 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. 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." Over the last six years, local areas have focused on those emission reduction strategies that make sense and actually benefit the local area. Areas implemented local strategies that probably would not have been implemented had the area been required to focus on those "traditional" prescriptive measures.

As a part of the review of the data and information, the Department considered county lines and/or CBSA as the boundaries for recommended nonattainment area designations but has determined that such nonattainment area boundaries would lead to inefficiency in the coordination of SIP development, nonattainment requirements and implementation of control measures. CBSA boundaries are based on city and county populations in urbanized areas, with "outlying counties" being included in the CBSA contingent upon their commuting patterns into the central counties. Under the standards, the county (or counties) that contains the largest city becomes the "central county" (counties), along with any adjacent counties that have at least 50 percent of their populations in the urbanized area surrounding the largest city. The CBSA is named according to the populations of the largest central cities.

Figure 3: State of South Carolina Core-based Statistical Areas and Metropolitan Planning Organizations

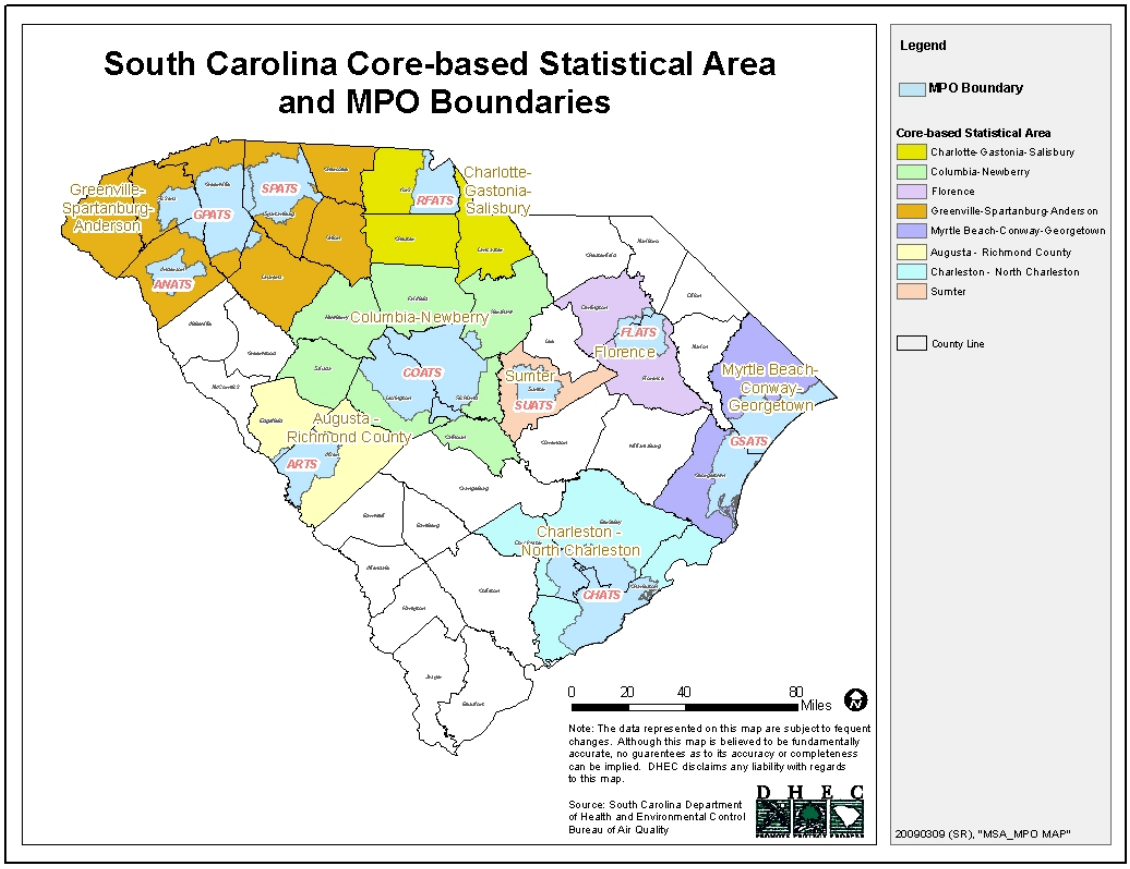


Figure 3 shows the 28 South Carolina counties that are incorporated in eight separate CBSAs. In South Carolina, one CBSA has three MPOs located within its boundary. The Greenville Pickens Area Transportation Study (GPATS), Spartanburg Area Transportation Study (SPATS), and Anderson Area

Transportation Study (ANATS) MPOs are all in the Greenville-Spartanburg-Anderson CBSA. Two CBSAs cross state lines. The Rock Hill/Fort Mill Area Transportation Study (RFATS) MPO is located in the "Charlotte - Gastonia - Salisbury, NC-SC CBSA" along with the various North Carolina MPOs. The Aiken Regional Transportation Study (ARTS) MPO is in the "Augusta – Richmond County, GA-SC CBSA." CBSAs do not consider the jurisdictional boundaries of the various State and local governments and their MPOs, whose jurisdictional boundaries may cross county lines.

Many of the counties in the individual CBSAs have large rural areas, which have very few, if any, stationary sources that make a significant contribution to the ozone concentrations measured in that area or in any other area. In the Augusta – Richmond County, GA-SC CBSA, Edgefield County, an outlying county, and a large portion of Aiken County are primarily rural.

Furthermore, the Department does not consider CBSA boundaries a reliable tool for the designation of nonattainment areas. The data from the 16 ozone monitoring sites indicate that several areas demonstrating attainment of the air quality standard would be declared nonattainment areas simply due to the fact that the county is incorporated within a CBSA and not due to the air quality or emissions within the area.

The working relationship between the Department and the MPOs has been excellent. The Smart Highways efforts have given the Department and MPOs an opportunity to work together on air quality and transportation planning issues. Another example is the recent revision to the Transportation Conformity State Implementation Plan which includes the memorandum of agreement (MOA) outlining the interagency consultation procedures that must be implemented if an area is designated nonattainment. If an area is designated as nonattainment, the transportation conformity interagency consultation partners, including the responsible MPO, the South Carolina Department of Transportation (SC DOT), and the Department have a transportation conformity MOA in place so there will be no delay in beginning the transportation conformity process. Transportation models for the area are specific to the responsible MPO. Transportation planning outside of the MPO boundary is the responsibility of the SC DOT. Models would have to be developed and/or refined to perform modeling needed for transportation conformity purposes. This would require significant resources to be expended by SC DOT.

Office of Environmental Quality Control - Region Offices

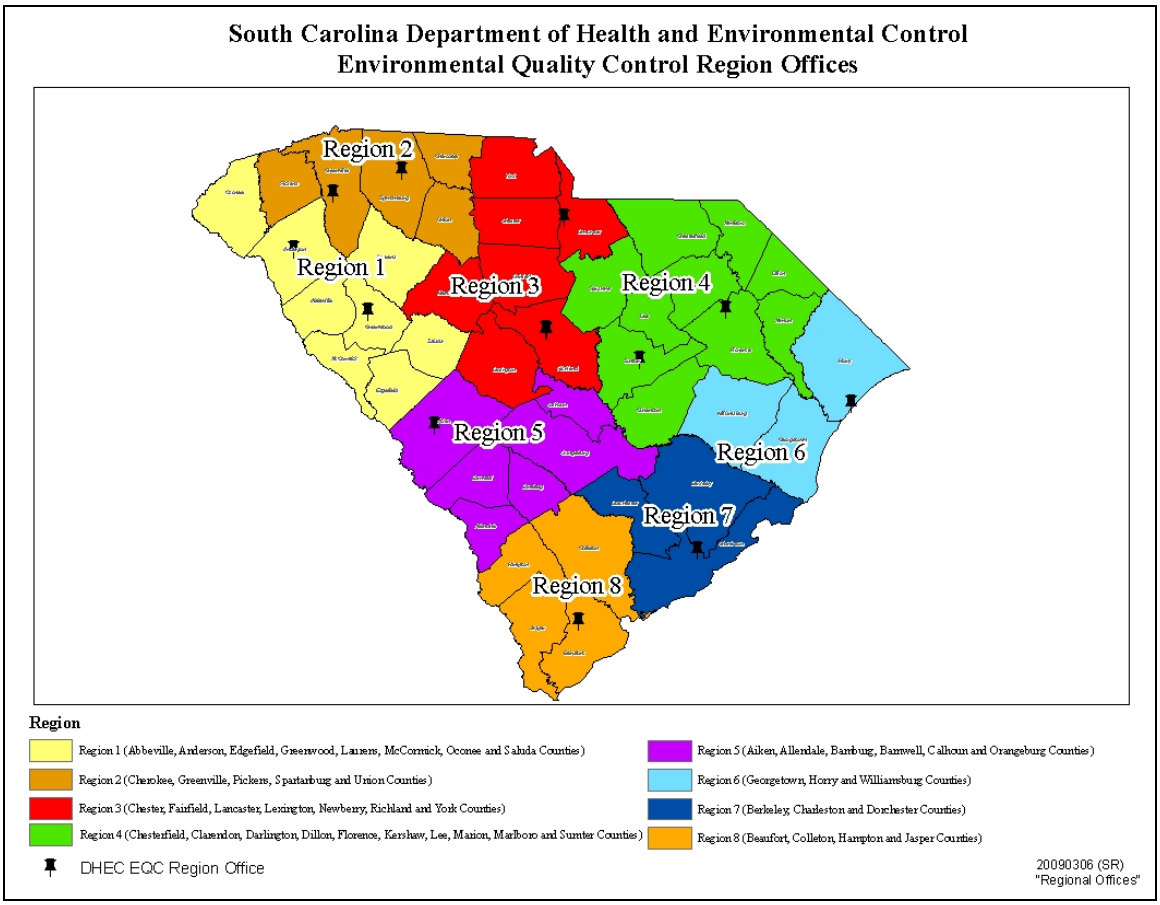
The Office of Environmental Quality Control (EQC) is the environmental regulatory arm of the Department. EQC is responsible for the enforcement of federal and state environmental laws and regulations, and for the issuing of permits, licenses and certifications for activities that may affect the environment. EQC is composed of four program areas: the Bureau of Air Quality, the Bureau of Land and Waste Management, the Bureau of Water, and the Bureau of Environmental Services. There are no local regulatory agencies; all South Carolina air quality regulatory activities are managed by the Department.

Eight EQC Regions, under the Bureau of Environmental Services, are located strategically across the State (Figure 4). The four larger Regions are further subdivided with two regional offices. The EQC Regions assist in implementation of the various State plans developed to ensure maintenance or attainment of the air quality standards. Regional field staff provide direct support services to the EQC program areas and the general public. The EQC region services include but are not limited to emergency response activities, environmental monitoring for EQC bureau programs, facility inspections and evaluations, technical assistance, on-site presence at certain commercial hazardous waste facilities, shellfish regulation, and a summer swimming pool inspection program. Particular emphasis is placed on the investigation and resolution of complaints associated with environmental and public health issues. Regional personnel also work closely with facility owners and operators to provide technical assistance

and identify potential system problems before they present a risk to the environment or public health. Since 2007, the regional staff increased involvement in air planning activities that provide assistance to air quality planning and outreach programs at the local level.

The EQC Region air quality staff carry out a number of services designed to assist in protecting and maintaining the quality of the air in South Carolina. One of the primary responsibilities of the region air quality staff is to respond to all customer complaints involving excessive emissions, odors, and open burning. Another area of responsibility involves facility compliance. Major sources in each region are inspected biennially for compliance with operation and maintenance and visible emissions requirements. Minor sources are inspected at least once every three years. Inspecting new sources for operating permits and ensuring that all sources have a current operating permit are also activities handled by the region air quality staff. Region staff also maintain air quality monitoring stations. Long term trends for carbon monoxide, particulate matter, ozone, SO_2 and NO_x concentrations are monitored. Results from each of the region monitoring programs are combined and used to provide a comprehensive picture of the air quality in South Carolina. Through compliance inspections, complaint response and monitoring activities, the region air quality staff help to ensure that ambient air quality is maintained at the highest possible level.

Figure 4: South Carolina DHEC EQC Region Offices



I. Level of Control of Emission Sources

The Department has primary responsibility for ensuring attainment and maintenance of the National Ambient Air Quality Standards established by EPA. Under Section 110 of the CAA and related provisions, the Department must submit for EPA approval State Implementation Plan amendments that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The Department also administers the Nonattainment New Source Review (NSR) and 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.

Figures 5 and 6 below illustrate the generic breakdown of the sources of NO_x and VOC emissions in the State. On-road mobile sources of pollution include most forms of transportation such as automobiles, trucks, and buses. Non-road mobile sources include a wide variety of internal combustion engines not associated with highway vehicles. Examples of non-road mobile sources would be construction equipment, lawn mowers, and boats. A point source of pollution refers to a source at a fixed point, such as an industrial boiler or storage tank, that emits air pollutants. A non-point source refers to a series of small sources that together can affect air quality in a region. Examples of non-point sources include gas stations and residential heaters. Biogenic emissions are emissions that originate from natural sources such as vegetation. In South Carolina, 71 percent of all VOC emissions come from biogenic sources. As such, attempts to reduce VOC emissions to control ozone concentrations would have little or no effect.

Figure 5: 2002 South Carolina NOx Source Categories

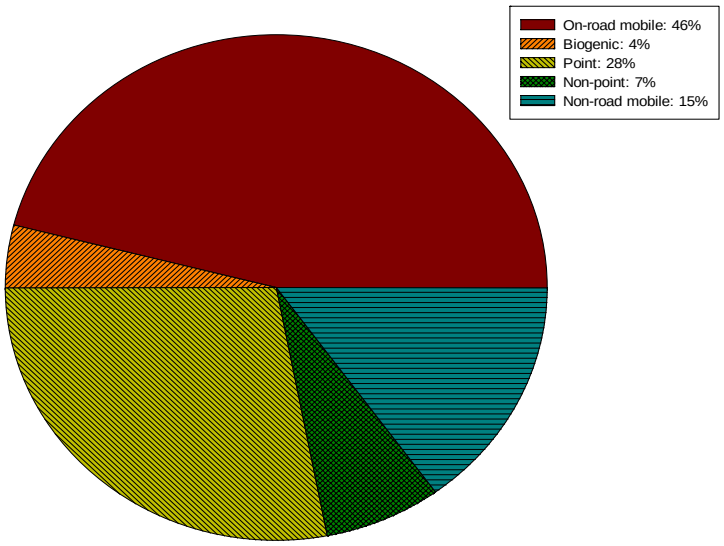
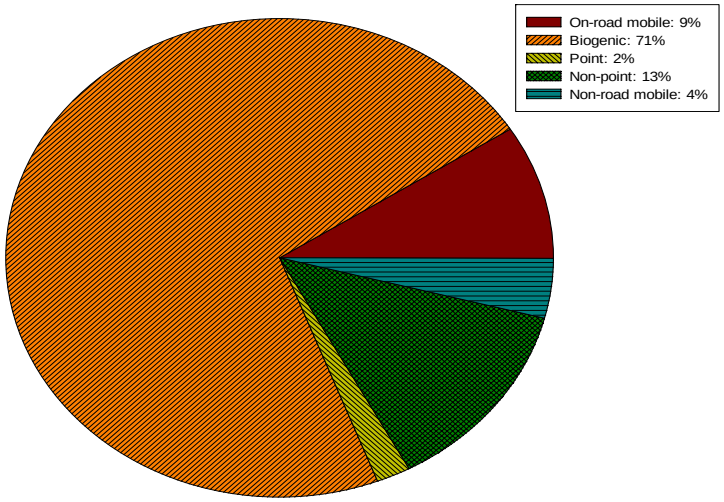


Figure 6: 2002 South Carolina VOC Source Categories



Federal Measures

Stationary Sources

The EPA publishes requirements for specific types of new stationary sources of air pollution. The requirements are referred to as the New Source Performance Standards. Several New Source Performance Standards (NSPS) include limitations on NO_x and VOCs that reduce these precursors of ozone.

Federal regulations that target emission reductions that are beneficial to the reduction of ozone precursors for the operation of reciprocal internal combustion engines are 40 CFR 60, Subparts IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)) and JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE)) and 40 CFR 63, Subpart ZZZZ (National Emission Standards For Hazardous Air Pollutants For Stationary Reciprocating Internal Combustion Engines).

40 CFR 60, Subpart IIII: The final standards will reduce NO_x by an estimated 38,000 tons per year (tpy) in the year 2015 and 270,000 tpy by 2030. Reductions are presented for 2015 because that is the model year for which certified stationary CI ICE would have to meet the final Tier 4 emission standards. It is expected that almost all of EPA air quality impacts will be incorporated by that year, given turnover of old engines.

40 CFR 60, Subpart JJJJ and 40 CFR 63, Subpart ZZZZ: The final rule is estimated to reduce NO_x emissions from stationary SI ICE by an estimated 77,000 tpy, and VOC emissions by about 2,000 tpy in the year 2015. The final rule is estimated to reduce NO_x emissions by 84,000 tpy and VOC emissions by 2,400 tpy in the year 2020. The final rule is estimated to reduce NO_x emissions by 99,000 tpy and VOC emissions by 3,000 tpy in the year 2030. EPA estimates that a total of about 150,000 stationary SI ICE will be affected by the final rule by the year 2015. A total of 433,000 stationary SI engines will be affected by the year 2030. An estimated 623,000 stationary CI engines will be affected by the final rule by the year 2015.

Background information on 40 CFR 60, Subpart IIII can be found at http://www.epa.gov/EPA-AIR/2006/July/Day-11/a5968.htm.

Background information on 40 CFR 60, Subpart JJJJ and 40 CFR 63, Subpart ZZZZ can be found at http://www.epa.gov/EPA-AIR/2008/January/Day-18/a25394.pdf.

Mobile Sources

Mobile source emissions significantly contribute to air pollution in South Carolina. New national standards will provide tremendous air quality benefits, particularly those that will address pollution from mobile sources. 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, light-duty trucks and SUVs. The phase-in of the tailpipe emissions standards began in 2004 for passenger cars and light-duty trucks and was completed by 2007. The phase-in period for heavy-duty light trucks (HDLTs) and medium-duty passenger vehicles (MDPVs) began in 2008. The standard will be completely

implemented for this group by 2009. Tier 2 standards will reduce new vehicle NO_x levels to an average of 0.07 grams/mile.

Gasoline Sulfur Standards

The gasoline sulfur standards focus on reducing average sulfur level in gasoline to 30 ppm. Refiners and importers were required to meet a corporate average gasoline standard of 120 ppm and a cap of 300 ppm beginning in 2004. This standard was reduced to 30 ppm with a cap of 80 ppm in 2007. Implementation of these standards will be the equivalent of taking 164 million cars off the road.

Highway Diesel Fuel Sulfur Standards

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

Standards For Heavy-Duty Diesel Engines

The new standard for heavy-duty diesel engines will also help to reduce mobile source emissions. This standard became effective for diesel engines beginning with the 2007 model year. Included in this standard is a reduction for NO_x and non-methane hydrocarbons. The regulation 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.

Non-Road Diesel Engines and Fuel

EPA required emissions reductions from off-road diesel engines and ultra-low-sulfur fuel requirements for these same engines. By 2014 emissions should be reduced by more than 90 percent and when fully implemented, 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 was 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 15 percent of the NO_x inventory in South Carolina, emission reductions from this sector will be a tremendous benefit to our air quality.

State Measures

The South Carolina Pollution Control Act (PCA) specifies the public policy of the state is to maintain reasonable standards of air quality and delegates authority of its provisions to the Department. The PCA empowers the Department to cooperate with other state agencies, local governments or local groups to restore or preserve air quality. 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 to realize appropriate emissions reductions within and outside of nonattainment areas.

Department Regulatory Actions

This authority is evident through the regulations promulgated as a part of the Early Action Compact (EAC) process established for the 1997 8-hour ozone standard. In early 2003, the Department began meeting with industry representatives, environmentalists, local governments, and other interested parties to develop state-wide regulations for the purpose of getting additional NO_x and VOC reductions. NO_x reductions were the focus during these meetings because modeling indicates that, with respect to ozone

formation, NO_x is the critical pollutant. Furthermore, sensitivity analysis demonstrated that VOC reductions have very little impact on ozone in South Carolina. As a result, a new statewide regulation to control NO_x from stationary sources was promulgated. In addition, the existing open burning regulation was revised to add more stringent restrictions. Upon publication in the June 25, 2004, issue of the *State Register*, these regulations became effective.

Regulation 61-62.5, Standard 5.2, Control of Oxides of Nitrogen

The Control of Oxides of Nitrogen (NO_x) Regulation (R.61-62.5, Standard 5.2), requires Best Available Control Technology (BACT) level controls on stationary sources that emit or have the potential to emit NO_x. Many of these sources would not otherwise be required to control their NO_x emissions. For example, under the CAA, the preconstruction review program referred to as New Source Review (NSR) only applies to larger sources (generally those with potential emissions greater than 100 tpy or more). For sources with emissions below these levels, there are generally no controls for NO_x required.

This regulation is applied statewide to new and existing stationary sources of NO_x emissions. Larger sources that have undergone a BACT review for NO_x are exempt from the regulation; however, larger sources that have taken limits to opt out of a Prevention of Significant Deterioration (PSD) review will still be required to comply with this regulation, which covers sources ranging from boilers and turbines to fluidized bed combustors and lime kilns. For existing sources, the regulation only applies when an applicable unit undergoes a burner replacement, at which time the burner must be replaced with a low burner or equivalent technology capable of achieving a 30 percent reduction from uncontrolled levels.

Regulation 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, revising 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 presents health and environmental concerns for many communities. The smoke generated from these activities is a nuisance to some and a health threat to others with asthma or other respiratory problems. Furthermore, the Department spends significant staff time and resources responding to complaints related to these activities. Regulation 61-62.2 had previously prohibited the burning of household waste except where other disposal options were not available. This activity is now clearly prohibited, which should provide the clarity necessary to help enforce this restriction.

With respect to the exception for the burning of construction waste, the Department has revised this provision to allow only residential construction waste to be burned. Residential construction waste can only be burned outside of the ozone season (which runs April 1 through October 31), between the hours of 9:00 a.m. and 3:00 p.m., and must be conducted at least five hundred feet from any occupied structure. Furthermore, only certain "clean" wastes are allowed to be burned. "Clean" wastes would be residential construction waste that is free of heavy oils, wood treatment products, asphaltic materials, natural or synthetic rubber, or any other trade wastes that would produce smoke in excess of 40 percent opacity. Again, the Department believes that the burning of construction waste presents health and environmental concerns for many. Prohibiting a significant portion of this waste from being burned will alleviate some of these concerns and provide additional NO_x reductions.

Finally, the exception for the purpose of firefighter training has been revised to ensure that minimum health, environmental and safety concerns are addressed. Prior Department approval is required in order to obtain the exemption as a permanently established training site. Fires set for the purpose of fire-fighter training at non-permanent locations must receive Department approval prior to the initiation of any burning activity.

Based on the Department's 2002 emissions inventory, residential burning of household waste generates 2,414 tons of NO_x and 12,074 tons of VOCs in the state annually. Such emissions reductions can be realized with the Department's implementation of the ban on burning of household waste. Although information on the reduction of NO_x and VOCs resulting from the ban on burning commercial construction waste is not available, it is presumed that substantial reductions of those pollutants will occur with the implementation of this prohibition.

Additional State Measures

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. The SC Forestry Commission receives the daily Ozone forecast and will not allow prescribed fires on days with a high ozone forecast. The partnership has also allowed the Department access to information to document exceptional events where prescribed burning may have contributed to high ozone readings.

Heavy Duty Diesel Trucks Idle Reduction Legislation, Act 0234 of 2008

In May 2008 South Carolina passed a heavy duty commercial vehicle idling reduction law which limits idling of diesel vehicles. Commercial diesel vehicle are prohibited from idling more than ten minutes in one hour.

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 percent 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.

On October 18, 2001, former Governor Jim 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 3,978 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, Dodge Stratus, Chevrolet S-10 Pick-up, Chevrolet Impala, and other makes and models. 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 operates hybrid electric vehicles such as the Honda Insight, Toyota Prius, Ford Escape, and Saturn Vue. Santee Cooper the State's publicly owned utility also operates a hybrid electric utility truck and the University of South Carolina operates some all-electric vehicles.

The State owns all the daily transport school buses in South Carolina. The Department of Education was the recipient of two Clean School Bus USA grants accounting for nearly two million dollars worth of reduced school bus emissions. Diesel particulate filters, diesel oxidation catalysts and crankcase ventilation filters were installed on buses in areas with high ozone concentrations. The Department of Education is also using Global Positioning System (GPS) technology to optimize bus routes to avoid excess idling. In addition, the Department of Education has two diesel hybrid school buses in the fleet.

The state is also committed to cleaner fuels in our non-road fleet. As of January 1, 2008, all state owned diesel fuel pumps were required to provide at least B5 biodiesel. The South Carolina State Ports Authority and the state owned Division of Public Railways have switched to ultra-low sulfur diesel fuel well ahead of the mandated federal deadlines.

Permitting Programs

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 oversight on sources of emissions within South Carolina and promotes improved compliance with regulatory requirements.

Title V Permitting Program

The CAA 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 CAA 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 tpy or more of volatile organic compounds, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, or particulate matter (PM-10); and (2) those that emit 10 tpy or more of any single toxic air pollutant (specifically listed under the Clean Air Act), or those that emit 25 tpy 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 2003 and 2007, EPA Region 4 conducted comprehensive reviews 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 monitors exceeding the NAAQS, NSR assures that new emissions do not slow progress toward cleaner air. In areas meeting the NAAQS, 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 in any nonattainment area. South Carolina implements the applicable major NSR permitting regulations for the Prevention of Significant Deterioration (PSD) in the rest of the state.

In 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.

State VOC LAER and RACT

The Department has the authority to require controls on any source that impacts the ambient air quality and will pursue any necessary additional controls on industry and transportation. South Carolina currently has two separate standards that regulate VOC emissions. South Carolina Regulation 61-62.5, Standard 5.1, Lowest Achievable Emission Rate (LAER) applies to all new, modified, or altered sources that would increase VOC emissions. LAER is applied to new construction or modifications when the net VOC emissions increase exceeds 100 tpy. In addition, Regulation 61-62.5, Standard 5, is applicable to existing sources and outlines the Reasonably Available Control Technology (RACT) for VOC.

J. Regional/National Emission Reductions

Clean Air Interstate Rule

On March 10, 2005, EPA issued the Clean Air Interstate Rule (CAIR). This rule provides states with a solution to the problem of fossil-fuel powered electric generating unit pollution that drifts from one state to another. CAIR covers 28 eastern states and the District of Columbia. The rule uses a cap and trade system to reduce the target pollutants—sulfur dioxide (SO_2) and nitrogen oxides (NO_x)—by 70 percent, starting in 2009. On December 23, 2008 the DC Circuit Court remanded without vacature the CAIR rule. In South Carolina, sources continued to move forward and began complying with the requirements of CAIR on January 1, 2009. Significant continued improvement in air quality is expected as new control equipment is installed and operated.

Early Action Compact State Implementation 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 led the nation with forty-five of forty-six counties participating in the 1997 8-hour Ozone Early Action Compact (EAC) process. Local strategies were implemented that probably would not have been had the area been required to focus on those "traditional" nonattainment prescriptive measures. Those affected by the prescriptive requirements of a traditional nonattainment designation, at a minimum industry and transportation partners, would have had to be engaged in the process. With the EAC efforts, many more partners were at the table and were engaged in the process more so than had the area been designated nonattainment through the traditional process.

South Carolina provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing oxides of nitrogen emissions, do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2005, 2006, and 2007, the areas in South Carolina designated as nonattainment for the 1997 8-hour ozone standard with the effective date deferred were redesignated to attainment. Each of the diverse stakeholders joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.

The Department, along with the stakeholders in our State, continues to dedicate resources to the efforts of improving air quality and meeting new standards earlier than federally required or before designations occur. The state-wide success of the EAC process opened the door to awareness for not only ground-level ozone but other air quality standards and issues as well, such as particulate matter and greenhouse gases. The partnerships continue to be strengthened as stakeholders address air quality issues and concerns impacting their respective areas. While this is a significant commitment of resources, it is still much less than the cost of the technical components of an attainment SIP and makes public health a priority.

For additional information on the EAC process in South Carolina and the final EAC progress report (county specific and/or statewide) you may visit our website:

http://www.dhec.sc.gov/environment/baq/eap.aspx

South Carolina strongly encourages EPA to consider a similar EAC process for the 2008 Ozone NAAQS. Strong commitments by local stakeholders, including local governments, as well as local industry and environmental groups working together, in conjunction with regional and state-wide efforts have been very successful according to our data. Most recent data is evidence that at times when the meteorological patterns are conducive to the formation of ozone, the ozone monitors did not reveal elevated readings. While weather is a factor in the formation of ozone, it is one component that we have no ability to control. However, stakeholders given the flexibility to implement programs geared toward reducing oxides of nitrogen emissions does have an impact on the formation of ozone. The following link contains the description of activities for the areas addressed in the separate attachments:

http://www.scdhec.gov/environment/baq/eapreport.aspx?date=December%202007&filedate=1207

The emission reduction strategies submitted by these local areas contained both quantifiable and directionally sound measures. The partnership opportunities developed over the last several years and the awareness of the participants, including local officials, local agencies, organizations, businesses, industries, environmental groups and other stakeholders about air quality issues have resulted in proactive voluntary and regulatory actions. We will continue to work with these stakeholders to encourage implementing measures to improve air quality.

Other Point Source Reductions

Several of the largest existing industrial sources in the Upstate and Midlands areas of South Carolina have voluntarily committed to reduce and/or limit their NO_x emissions. These negotiations were the direct result of the EAC process as are the NO_x reductions that will result from them. The South Carolina Electric and Gas (SCE&G) - Wateree Plant in Richland County installed Selective Catalytic Reduction (SCR) on two coal-fired boilers to comply with the NO_x SIP Call and has agreed to take permit limits on these units as their commitment to the EAC process. International Paper in Richland County agreed to take an annual allowable NO_x emission reduction of 1000 tons, facility wide.

In addition, Duke Power in Anderson County committed to install and operate low NO_x combustion controls on two coal-fired boiler units (controls were installed in 2001 on the other boiler at the facility) and to limit the NO_x emissions from these units to an emission rate of 0.27lbs/MMBtu. This is a $7 million investment by Duke Power that will result in approximately 850 tons of NO_x reduced annually. As part of the EAC process, Transcontinental Gas Pipeline Corporation (Transco), which operates the internal combustion engines at Station 140 in Spartanburg County, began early implementation of the NO_x emission reductions required by Phase II of EPA's NO_x SIP Call regulation. In accordance with the federal requirements, Phase II was required to be fully implemented by 2007. As part of the EAC process, Transco performed engine overhauls and engine combustion modifications on 13 engines during the 2005 calendar year so that these NO_x emission reductions were captured well ahead of the federal timeline. The goal was to have all NO_x reductions quantified and certified before the end of the 2006 calendar year, allowing Transco to take credit for NO_x reductions prior to the start of the 2007 Ozone Season. August 2006 testing reports of the 13 units at Transco revealed emissions were significantly below the control period emissions limit established in the facility's permit. SCE&G installed NO_x reducing technology on coal-fired boilers at the Canadys, McMeekin, and Urquhart plants. All units have NO_x continuous emission monitors in place. These actions are permanent and quantifiable and were not required by any federal or state regulation. These actions were taken to demonstrate the facility's commitment to the EAC process and further substantiate the commitment and authority to implement emission control strategies.

The Department recognizes the importance of controlling large concentrated emissions in urban areas but also recognizes the impact of ozone transport from areas outside of nonattainment boundaries. The latest air quality models and extensive emission inventories have been utilized to project the impact various parameters have in the urban and non-urban areas of South Carolina. The Department placed ozone monitors in rural or isolated areas throughout the State, as discussed in Section IV *Ozone Monitoring Network*. These strategically placed monitoring sites have been beneficial to the Department in ascertaining levels upwind of urban areas and analyzing ozone transport from areas inside and outside of the State.

K. Statewide Education and Outreach Efforts

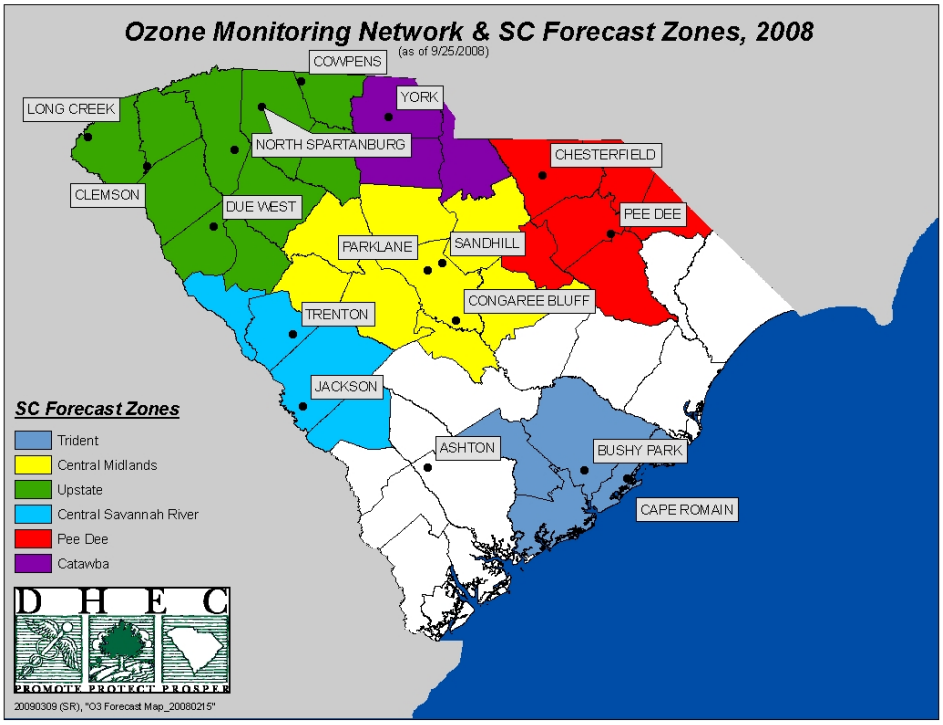
The South Carolina "Spare the Air" campaign was created by the Department's Bureau of Air Quality to educate citizens about air quality and its relationship to their health. This program provides information to the public about their air quality and warns them when levels of ozone are expected to be 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 April 1 through September 30, the Bureau of Air Quality staff meteorologists produce daily ozone forecasts for the Upstate, Midlands, Trident, Pee Dee, Central Savannah River, and Catawba area (Figure 7). 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 comprehensive ozone-forecasting program is not limited to a few areas but instead covers thirty-four of the forty-six counties in our State. 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 via EPAs ENVIROFLASH program, toll-free at 1-866-238-4973, and through an agency-created website (www.scdhec.gov/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 declares the first week of April as "Ozone Awareness Week."

Figure 7: South Carolina Ozone Monitoring Network and Forecast Zones, 2008



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.

Schools are also encouraged to participate in the B^2 (Breathe Better) program, an anti-idling/clean air campaign. The goal of B^2 is to protect the health of children by reducing harmful vehicle emissions

around school campuses. Students and school staff work with bus drivers and parent drivers to turn off their vehicles' engines while on school grounds. Solutions involve the efforts of students, faculty, administration, staff, local government and other community partners working together.

The Department has assigned specific staff members to Council of Government areas in the state to specific staff members to help with the implementation of voluntary efforts. These partnerships facilitate interaction from local governments, industries, and environmental groups to establish clean air coalitions at the local level. The success of these partnerships was demonstrated by all of the EAC Areas being redesignated to attainment. This effort has grown to include a multipollutant approach at improving air quality across the state. Although the EAC effort for the 1997 ozone NAAQS was successful, this effort continues as we face even tighter NAAQS.

The Department used federal grant funding under the Diesel Emission Reduction Act (DERA) to create the SCDERA grant program. The SCDERA grants will target diesel emission reduction activities in areas around the state which are above the 2008 Ozone standard. The Department partnered with other public and private entities to match the grant funding and maximize the potential reductions.

L. Public Participation

The Department has developed many positive relationships with customers and stakeholders by routinely meeting with stakeholders and providing opportunities for involvement in our decision making. Numerous stakeholder committees exist and focus on all program activities, which support the agency's public participation initiative and priority. After the Ozone NAAQS were finalized the Department scheduled meetings around the State to present information in each of the affected areas. A webpage was established on the Agency website to provide information and updates on the Department's preparations. A statewide public meeting was held in Columbia, South Carolina on January 7, 2009, to allow for public comments on the recommended nonattainment areas. The meetings were well attended and allowed for direct input from the public into the nonattainment boundary recommendations. The Department received written comments from fifteen individuals or organizations and all comments were given full consideration prior to the submittal of this document.

The Early Action Compacts (EAC) were definitely successful at engaging and involving stakeholders at the local level. The local stakeholders continue to feel pride and ownership in the strategies that are implemented within their respective area. The local awareness through the EAC process is probably more than what it would have been through a "traditional" nonattainment designation. Those affected by the prescriptive requirements of a "traditional" nonattainment designation, at a minimum industry and transportation partners, would have had to be engaged in the process. With the EAC efforts there were many more partners at the table that were engaged in the process and a lot of these probably would not have been involved had the area been designated through the "traditional" process. Local stakeholders have become much more educated in the air quality issues and concerns and will definitely be able to make better decisions in the future as a result. They now have a better understanding of the link between land use, energy conservation, etc. and air quality and the environment in general. Each of the diverse parties has come together for a worthy common goal of providing cleaner air sooner to the citizens of South Carolina. We continue to see activities that remain a part of the EAC process, above and beyond that required of an area with a "traditional" nonattainment designation.

In 2006, the EAC Summit held in South Carolina was a great success. As the first of its kind, it attracted nearly 300 stakeholders from 5 different states including representatives from 24 counties and 7 Councils of Government. Building upon the local EAC stakeholders and those attending the EAC Summit the Department currently has an electronic mailing list of over 675 recipients. As part of the Department's

commitment to work with all air quality stakeholders, the Bureau of Air Quality's Planning Section in mid-2008 began an electronic distribution of a weekly update of air quality issues affecting South Carolina. These updates include information pertaining to federal air quality standards, attainment/nonattainment issues, grant opportunities, as well as innovative ideas and emission reduction strategies. The distribution list continues to grow as positive feedback from the stakeholders continues to be received. The partnership opportunities developed and the awareness of the participants, including local officials, state agencies, universities, organizations, businesses, industries, environmental groups and other stakeholders about air quality issues have resulted in proactive, voluntary and regulatory actions that would not have occurred without the EAC process. In South Carolina, we have the information and data to demonstrate that local stakeholders given the flexibility to implement programs geared toward reducing oxides of nitrogen emissions do have an impact on the formation of ozone.

Abbeville County

Overview

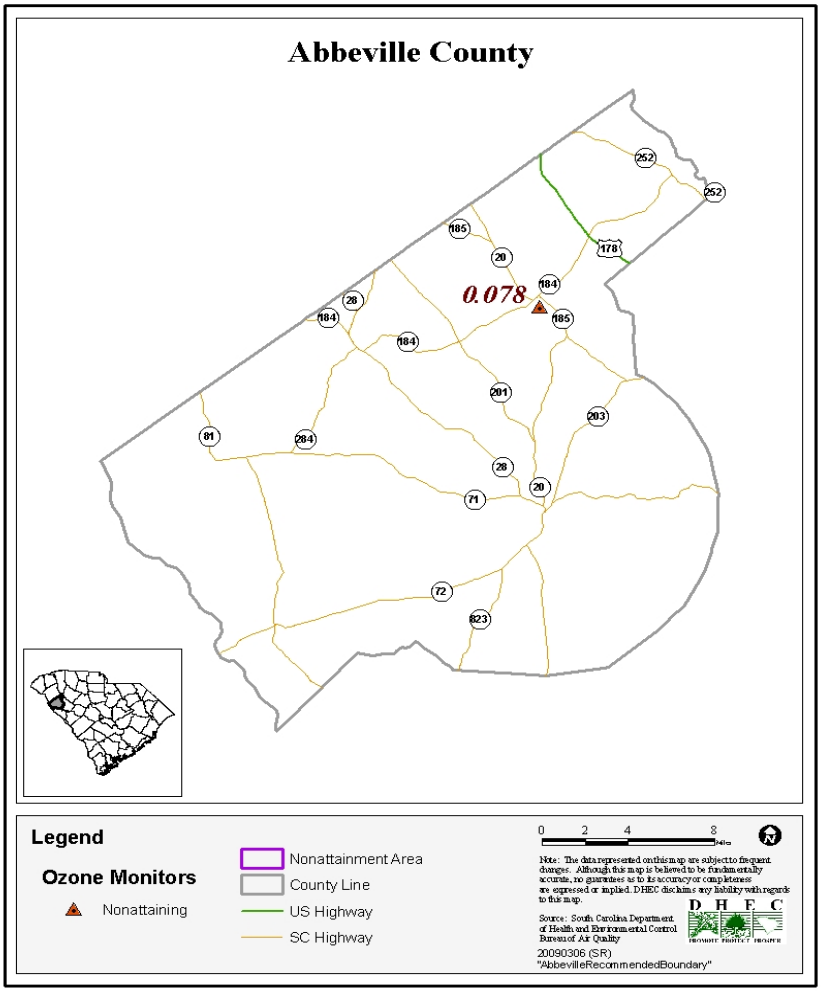
In accordance with the United States Environmental Protection Agency (EPA) suggested guidance for establishing nonattainment boundaries for the 2008 8-hour ground-level ozone National Ambient Air Quality Standards (Ozone NAAQS), the South Carolina Department of Health and Environmental Control (Department) is submitting its recommendation for Abbeville County, South Carolina.

The Department recommends that Abbeville County be designated as attainment, as its exceeding 2008 design value is due to long-range transport of ozone and its precursors, and not to emissions of ozone precursors from within the county. Abbeville County is rural in nature, having few industries to regulate and a small population.

Wind roses and back trajectories for each episode of exceedance of the Ozone NAAQS indicate Abbeville County is impacted by ozone transport from either the southwest or the northeast. Since ozone levels in Abbeville County are dominated from upwind areas, air quality improvements will be reached only by securing additional emissions reductions from upwind states that make a significant contribution to ozone levels in Abbeville County.

The Department will further demonstrate the impact of ozone transport to Abbeville County by comparing the nine factors that EPA plans to consider in determining nonattainment area boundaries to two counties in South Carolina with comparable characteristics. These two counties, Chesterfield County and Colleton County, are similar in terms of size, economic activity, mobile source emissions and industry, but their 2008 design values demonstrate attainment to the Ozone NAAQS. The location and boundary of Abbeville County is shown in Figure 1.

Figure 1: Abbeville County



The factors utilized to recommend the boundary for this attainment designation are as follows:

- The Due West ozone monitoring station (45-001-0001) in Abbeville County is currently exceeding the Ozone NAAQS. The Department recommends that Abbeville County be designated as attainment, as its exceeding design value is due to long-range transport of ozone and its precursors, and not to emissions of ozone precursors within the county. The Department will further demonstrate the impact of ozone transport to Abbeville County by examining wind roses and back trajectories for all 2006 - 2008 dates of exceedance of the Ozone NAAQS and showing that each exceedance in Abbeville County was impacted by ozone transport from the southwest or the northeast.
- The design value data indicates that, in general, during the last eight years the ozone levels in Abbeville County, as the rest of the ozone levels in South Carolina, have been declining.
- The total annual number of days that ozone levels at the Due West ozone monitoring station has been above 0.075 ppm over the past ten years has been declining.

- Abbeville County is rural in nature, having little commercial and industrial development and a small population. Abbeville County will be compared to two counties in South Carolina with similar characteristics throughout this section. These two counties, Chesterfield County and Colleton County, are similar or larger in terms of size, economic activity, mobile source emissions and industry, but their 2006 - 2008 quality assured air quality data indicates attainment of the Ozone NAAQS, reinforcing the Department's belief that Abbeville County does not produce ozone precursors in an amount to cause an exceedance of the Ozone NAAQS at the Due West monitor and that all of the exceedances of the Ozone NAAQS were caused by long-range ozone transport.
- Motor vehicle emissions are a significant contributor to ozone formation. Abbeville County's daily vehicle miles per person are the second lowest in the state. On a per-capita basis, Abbeville County residents travel on average 24.0 miles daily which is less than Chesterfield County (32.1 miles) and less than half of Colleton County (62.8 miles). With 628,669 estimated daily vehicle miles traveled (DVMT) in 2007, Abbeville ranks 41st among South Carolina's 46 counties in vehicle miles traveled. Despite their DVMT, both Chesterfield County's and Colleton County's 2006 - 2008 quality assured air quality data indicates attainment of the Ozone NAAQS.
- Compared to Chesterfield County and Colleton County, from 2005 to 2007, Abbeville County's DVMT declined 1.8 percent, while Chesterfield County's increased 4.4 percent, Colleton County's was virtually unchanged, and South Carolina's increased 2.8 percent.
- Facilities holding Title V permits which are major sources of NO_x and/or VOC emissions may contribute to ozone formation. There are only two Title V facilities in Abbeville County that produce a total of 52.85 tons of NO_x emissions and 91.43 tons of VOC emissions per year. When compared to the Title V facilities in Colleton County, which is currently designated as attainment for the Ozone NAAQS, Abbeville County's Title V facilities produce one percent of the emissions that are produced in Colleton County. It is the Department's belief that Abbeville County's Title V facilities do not produce enough NO_x emissions or precursors to cause the exceedances observed at the Due West monitor.
- On many occasions, South Carolina has provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing emissions, do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2005, 2006, and 2007, the areas in South Carolina designated as nonattainment for the 1997 8-hour ozone standard with the effective date deferred were redesignated to attainment. Each of the diverse stakeholders joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.
- Abbeville County was one of 45 counties across South Carolina that participated in the Early Action Compact (EAC) process. Abbeville County committed to supporting state-wide efforts and encouraged local governments to implement strategies to reduce vehicular emissions. Additionally, Abbeville County designated a contact to receive and disseminate air quality education and outreach materials and information. The commitment from this county confirms that attainment/nonattainment designations do not restrict the implementation of local and regional controls. Therefore, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, local stakeholders do have an impact on reducing the formation of ozone.

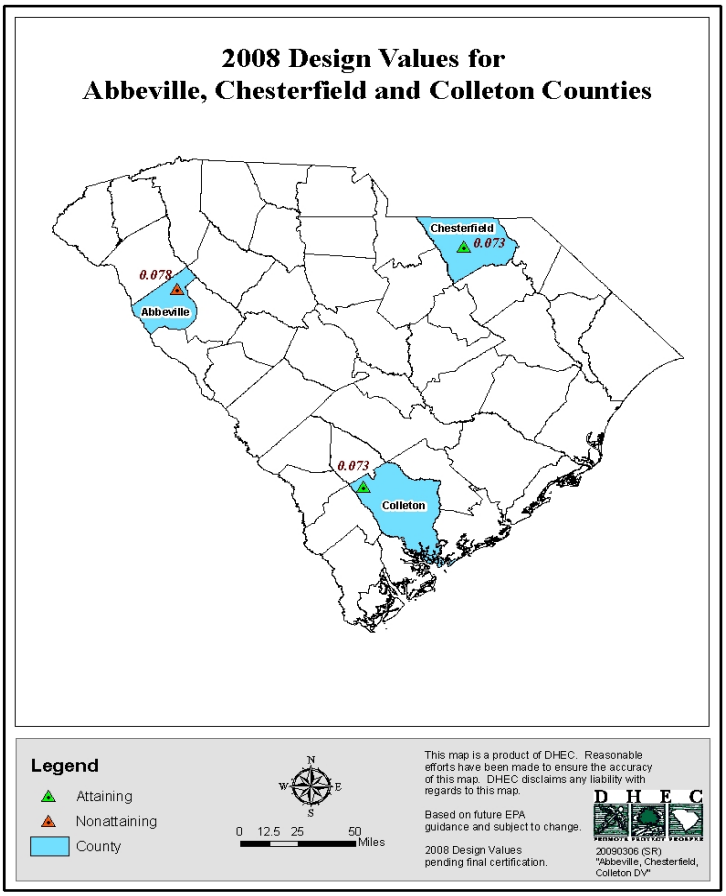
- Section 48-1-50 (Powers of Department) of the South Carolina Pollution Control Act gives the Department the authority to require emission reductions from any source, regardless of where it is located, if the emissions result in pollution in excess of applicable standards. The Department currently has regulations that are more stringent and protective than federal requirements. These actions, such as addressing NO_x emissions from stationary sources, demonstrate our statutory authority and ability to implement controls to improve air quality statewide. A nonattainment designation does not provide any additional authority to address emissions where appropriate and needed.
- The Department operates a comprehensive ozone-forecasting program that covers 34 counties in our state, including Abbeville County. South Carolina's citizens are informed on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as appropriate to better protect their health. The availability of this forecast for all of Abbeville County confirms that attainment/nonattainment designations do not restrict the implementation of this program. Therefore, the Department concludes that attainment/nonattainment designation does not influence the ozone forecasting for this county, and that everyone in Abbeville County will be given the same precautions.
- The Department has evaluated monitoring data, emissions data, population density and growth, economic growth and urbanization, traffic patterns, and meteorological data to develop the boundary recommendation for Abbeville County. The following details support the recommendation.

A. Air Quality Data

The impact of long-range ozone transport into Abbeville County can be demonstrated by comparing both the 2008 design values and the number of exceedance days to two other comparable South Carolina counties; Chesterfield County and Colleton County.

The map of the 2008 design values for Abbeville, Chesterfield and Colleton Counties (Figure A-1) shows the location of the Abbeville County Due West ozone monitoring station (45-001-0001), the Chesterfield County Chesterfield ozone monitoring station (45-025-0001), and the Colleton County's Ashton ozone monitoring station (45-029-0002) within the State.

Figure A-1: 2008 Design Values for Abbeville, Chesterfield, and Colleton Counties



Based on the 2008 design value, the air quality in this area is exceeding the Ozone NAAQS. The Department will show that each exceedance was due to ozone transport from either the southwest or the northeast. Abbeville County has a small, rural population and little commercial or industrial development. The monitoring data from Abbeville County will be compared to the monitoring data from Chesterfield County and Colleton County. These two counties are similar in all aspects to Abbeville County except that the air quality in these two counties, based on their 2008 design values, is below the Ozone NAAQS.

The Due West monitor is located in northeastern Abbeville County (see Figure 1, above). The site was established as a general/background location and is sited to represent urban concentration scales (citywide or equivalent rural areas with dimensions ranging from 4 to 50 kilometers) on April 29, 1991. The area represented by this monitor is dominated by area sources.

Colleton County's Ashton ozone monitoring site is located in northwestern part of the county. The site was established as a general/background location on March 8, 1990, and is dominated by area sources.

Chesterfield County's Chesterfield ozone monitoring site is located in the central part of the county. The site was established as a general/background location on March 7, 2002. The area represented by this monitor is dominated by area sources.

Figure A-2 presents the 2000 through 2008 8-hour ozone monitoring data for the Abbeville County Due West ozone monitoring station, the Chesterfield County Chesterfield ozone monitoring station, and the Colleton County Ashton ozone monitoring station. The design value data indicates that, in general, during the last nine years the ozone levels in Abbeville, Chesterfield, and Colleton counties have been declining.

Figure A-2: Design Values Trends 2000 – 2008

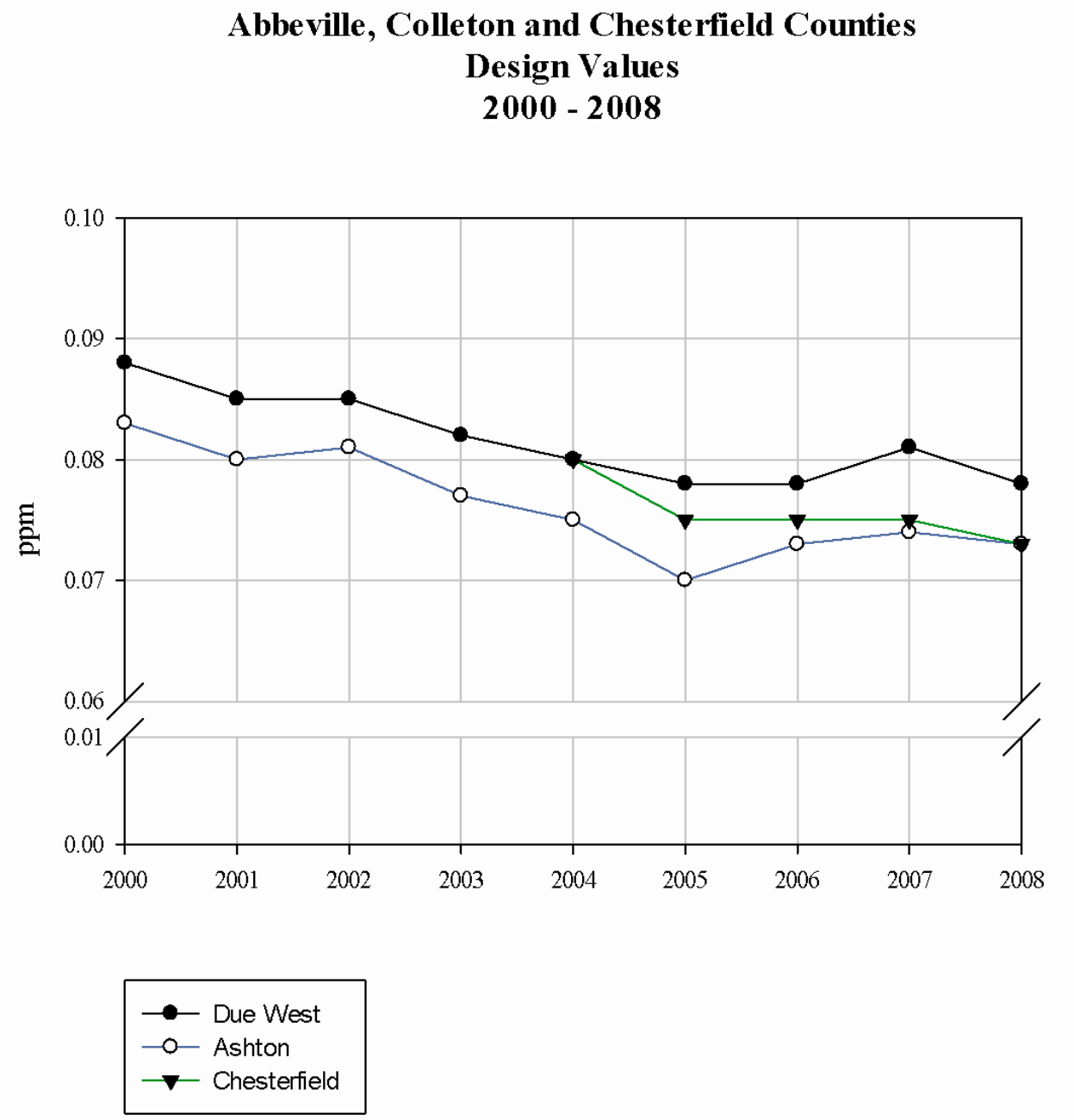
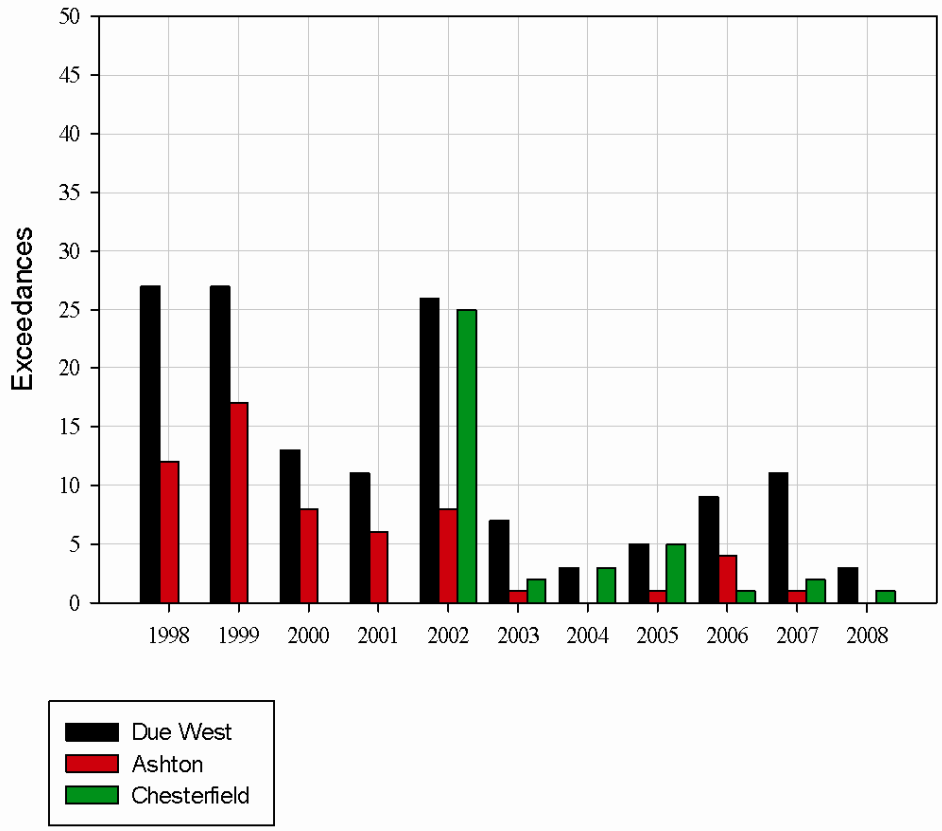


Figure A-3 demonstrates the total annual number of days that ozone levels at the Abbeville County Due West ozone monitoring station, Colleton County Ashton ozone monitoring station and the Chesterfield County Chesterfield ozone monitoring station have been above 0.075 ppm over the past ten years. The number of exceedances over the last ten years indicates that, in general, total days with ozone levels above 0.075 ppm in Abbeville, Chesterfield and Colleton County have been declining.

Figure A-3: Number of Days Ozone Concentrations Above 0.075 ppm

Comparison of Abbeville County-Due West, Colleton County-Ashton and Chesterfield County-Chesterfield Number of Exceedances Based on 0.075 ppm



B. Emissions Data

In this section both source sector and Title V facility data are presented. There are two Title V facilities in Abbeville County that produce NO_x and VOC emissions. It should be noted that South Carolina is a NO_x limited state. On average, about 70 percent of the VOC emissions come from biogenic sources.

Figure B-1 shows the Abbeville County NO_x Title V point sources in operation.

Figure B-1: Title V Source NO_x Emissions

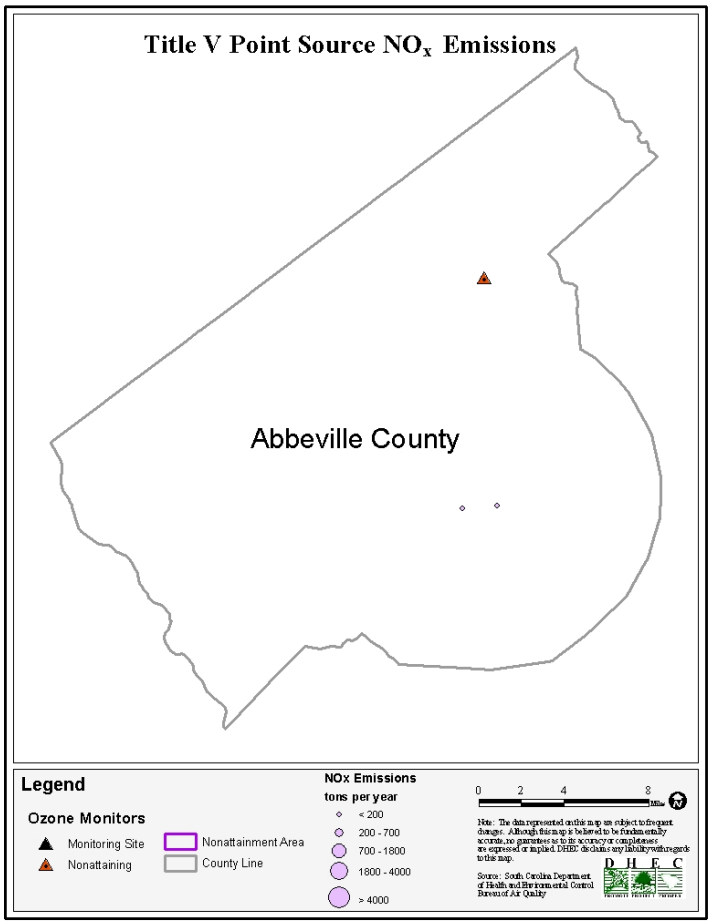


Table B-1 lists and compares the Abbeville County NO_x Title V point sources to the Colleton County and Chesterfield County NO_x Title V point sources.

Table B-1: Title V Source NO_x Emissions

Title V Source NO_x Emissions		
Abbeville County Facility	**Permit Number**	**2005 Est. Emissions Tons/year**
Milliken Abbeville	0040-0005	52.75
Flexible Technologies Inc	0040-0013	0.09
Total tons of NO_x emissions		52.85
Colleton County Facility	**Permit Number**	**2005 Est. Emissions Tons/year**
SCE&G Canadys	0740-0002	4,936.96
New York Wire Walterboro	0740-0003	5.53
Total tons of NO_x emissions		4,942.49
Chesterfield County Facility	**Permit Number**	**2005 Est. Emissions Tons/year**
AO Smith Water Products	0660-0023	9.31
Crown Cork and Seal USA	0660-0016	7.05
Highland Industries Inc	0660-0002	6.59
Schaeffler Group USA Inc Plants 1&5	0660-0030	1.91
Total tons of NO_x emissions		24.86

The two Title V facilities in Abbeville County produce a total of 52.85 tons of NO_x emissions per year. Colleton County also has two facilities that produce a total of 4,942.49 tons of NO_x emissions per year. When compared to the Title V facilities in Colleton County, Abbeville County's Title V facilities produce one percent of the NO_x emissions that are produced in Colleton County. It is the Department's position that these Title V facilities do not produce enough ozone precursors to cause the 2008 design value for the Due West monitor in Abbeville County to exceed the Ozone NAAQS.

Figure B-2shows the Abbeville County VOC Title V point sources in operation.

Figure B-2: Title V Source VOC Emissions

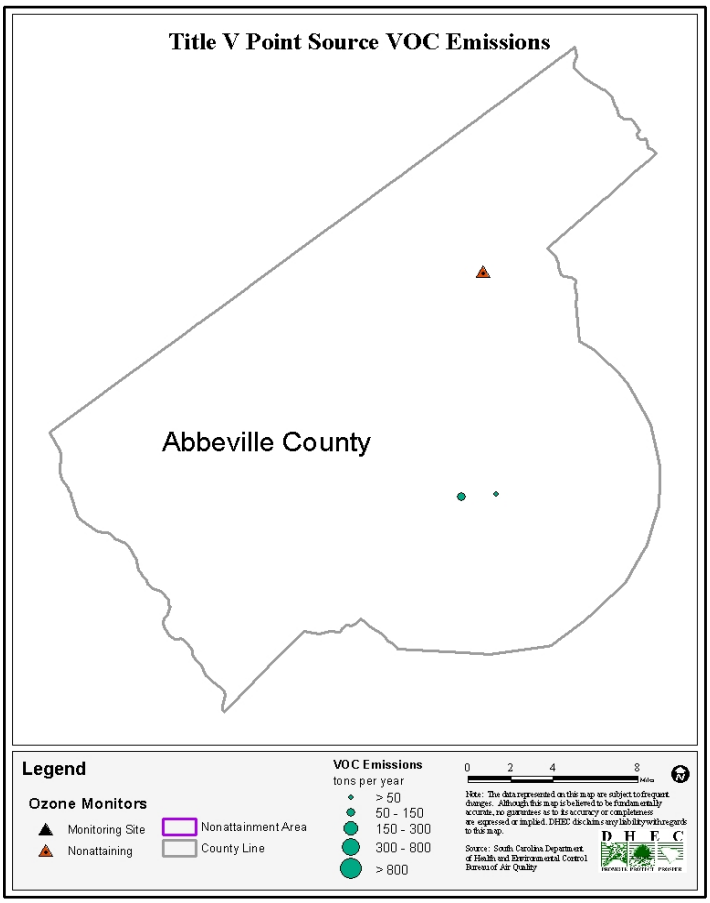


Table B-2 lists and compares the Abbeville County Title V facilities to the Colleton County and Chesterfield County Title V facilities that contribute to the VOC emissions.

Table B-2: Title V Source VOC Emissions

Title V Source VOC Emissions		
Abbeville County Facility	**Permit Number**	**2005 Est. Emissions Tons/year**
Flexible Technologies Inc	0040-0013	72.63
Milliken Abbeville	0040-0005	18.80
Total tons of emissions		91.43
Colleton County Facility	**Permit Number**	**2005 Est. Emissions Tons/year**
New York Wire Walterboro	0740-0003	179.17
SCE&G Canadys	0740-0002	20.69
Total tons of emissions		199.85
Chesterfield County Facility	**Permit Number**	**2005 Est. Emissions Tons/year**
Schaeffler Group USA Inc Plants	0660-0030	138.27

Title V Source VOC Emissions		
1&5		
Crown Cork and Seal USA	0660-0016	53.62
Highland Industries Inc	0660-0002	3.72
AO Smith Water Products	0660-0023	1.84
Total tons of emissions		197.45

Abbeville County's two Title V facilities produce a total of 91.43 tons of VOC emissions per year. Chesterfield County has four Title V facilities that produce a total of 197.45 tons of VOC emissions and Colleton County has two Title V facilities that produce 199.85 tons of VOC emissions per year. In comparison, Abbeville County's Title V facilities produce 54 percent less tons of VOC emissions than Chesterfield or Colleton County's Title V facilities, respectively. It is the Department's position that these Abbeville County's Title V facilities do not produce enough VOC emissions or precursors to cause the levels of ozone concentrations measured in Abbeville County.

Table B-3 ranks the South Carolina counties from highest to lowest by the total amount of NO_x and VOC emissions from their Title V facilities. Abbeville County ranks 35th out of 46 counties for Title V facility NO_x emissions and 35th out of 46 counties for Title V facility VOC emissions.

Table B-3: NO_x and VOC Emissions Ranked High to Low by County

NO_x and VOC Emissions Ranked High to Low by County					
Rank	**County**	**NO_x**	**Rank**	**County**	**VOC**
1	Berkeley	17,217.28	1	Georgetown	2,427.95
2	Georgetown	9,966.75	2	Spartanburg	2,362.86
3	Richland	8,614.35	3	Richland	2,255.47
4	Orangeburg	6,968.15	4	Charleston	2,154.17
5	Aiken	4,978.16	5	Berkeley	1,859.93
6	Colleton	4,942.49	6	Orangeburg	1,770.54
7	Darlington	4,888.99	7	Greenville	1,764.75
8	Dorchester	4,211.48	8	Florence	1,619.15
9	Lexington	3,625.95	9	Lexington	1,529.20
10	Spartanburg	3,180.22	10	York	1,265.04
11	Anderson	3,179.48	11	Hampton	1,248.27
12	Horry	3,074.75	12	Newberry	1,222.29
13	Florence	2,900.72	13	Darlington	951.24
14	Charleston	2,777.85	14	Anderson	851.25
15	Chester	1,937.35	15	Aiken	725.93
16	York	1,738.33	16	Kershaw	703.82
17	Marlboro	1,348.10	17	Marlboro	600.95
18	Lancaster	1,084.64	18	Chester	591.08
19	Kershaw	832.58	19	Dorchester	552.26
20	Cherokee	528.13	20	Lancaster	386.78
21	Greenville	507.78	21	Horry	312.69
22	Hampton	268.25	22	Sumter	300.58
23	Greenville	229.38	23	Allendale	266.48
24	Laurens	227.21	24	Williamsburg	264.57

NO_x and VOC Emissions Ranked High to Low by County						
25	Pickens	186.46		25	Lee	239.60
26	Sumter	183.12		26	Laurens	227.78
27	Calhoun	151.24		27	Greenwood	209.23
28	Union	140.27		28	Cherokee	200.48
29	Newberry	139.42		29	Colleton	199.84
30	Williamsburg	96.54		30	Chesterfield	197.45
31	Jasper	84.10		31	Barnwell	129.94
32	Beaufort	69.15		32	McCormick	105.41
33	McCormick	63.48		33	Calhoun	93.84
34	Barnwell	56.48		34	Saluda	92.25
35***	**Abbeville**	52.85		35***	**Abbeville**	91.43
36	Saluda	36.13		36	Marion	85.90
37	Lee	33.05		37	Union	76.64
38	Oconee	26.60		38	Pickens	74.42
39	Chesterfield	24.86		39	Jasper	36.95
40	Fairfield	13.63		40	Clarendon	35.38
41	Allendale	9.79		41	Edgefield	21.47
42	Edgefield	2.63		42	Beaufort	12.23
43	Marion	0.23		43	Oconee	10.47
44	Bamberg	0		44	Fairfield	9.82
45	Clarendon	0		45	Bamberg	0
46	Dillon	0		46	Dillon	0

It is the Department's position that the Title V facility NO_x and VOC emissions in Abbeville County, do not produce enough precursors to cause Abbeville County to exceed the Ozone NAAQS.

NO_x and VOC Source Sectors

The source sectors that were evaluated include point, non-point, and on-road and non-road mobile sources. Point source data is state generated data representing calendar year 2005. All other sectors are a combination of state generated and EPA generated data in EPA's final National Emissions Inventory (NEI) form representing calendar year 2002. The data for 2002 was used rather than 2005 for the other sectors since EPA had de-emphasized the 2005 NEI to focus efforts on the reinvention of the 2008 inventory. Because of the focus on the 2008 NEI, there was no real attempt to generate 2005 data for sectors other than point sources. Other source sector emissions are largely population based. This means they are not likely to greatly change on an annual basis. However, point sources were thoroughly evaluated in 2005 to account for significant changes in emissions. South Carolina believes the 2002 data is still representative of those sectors for 2005. These source sector emissions were compared to Chesterfield County and Colleton County. Both Chesterfield County and Colleton County are comparable in size, population and economy to Abbeville County, except their 2008 design values indicate no exceedance of the Ozone NAAQS.

Tables B-4 and B-5 show the NO_x and VOC emissions from each of the source sectors.

Table B-4: NO_x Source Sector Emissions

2005 NO_x Source Sector Emissions									
County	Land Area (Sq. miles)	On-road		Non-road		Point		Non-Point	
		Tons/ year	Tons/ year/ Sq. mile	Tons/ year	Tons/ year/ Sq. mile	Tons/ year	Tons/ year/ Sq. mile	Tons/ year	Tons/ year/ Sq. mile
Abbeville	510.87	739.60	1.45	325.70	0.64	69.28	0.14	214.70	0.42
Chesterfield	805.26	1637.60	2.03	325.70	0.40	60.56	0.08	415.30	0.52
Colleton	1059.62	3114.60	2.94	659.90	0.62	4947.70	4.67	665.90	0.63

The NO_x source sector emissions were calculated for each county in tons per year. The tons per year were then divided by square miles per county in order to derive a unit per square mile.

In general, when compared to Chesterfield and Colleton County, Abbeville County's NO_x Source Sector Emissions were lower in almost every category. For example, Abbeville County's 2005 NO_x mobile source sector emissions were one-third (29 percent) less than Chesterfield County's mobile source sector emissions, and almost half (51 percent) of Colleton County's mobile source sector emissions. Abbeville County's point source sector emissions were 97 percent less than Colleton County. It is the Department's position that the Title V facility NO_x emissions in Abbeville County, do not produce enough precursors to cause Abbeville County to exceed the Ozone NAAQS.

Table B-5: VOC Source Sector Emissions

2005 VOC Source Sector Emissions									
County	Land Area (Sq. miles)	On-road		Non-road		Point		Non-Point	
		Tons/ year	Tons/ year/ Sq. mile	Tons/ year	Tons/ year/ Sq. mile	Tons/ year	Tons/ year/ Sq. mile	Tons/ year	Tons/ year/ Sq. mile
Abbeville	510.87	626.60	1.23	235.00	0.46	107.90	0.21	1,642.20	3.21
Chesterfield	805.26	1,336.30	1.66	397.20	0.49	218.62	0.27	3,338.00	4.15
Colleton	1,059.62	2,064.30	1.95	870.60	0.82	203.65	0.19	2,811.60	2.65

The VOC Source Sector Emissions were calculated for each county in tons per year. The tons per year were then divided by square miles per county in order to derive a unit per square mile.

In general, these counties have limited VOC source sector emissions. When compared to Chesterfield and Colleton County, Abbeville County's VOC source sector emissions were lower or similar in value. It is the Department's position that the Title V facility VOC emissions in Abbeville County, do not produce enough precursors to cause Abbeville County to exceed the Ozone NAAQS.

C. Population Density and Degree of Urbanization

According to the U.S. Census Bureau, urban is defined as all territory, population, and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a

census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas and urban clusters. Rural is defined as all territory, population, and housing units located outside of urbanized areas and urban clusters.

Table C-1: Population and Population Density, 2000

County	Population					Land Area (Sq. Miles)	Population Density (Persons/ Sq. Mile)
	Urban	Rural	TOTAL	Percent Urban	Percent Rural		
Abbeville	6,128	20,039	26,167	23.4%	76.6%	510.87	51.2
Chesterfield	11,650	31,118	42,768	27.2%	72.8%	805.26	53.1
Colleton	10,064	28,200	38,264	26.3%	73.7%	1,059.62	36.1

Table C-1 shows a comparison of the 2000 U.S. Census populations and population density of Abbeville, Chesterfield and Colleton Counties, and figures C-2 through C-4 show the similarity in terms of patterns of population density and urbanization. All three counties are rural and lightly populated. Compared with Chesterfield and Colleton Counties, Abbeville County's population is the most rural and the least urbanized. The population density is similar to Chesterfield County. All three counties have a single small urban area.

Human activities are a major contributing factor to ozone precursor formation. Population density of an area can indicate the potential of ozone formation. Since Abbeville County has similar population and population density make-up to Chesterfield County and Colleton County, its ozone formation potential should also be similar.

Although Chesterfield and Colleton Counties have larger urban populations, their ozone monitors indicate attainment with the Ozone NAAQS. This supports the Department's conclusion that transport is the primary cause for exceedances of the Ozone NAAQS at the Due West monitoring station in Abbeville County.

Figures C-1 through C-3 shows the similarity in population and urban development patterns in Abbeville, Chesterfield and Colleton Counties.

Figure C-1: Population Density and Urban Areas in Abbeville County

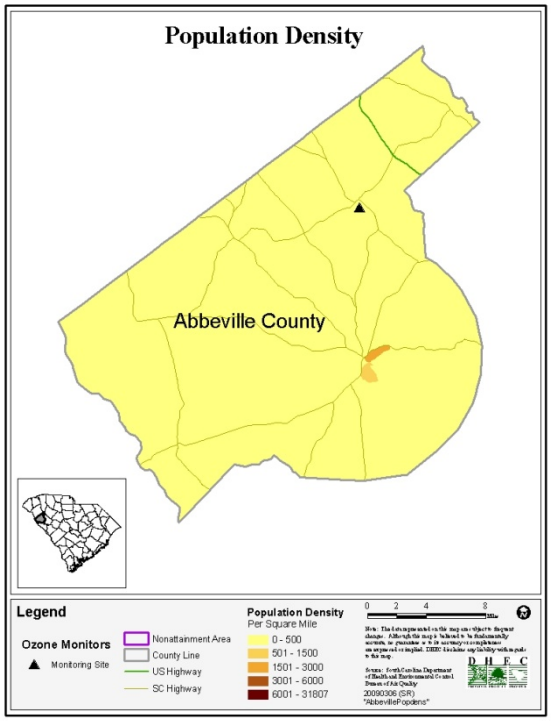
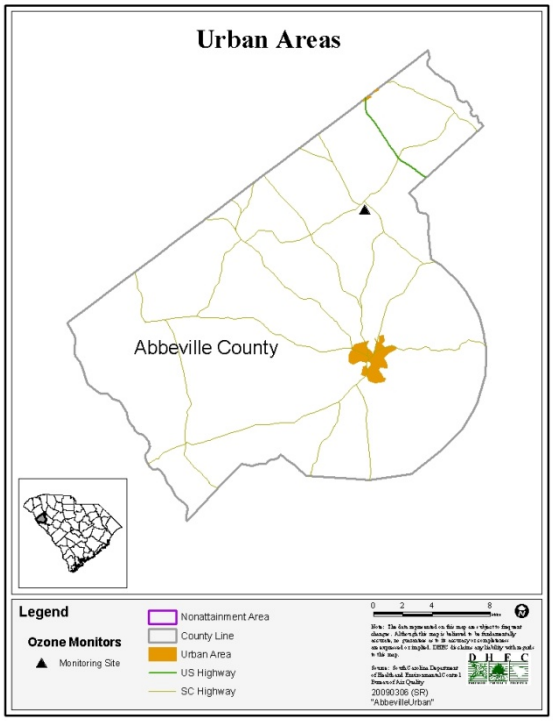
Population Density in Abbeville County	*Urban Areas in Abbeville County*
	

Figure C-2: Population Density and Urban Areas in Chesterfield County

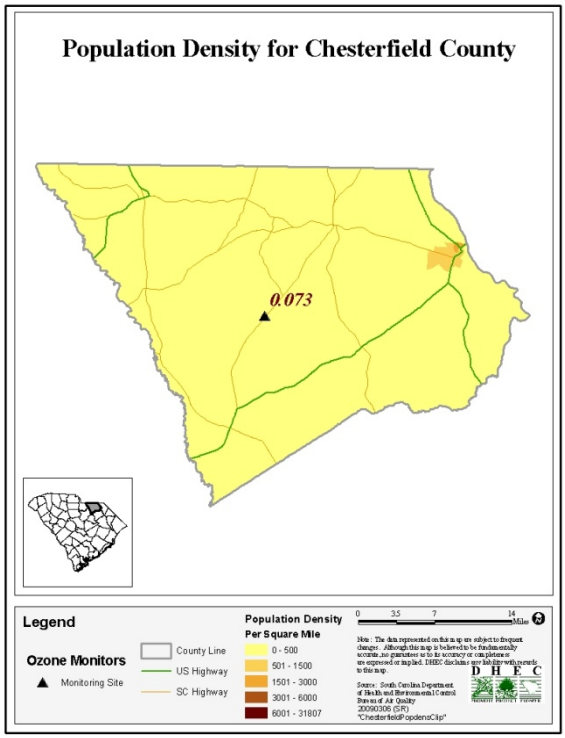
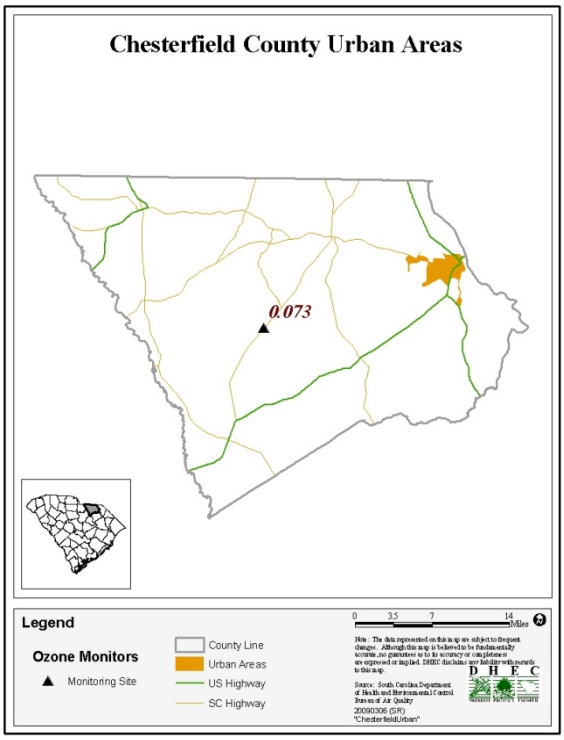
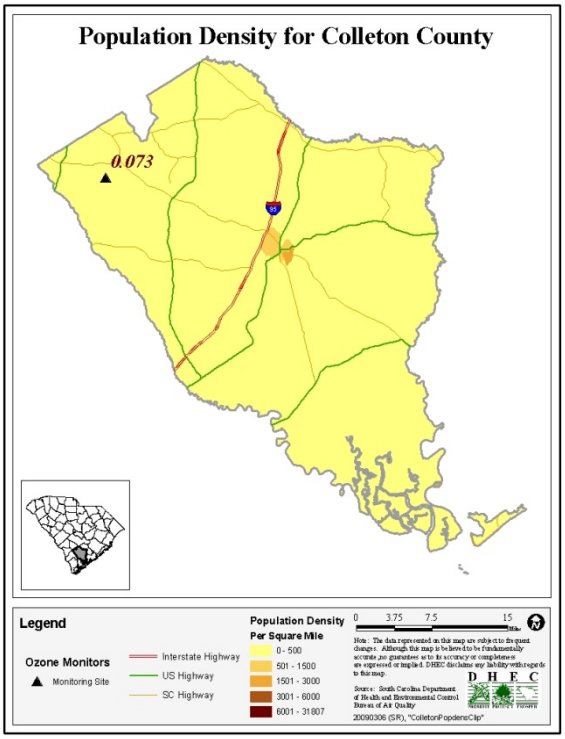
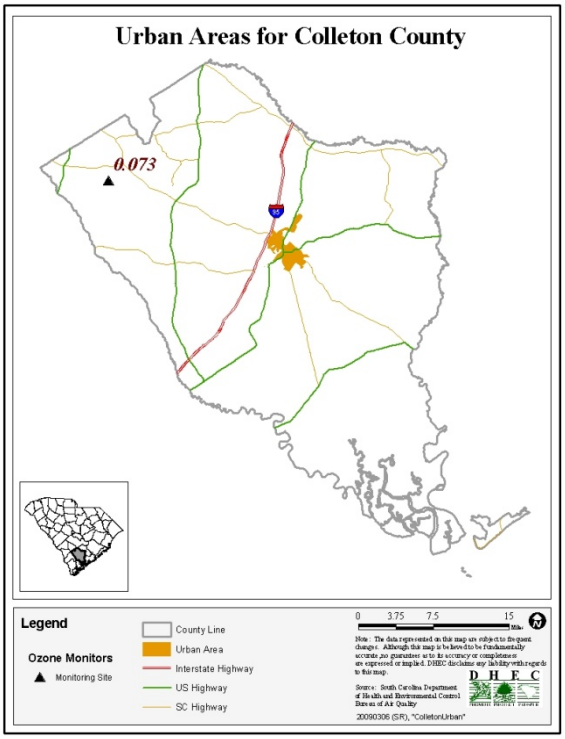
Population Density for Chesterfield County	*Urban Areas in Chesterfield County*
	

Figure C-3: Population Density and Urban Areas in Colleton County

Population Density for Colleton County	*Urban Areas in Colleton County*
	

According to the U.S. Census Bureau, manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction. Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included. The retail trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Like many small, rural counties, Abbeville County is facing daunting economic challenges. Table C-2 shows that Abbeville County is losing both jobs and population. Between 2000 and 2006, the population change in Abbeville County was -0.9 percent as compared to an overall gain in South Carolina of 7.7 percent. In comparison with South Carolina and the United States, Abbeville County incomes are lagging behind, a larger percent of the population lives in poverty, and the population is older, with more people retired or moving towards retirement and fewer people preparing to enter the workforce. All of these

factors contribute to Abbeville County's economic challenges. A nonattainment designation would impose undeserved economic challenges on this county.

Table C-2: Economic Comparison of Abbeville County to South Carolina

Economic Comparison of Abbeville County to South Carolina			
People Quick Facts	**South Carolina**	**USA**	**Abbeville County**
Population, 2006 estimate	4,321,249	299,398,484	25,935
Population, percent change, April 1, 2000 to July 1, 2006	7.7%	6.4%	(-0.9%)
Population, 2000	4,012,012	281,421,906	26,167
Persons under 18 years old, percent, 2006	24.1%	24.6%	23.5%
Persons 65 years old and over, percent, 2006	12.8%	12.4%	14.9%
Median Age	35.4	35.3	36.9
Housing units, 2006	1,975,638	126,316,181	11,903
Homeownership rate, 2000	72.2%	66.2%	80.5%
Housing units in multi-unit structures, percent, 2000	15.8%	26.4%	7.9%
Median value of owner-occupied housing units, 2000	$94,900	$119,600	$70,600
Households, 2000	1,533,854	105,480,101	10,131
Median household income, 2004	$39,454	$44,334	$31,362
Per capita money income, 1999	$18,795	$21,587	$15,370
Persons below poverty, percent, 2004	15.0%	12.7%	15.1%
Business Quick Facts	**South Carolina**	**USA**	**Abbeville County**
Private establishments, 2005	103,416	7,499,702	353
Private employment, 2005	1,584,914	116,317,003	5,428
Private employment, percent change 2000-2005	(-1.0%)	2.0%	(-18.7%)

Table C-3: Abbeville County Employment in the Three Largest Business Sectors, 2006

Abbeville County		
	Number of Employees	**Number of Establishments**
Manufacturing	2,556	29
Educational Services	500-999	4
Retail Trade	454	58

Table C-4: Chesterfield County Employment in the Three Largest Business Sectors, 2006

Chesterfield County		
Type of Industry	**Number of Employees**	**Number of Establishments**
Manufacturing	4,905	51
HealthCare/Social Assistance	1,458	71
Retail Trade	1,416	158

Table C-5: Colleton County Employment in the Three Largest Business Sectors, 2006

Colleton County		
	Number of Employees	**Number of Establishments**
Manufacturing	1,907	31
Retail Trade	1,881	169
HealthCare/Social Assistance	1,047	63

There are a total of 345 establishments that employ 5,382 persons located in Abbeville County. Tables C-3 through C-5 show the three largest employment sectors in Abbeville, Chesterfield and Colleton Counties. Manufacturing is the largest employment sector in Abbeville County. The second and third largest sectors are Educational Services and the Retail Trade. There are a total of 727 establishments that employ 12,217 persons located in the Chesterfield County. Manufacturing is the largest employment sector, with Health Care and Retail Trade being the second and third. There are a total of 809 establishments that employ 8,988 persons located in the Colleton County. Manufacturing is the largest employment sector in Colleton County. The second largest sector is Retail Trade and the third largest sector is Health Care. Table C-6 shows the concentration of businesses and employment in the three counties. There are more business establishments and more jobs, relative to population, in both Chesterfield and Colleton Counties than in Abbeville County.

Table C-6: Comparison of County Employment and Population, 2006

County Employment and Population					
	Total Employees	**Total Establishments**	**Estimated Population**	**Persons per Business**	**Persons per Job**
Abbeville	5,382	345	25,517	74.0	4.7
Chesterfield	12,217	727	42,627	58.6	3.5
Colleton	8,988	809	38,878	48.1	4.3
South Carolina	1,633,441	105,296	4,330,108	41.1	2.7

Table C-7 shows that half of Abbeville County workers are employed in Abbeville County, while a majority of Chesterfield County, Colleton County and South Carolina workers are employed in the same county they live in. The smaller percentage of Abbeville County workers working in their home county is consistent with the low concentration of business establishments in Abbeville County.

Table C-7: Comparison of Workers Employed in Their County of Residence

Workers Employed in their County of Residence, 2000		
	Workers	**Percentage of Workers**
Abbeville	5,898	52.0
Chesterfield	11,565	66.8
Colleton	9,510	65.0
South Carolina	1,764,919	73.5

D. Traffic and Commuting Patterns

Figure D-1 shows that there are no interstate highways passing through Abbeville County, and only one U.S. Highway. A seven-mile length of U.S. 25 is passes through Abbeville County east of the Due West where the monitor is located. It runs from Belton in Anderson County through Donalds in Abbeville County, through Hodges to Greenwood in Greenwood County. South Carolina state highways connect the City of Abbeville and the towns of Due West, Lowndesville, Calhoun Falls and Donalds in Abbeville County with each other and with the cities of Anderson, Greenwood and Laurens in nearby counties.

Figure D-1: Abbeville County Highway System

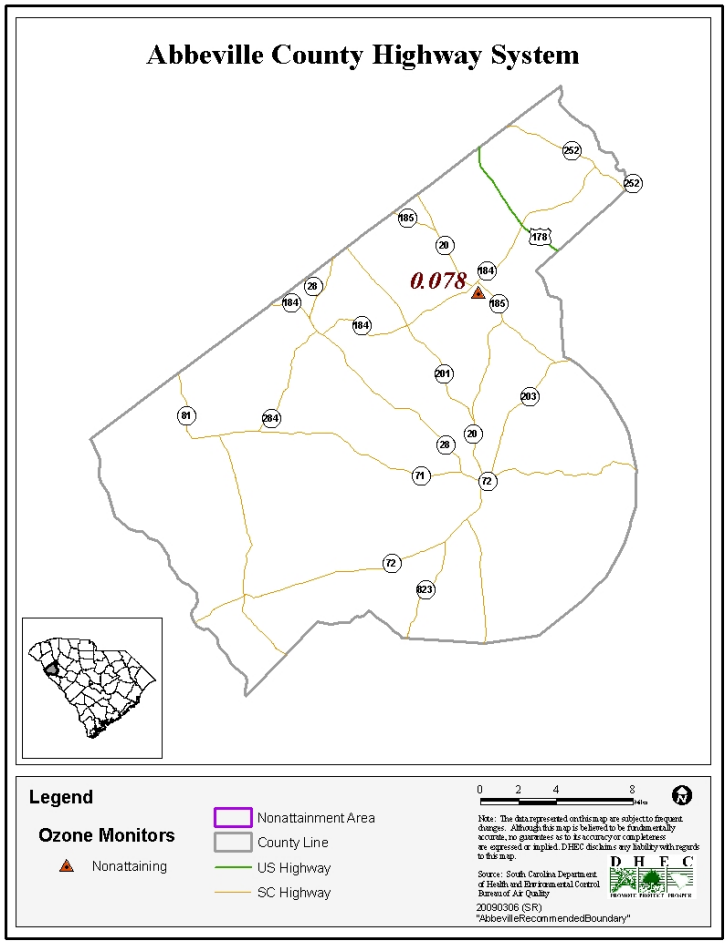


Table D-1 shows where Abbeville County residents commute to work. The table shows that just 11,334 workers live in Abbeville County. Only 5,898, or 52 percent of Abbeville County workers work within Abbeville County and just 2,326 workers commute to Abbeville County from other counties. This reflects the low number of businesses and employees in the county relative to population. In contrast, as shown in Table C-9, 14,349, or 82.9 percent of workers who live in Chesterfield County work in Chesterfield County, and 14,300, or 97.8 percent, of workers who live in Colleton County work in Colleton County. On average in South Carolina, 72.4 percent of workers work in the same county where they live.

Table D-1: Abbeville County Work Commute Patterns

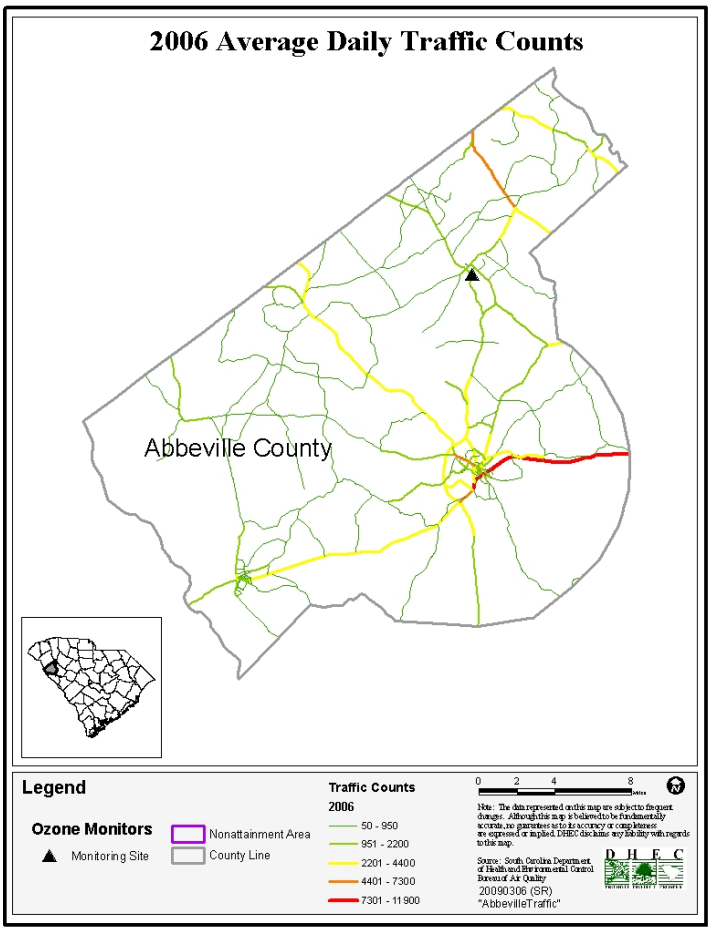
	Workers Living in Abbeville County by Work Location	Workers Employed in Abbeville County by Residence Location
Abbeville	5,898	5,898
Aiken	15	3
Anderson	1,762	591
Barnwell	0	12
Berkeley	6	0
Edgefield	25	0
Fairfield	0	8
Florence	6	0
Greenville	527	47
Greenwood	2,271	1,028
Kershaw	0	6
Laurens	147	73
Lexington	5	0
McCormick	123	292
Newberry	0	27
Oconee	32	6
Other States	341	162
Other	4	0
Pickens	85	26
Richland	33	15
Saluda	0	5
Spartanburg	45	0
Union	9	6
York	0	19
Total to/from Other Locations Excluding Abbeville County	5,436	2,326
Grand Total	11,334	8,224

Traffic counts are collected at stations representing different road segments (Figure D-3). Each daily traffic count is multiplied by the length of the corresponding segment to calculate the DVMT. A 2006 GIS traffic count file compiled by SC DOT estimates the traffic count on SC 72 between Abbeville and Greenwood at 10,500. This is the highest traffic count estimate in Abbeville County. In comparison, 33 South Carolina counties have traffic counts of over 11,000 within their borders. Chesterfield County's highest traffic count is 14,000, and Colleton County's highest traffic count is 40,800.

With 628,669 estimated daily vehicle miles traveled (DVMT) in 2007, Abbeville ranks 41 among South Carolina's 46 counties in vehicle miles traveled. Chesterfield County had 1,370,920 DVMT in 2007 and Colleton County had 2,402,504. From 2005 to 2007, Abbeville County's DVMT declined 1.8 percent, while Chesterfield County's increased 4.4 percent, Colleton County's was virtually unchanged, and South Carolina's increased 2.8 percent. On a per-capita basis, Abbeville County residents travel on average 24.0 miles daily, as contrasted with 32.1 miles in Chesterfield County, 62.8 miles in Colleton County and

34.6 miles in South Carolina as a whole. Abbeville County's daily vehicle miles per person are the second lowest in the state.

Figure D-3: Abbeville County 2006 Average Daily Traffic Counts



E. Growth Rates and Patterns

The following conclusions were drawn based on data from 2000, and population projections for 2020 and 2030 as contained in Table E-1.

As shown in Table E-1, Abbeville County's population declined 2.7 percent between 2000 and 2007 (from 26,167 to 25,457) according to U.S. Census estimates. During the same time period Chesterfield County held steady and Colleton County's population increased by 1.7 percent. Population projections were developed by the South Carolina Office of Research and Statistics based on U.S. Census data from the 2000 Census and 2005 Population Estimates. The projection for 2010 assumed a reversal in Abbeville County's population decline, but the latest population estimate for 2007 indicates the decline is continuing. In addition, the growth rate that was projected for Abbeville through 2020 is lower than that projected for Chesterfield and Colleton Counties.

Table E-1: Historical and Projected Population

Density per County	Abbeville County	Chesterfield County	Colleton County
Population, 2000	26,167	42,768	38,264
Population 2007	25,457	42,761	38,903
Growth Rate 2000-2007	(-2.7%)	0.0%	1.7%
Projected Population 2010	25,950	43,480	39,870
Projected Population, 2020	27,580	45,870	43,080
Projected Population, 2030	29,070	48,040	46,250
Projected Population Growth Rate, 2000 - 2020	5.4%	7.3%	12.6%
Projected Population Growth Rate, 2020 - 2030	5.4%	4.7%	7.4%
Land Area (Sq. Miles)	510.87	805.26	1059.62
Projected Population/Land Area (Sq. Miles) 2020	54.0	56.96	40.66
Urban Population, 2000	6,128	11,650	10,064
Percent Urban Population, 2000	23.4	27.2	26.3
Rural Population, 2000	20,039	31,118	28,200
Percent Rural Population, 2000	76.6	72.8	73.7

Figure E-1 shows population growth by historical and projected population data for Abbeville County. Figure E-2 shows trends in population density.

Figure E-1: Abbeville County Historical and Projected Population, 2000 - 2030

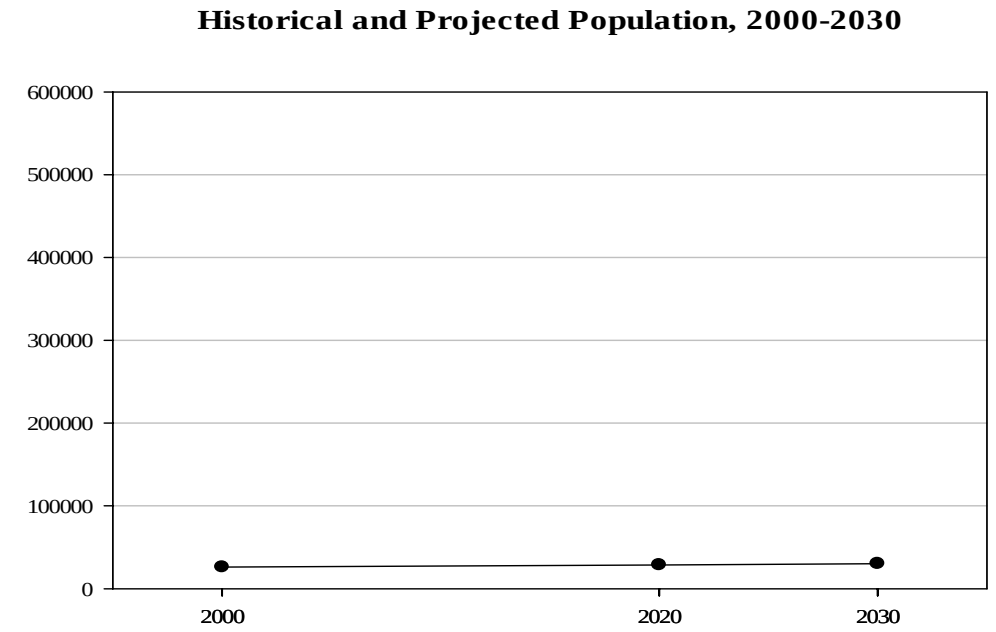
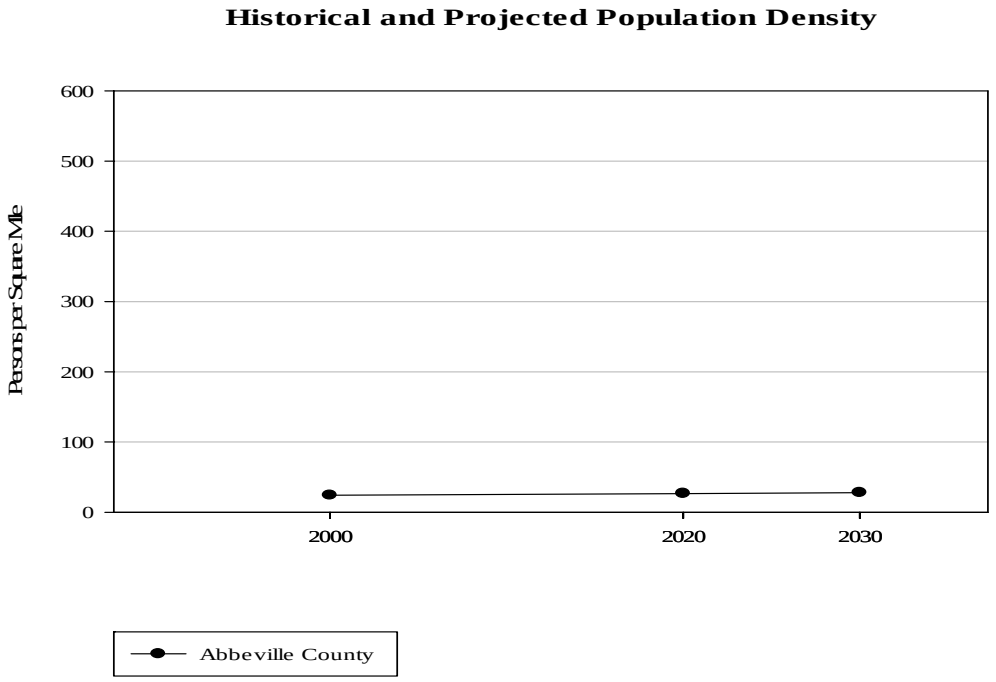


Figure E-2: Abbeville County Historical and Projected Population Density



F. Meteorology

The wind rose data from 2002 to 2007 and the back trajectories for each exceedance day at the Due West ozone monitoring station from 2006 to 2008 were calculated to determine the occurrence of long-range ozone transport and the origin of the air masses.

The wind rose in Figure F-19 was created using ozone season (April through October) wind data from the 2002 - 2007 meteorological data sets at Greenwood Airport in Greenwood County. This wind data represents the western Piedmont portion of South Carolina which includes the Abbeville County area. The Greenwood wind rose shows that a southwest and northeast wind direction dominates Abbeville County.

Figure F-1: Wind Rose for Abbeville County

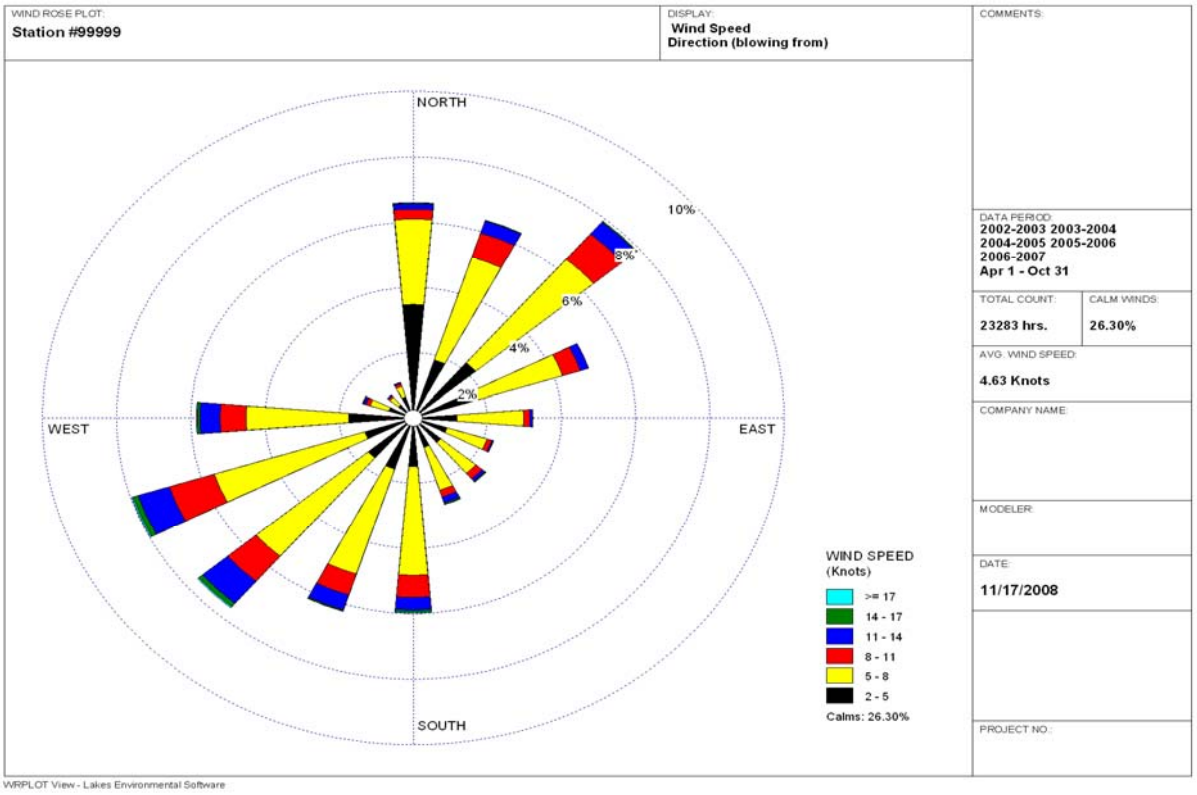
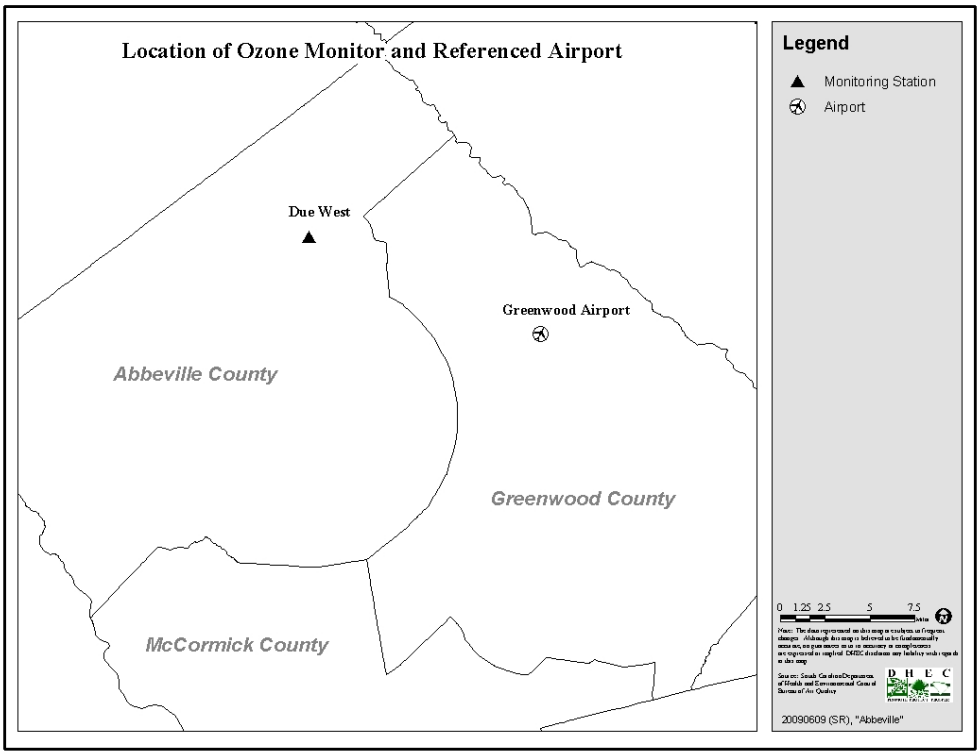


Figure F-2 shows the location of Greenwood Airport, where the wind rose data was collected, relative to the Due West ozone monitoring station.

Figure F-2: Location of the Greenwood Airport Relative to the Due West Ozone Monitoring Station



Back Trajectories

Back trajectories were calculated from the Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model for days when the maximum 8-hour ozone concentration exceeded 0.075 parts per million (ppm) at the Due West (Abbeville) ozone monitoring station (45-001-0001) from 2006 - 2008. Back trajectories calculate the location of a parcel of air based on modeled meteorological data. Back trajectories can give clues about the origin of air masses to assist in determining possible meteorological conditions during elevated ozone episodes. Because the model uses Coordinated Universal Time, or UTC, trajectories had to be started the day after the exceedance of the standard. Each trajectory runs back in time for a 24-hour time period. Since ozone concentrations are generally highest during the late afternoon hours, the back trajectories were run from 00Z (7:00 or 8:00 PM) on the day after exceedance.

All of the back trajectories below were generated from a starting location at the Due West monitor representating days when the 8-hour ozone concentrations were above the 0.075 ppm 8-hour ozone standard. The 24-hour time period begins when the air parcel reaches the Due West site, then the air parcel is traced backwards to where it was 24 hours earlier. The back trajectories chart where the air parcels originated and how these air parcels moved to the Due West site over a 24-hour period.

Transport days can clearly be identified since the trajectories during these days are generally longer. The first set of back trajectory maps (Figure F-3through Figure F-11) represents the nine exceedances that did not last more than one (24 hour) day. These maps demonstrate that both transport and stagnation play a role in the development of ground-level ozone in the Abbeville County Area. With the exception of July

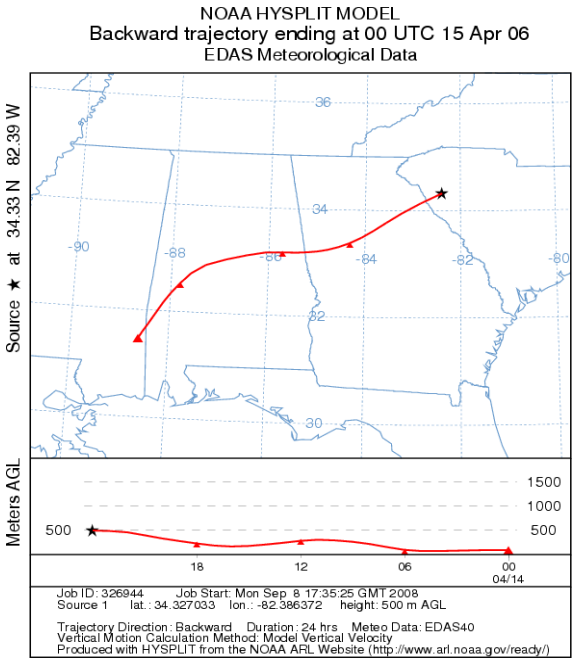
19, 2006, the back trajectories for each one day event were run with one low-level trajectory (750 meters or less) which showed transport at the ground level. This indicates that transport is the primary way that ozone precursors were brought into the Abbeville County area. The back trajectories also indicate that the most common transport direction for Abbeville County is from the southwest coming from the Atlanta, Georgia area. Other transport directions into the area were from the north and north-northeast.

Some single day episodes, such as July 19, 2006, have stagnant conditions near the surface with transport occurring in higher levels above the surface. This high-level transport gets mixed down to near the surface, then becomes stagnant. In order to show this, three different levels of back trajectories were run at Due West on July 19, 2006.

The second sets of back trajectories (Figure F-12 through F-17) are six events that were multi-day episodes (fourteen days total). In most cases, the sets were run as single trajectories indicating surface transport. Two days were run with multiple trajectories in order to thoroughly investigate the relationship between ground-level stagnation and transport aloft. The low level trajectories on these two days showed stagnation at the surface.

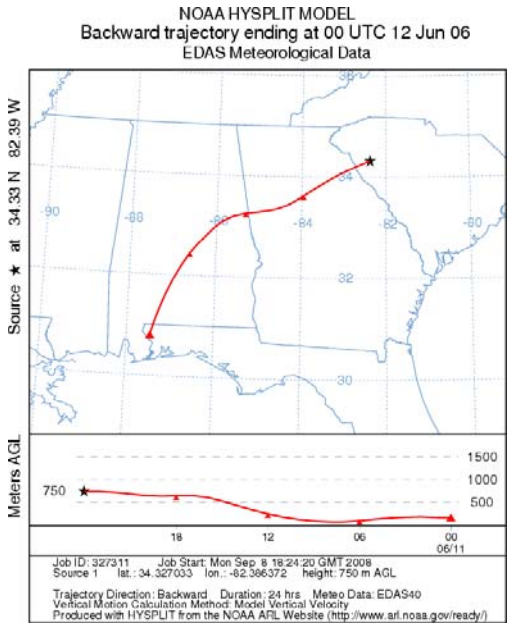
The first single-day event occurred on April 14, 2006. The back trajectory showed transport from Alabama and Georgia. The trajectory also indicated precursor transport from the Atlanta area which resulted in an ozone exceedance at the Due West monitor. The surface wind direction in Abbeville County on April 14 was from the southwest with a wind speed ranging from 8 to 16 knots.

Figure F-3: April 14, 2006 Single-Day Episode



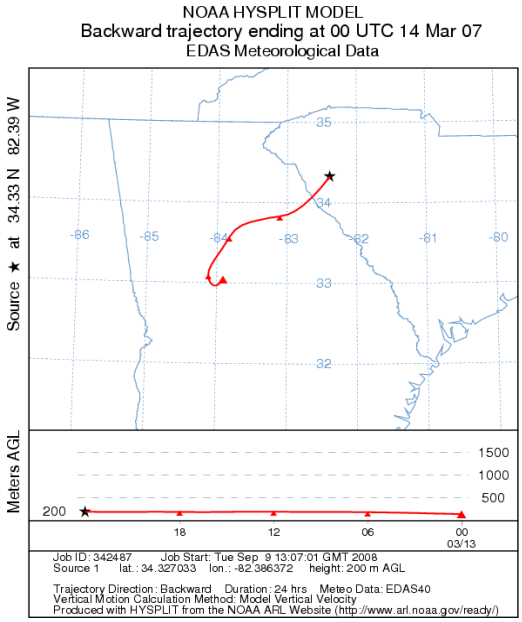
The back trajectory for June 11, 2006 also shows transport from Alabama and Georgia. Ozone precursors from the Atlanta area were transported into Abbeville County. On the same day, the Atlanta area had an exceedance of the 8-hour ozone standard. On June 11, 2006 the wind direction in Abbeville County was mainly from the southwest with a wind speed of 7 to 12 knots. Winds became calm by the early evening hours on June 11.

Figure F-4: June 11, 2006 Single-Day Episode



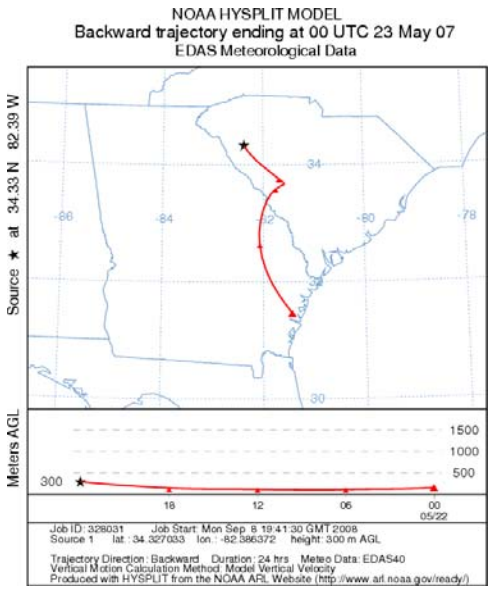
The low-level back trajectory for March 13, 2007 shows transport from the southwest from the Atlanta area into the lower piedmont of South Carolina. This resulted in an ozone exceedance at the Due West monitor.

Figure F-5: March 13, 2007 Single-Day Episode



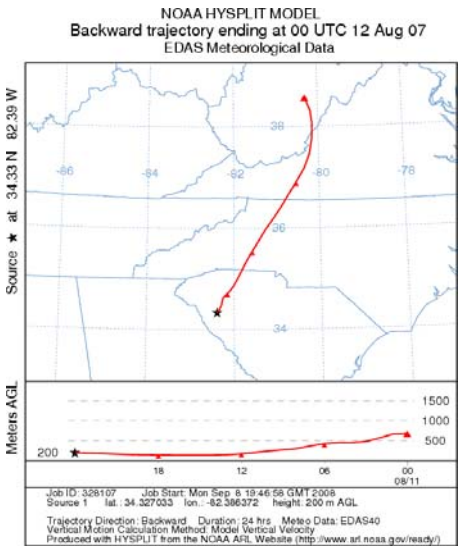
Another one day high ozone event occurred on May 22, 2007. The back trajectory for this day shows transport from the south-southeast up through the Augusta area, then into the Abbeville County area. On the previous day, exceedances of the ozone standard occurred at both of the Augusta, Georgia monitors. Winds were generally light to moderate and mainly from the south-southeast. Both the back trajectory and wind data show that precursors were transported from east-central Georgia into South Carolina, resulting in an ozone exceedance at Due West on May 22.

Figure F-6: May 22, 2007 Single-Day Episode



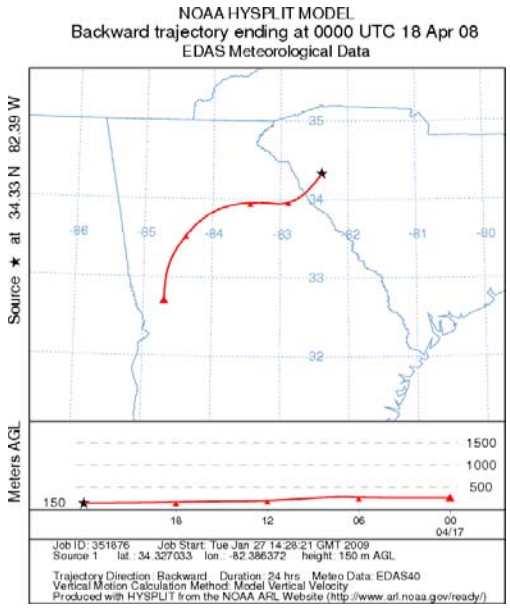
On August 11, 2007, the back trajectory indicated transport from North Carolina, southward into South Carolina. Early during the day, winds were generally north-north-easterly. Winds became light and variable during the afternoon hours, then became easterly and east-southeasterly during the evening hours. On August, 10, 2007, there were exceedances of the ozone standard at some of the monitors in east-central North Carolina. The back trajectory indicates that the precursors were transported into Abbeville County from North Carolina.

Figure F-7: August 11, 2007 Single-Day Episode



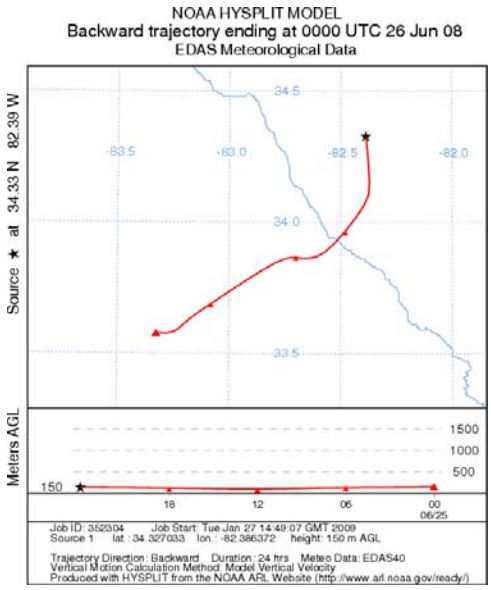
On April 17, 2008, transport occurred from the Atlanta area northeastward into Abbeville County. Winds were mainly from the southwest on April 17, which is consistent with the back trajectory on this day.

Figure F-8: April 17, 2008 Single-Day Episode



The back trajectory for June 25, 2008 shows some transport from central Georgia northeastward into Abbeville County. Ozone concentrations were above the 8-hour ozone standard in Atlanta on June 24 and June 25, 2008. Precursors from the Atlanta area and just south of the Atlanta area were transported by west-southwesterly winds which occurred across the area on June 25.

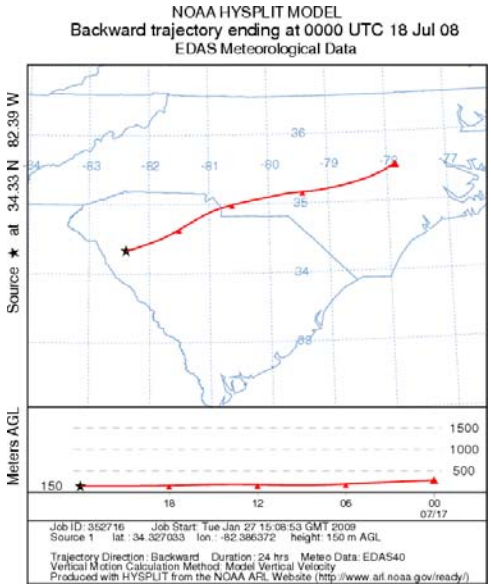
Figure F-9: June 25, 2008 Single-Day Episode



Transport from the opposite direction occurred on July 17, 2008. The back trajectory for this day clearly shows transport from the Raleigh and Charlotte areas, southwestward into South Carolina.

On July 16 ozone exceedances occurred at the Raleigh monitors. On July 17, ozone exceedances occurred both at the Raleigh and Charlotte monitors. The back trajectory indicates transport from the Raleigh and Charlotte areas into the piedmont of South Carolina, resulting in an ozone exceedance at the Due West monitor. Winds throughout the day were northeasterly at 4 to 11 knots. These wind speeds and direction are consistent with the back trajectory showing transport from the northeast into the Abbeville area.

Figure F-10: July 17, 2008 Single-Day Episode

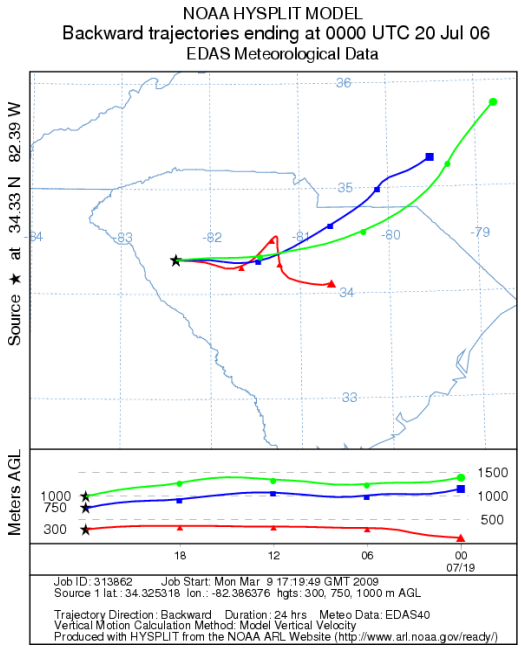


There was only one single-day episode in which stagnation played a role in ozone formation. Because the high-level transport gets mixed down to near the surface, then becomes stagnant, the three different levels of back trajectories were required to analyze the data. The multiple trajectories clearly show stagnant conditions near the surface with transport occurring at higher levels. The high level trajectories indicate transport from North Carolina into the lower piedmont of South Carolina. As expected, wind speeds were mainly light in the Greenwood area on July 19. The wind direction was generally variable with some northeasterly breezes. This northeasterly breeze is consistent with the higher level trajectories at Due West. It should also be noted that just because a 24-hour back trajectory indicates stagnation, this does not mean that transport was not involved. Days that appear to be stagnant by short-variable trajectories were probably influenced by transport on preceding days. Precursors were brought into the area the day before the occurrence of the stagnation/high ozone event.

On July 19, 2006, the shortest trajectory in red shows very little air movement which indicates stagnation near the surface. This allows the ozone precursors to form ozone near the site; however, this doesn't indicate that stagnation alone was the reason for the high ozone concentrations at Due West. It should be noted that on July 19, 2006, stagnant conditions occurred near the surface with transport occurring at higher levels above the surface. Some of these high-level precursors were transported into the area, mixed down to near the surface, and then became stagnant. In order to show this, back trajectories at three different levels were run at Due West on July 19, 2006. These multiple trajectories clearly show

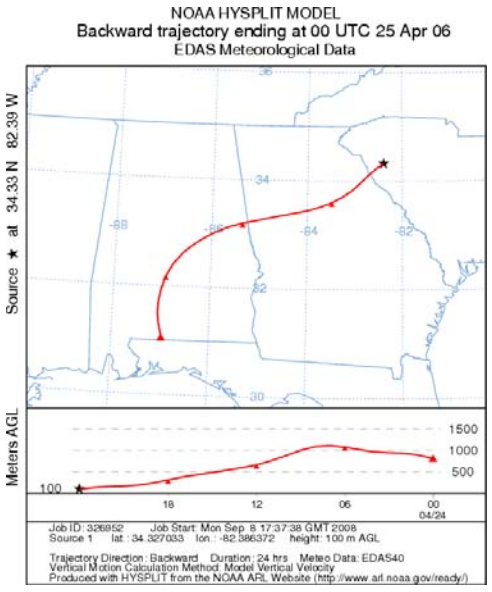
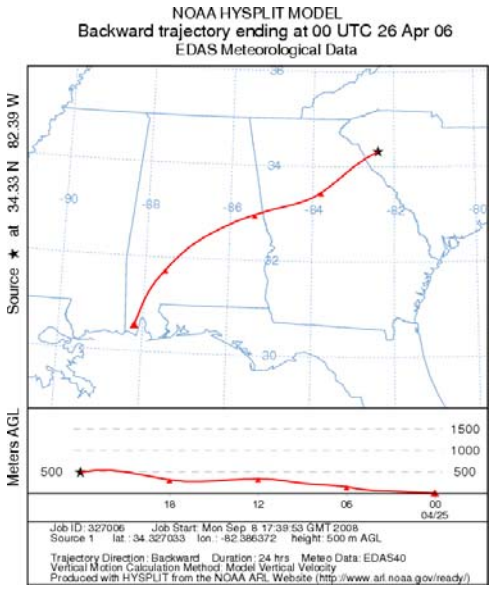
stagnant conditions near the surface with transport occurring at higher levels. The high level trajectories indicate transport from North Carolina into the lower piedmont of South Carolina. On July 18, ozone exceedances occurred throughout North Carolina in both the Charlotte and Raleigh areas. Some of these exceedances were well above the 8-hour ozone standard. Ozone exceedances continued across the Charlotte area on July 19. As stated above, this high level transport of precursors from North Carolina were mixed down then became stagnant near the surface. As expected, wind speeds were mainly light in the Greenwood area on July 19. The wind directions were generally variable or northeasterly. This northeasterly breeze is consistent with the middle and higher level trajectories at Due West for July 19.

Figure F-11: July 19, 2008 Single-Day Episode



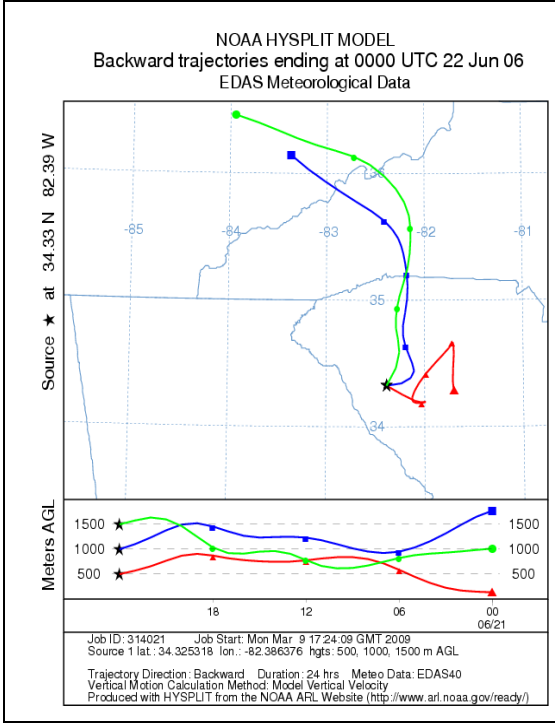
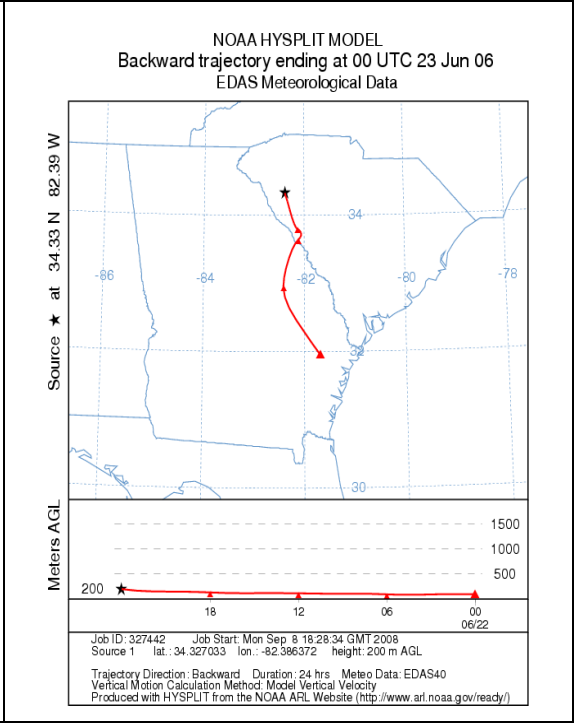
The first multi-day episode (Figure F-12) at the Due West monitor occurred on April 24 and April 25, 2006. This two day period featured strong transport from Alabama and Georgia northeastward into Abbeville County. High wind speeds on these two days helped to drive this transport from Georgia into South Carolina. On April 24, an ozone exceedance occurred at an Atlanta monitor. The trajectories and wind direction for both April 24 and 25 indicate that air parcels moved from the Atlanta area into the piedmont of South Carolina which resulted in exceedances of the ozone standard at Due West.

Figure F12: First Multi-Day Episode Back Trajectories

Due West April 24, 2006	*Due West April 25, 2006*
	

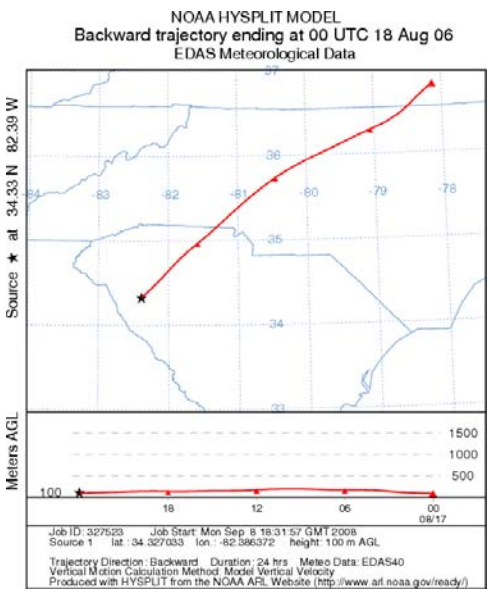
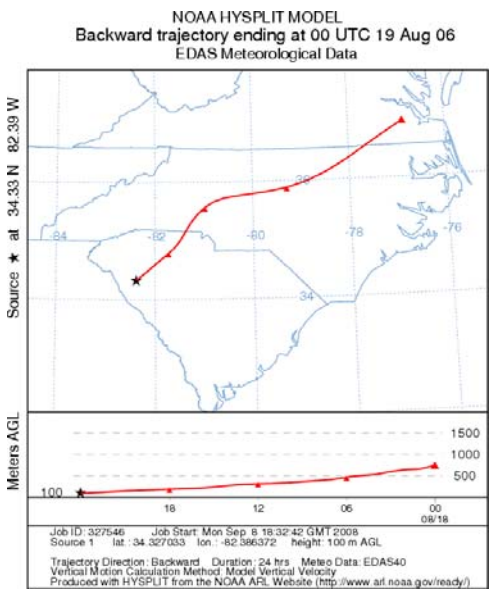
The second two-day episode at the Due West monitor (Figure F-13) occurred on June 21 and June 22, 2006. On June 21, the surface back trajectory (the red trajectory) was short, indicating stagnant conditions with very little air movement. Two additional back trajectories were also run for June 21 at higher levels. These two back trajectories indicate transport in the higher levels from eastern Tennessee and Western North Carolina, southeastward into the Upstate of South Carolina. The mid-level trajectory indicates that air parcels from the mid-level mixed in with the low-level air parcels, then became stagnant at the surface. Although the surface trajectory indicates stagnation, the higher level trajectories indicate some transport from the north-northwest to the south-southeast just above the surface. Wind speeds were generally light on June 21, and wind directions were variable and from the north and northeast. The winds shifted to the southeast later in the day. On June 22, air parcels traveled from southeast Georgia northward into the Abbeville County area. Wind speeds were light to moderate on June 22 with a wind direction mainly from the south-southeast.

Figure F-13: Second Multi-Day Episode Back Trajectories

Due West June 21, 2006	*Due West June 22, 2006*
	

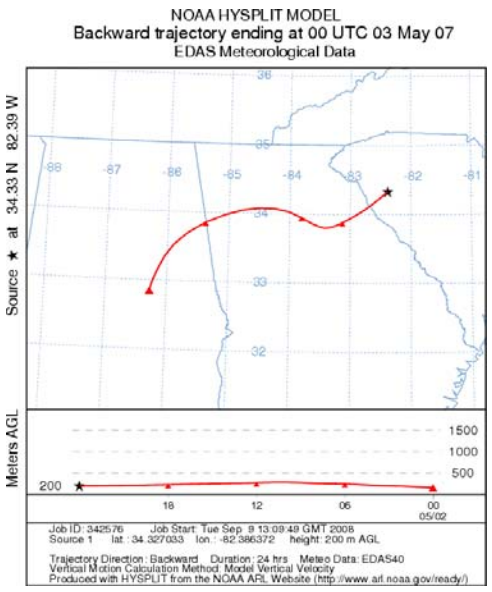
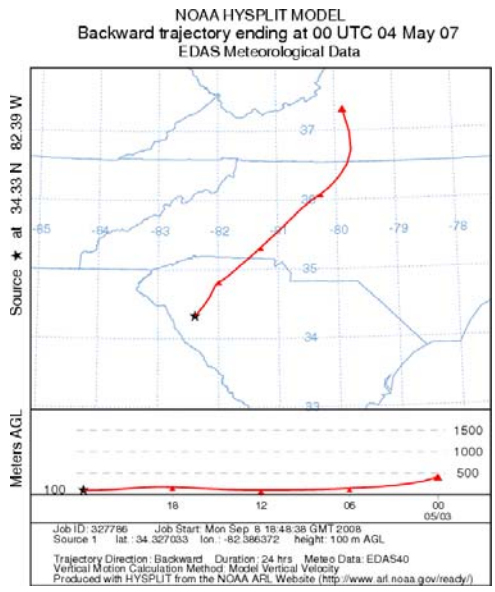
The third episode at the Due West monitor (Figure F-14) occurred on August 17 and August 18, 2006. Back trajectories for both of these days indicated strong transport from southern Virginia/northern North Carolina southwestward into the lower piedmont of South Carolina. The wind direction was consistently from the northeast ranging from 3 to 10 knots. This wind direction is consistent with the back trajectories.

Figure F-14: Third Multi-Day Episode Back Trajectories

Due West August 17, 2006	*Due West August 18, 2006*
	

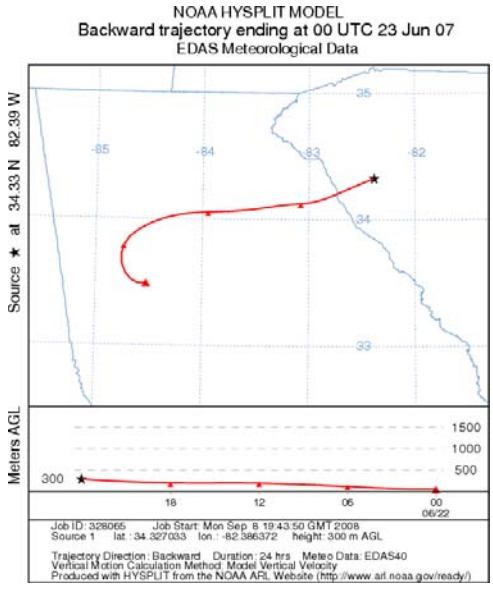
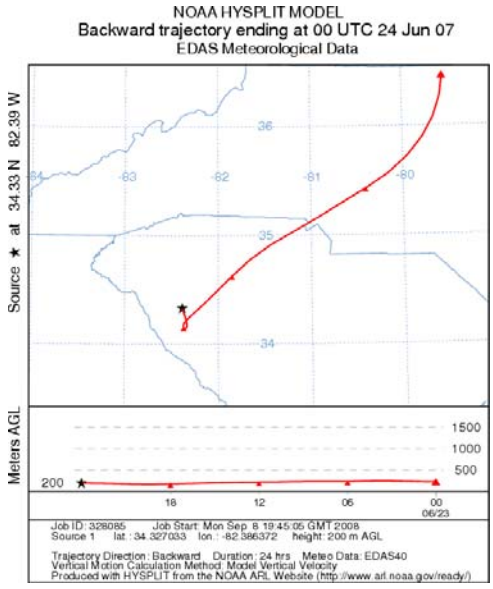
The fourth episode at the Due West monitor (Figure F-15) occurred on May 2 and May 3, 2007. On May 2, the back trajectory indicated that air parcels were transported from northern Alabama to near the Atlanta, Georgia area, then into the lower piedmont of South Carolina. On both May 1 and May 2, there were ozone exceedances of the 8-hour ozone standard at some of the Atlanta monitors. On May 2 the wind patterns and trajectories indicate that the precursors from Atlanta were transported into the lower piedmont of South Carolina. On May 3, re-circulation occurred and air parcels moved from southern Virginia/northern North Carolina southwestward into the Abbeville County area. It is important to note that exceedances of the 8-hour ozone standard occurred across North Carolina on May 2. When the re-circulation occurred, the same precursors that were transported northeastward on May 2, were transported back to the southwest and across the piedmont of South Carolina on May 3. This resulted in exceedances of the ozone standard at Due West for May 2 and May 3, 2007.

Figure F-15: Fourth Multi-Day Episode Back Trajectories

Due West May 2, 2007	*Due West May 3, 2007*
	

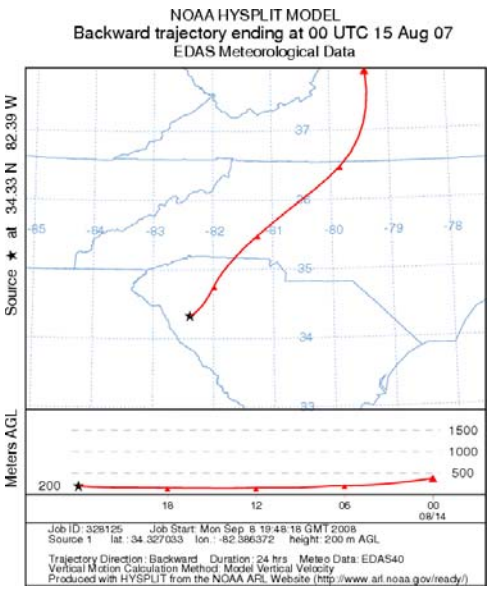
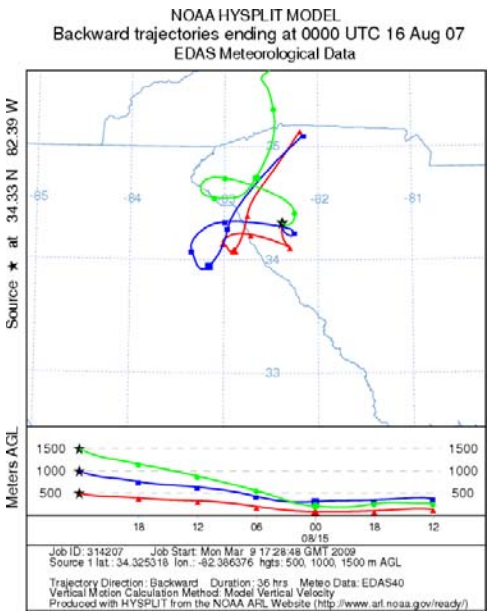
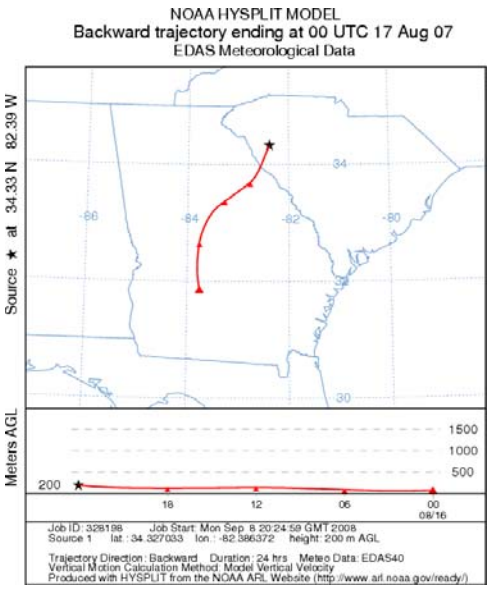
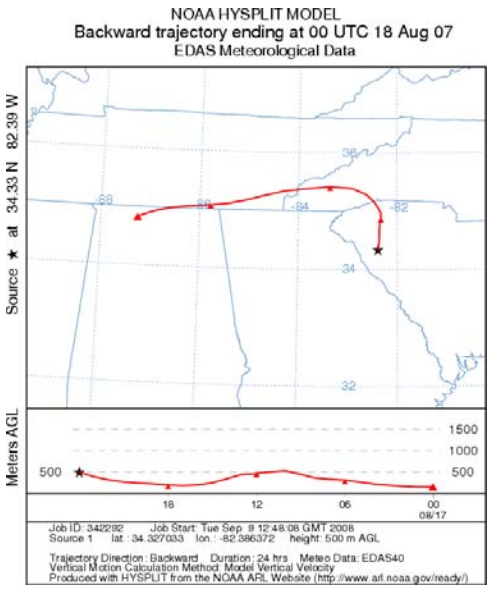
A fifth episode occurred at the Due West monitor (Figure F-16) on June 22 and June 23, 2007. The back trajectory for June 22 shows transport from the Atlanta, Georgia area eastward into Abbeville County in South Carolina. Numerous ozone exceedances of the 8-hour ozone standard occurred at the Atlanta monitors on both June 21 and 22. The wind direction was mainly from the west and west-southwest at 0 to 10 knots. The wind data along with the back trajectory clearly shows that precursors from the Atlanta area were transported into the piedmont of South Carolina. On June 23, re-circulation occurred and air parcels were transported down from central North Carolina into the lower piedmont of South Carolina. Numerous ozone exceedances occurred at the Raleigh and Charlotte monitors on June 22. The Charlotte area continued to have ozone exceedances on June 23. Wind directions on June 23 were variable or northeasterly ranging from 0 to 8 knots. The June 23 back trajectory and wind data indicates ozone precursor transport from Georgia into South Carolina on June 22 and ozone precursor transport from North Carolina into South Carolina on June 23. As a result, ozone exceedances occurred at Due West on both days.

Figure F-16: Fifth Multi-Day Episode Back Trajectories

Due West June 22,2007	*Due West June 23, 2007*
	

The final episode at the Due West monitor (Figure F-17) occurred from August 14 through August 17, 2007. This episode was regional with numerous ozone exceedances across the entire Southeast. The back trajectory for August 14, 2007, indicated strong transport from west-central Virginia/west-central North Carolina southwestward into the Abbeville County area of South Carolina. Isolated ozone exceedances occurred across North Carolina on August 13. These exceedances became more numerous on August 14, especially around areas surrounding Charlotte and Raleigh. The trajectory and wind data indicate ozone precursor transport from North Carolina southwestward into South Carolina. Winds on August 14 were north-northeasterly throughout much of the day. The winds became calm late in the day and during the evening hours. These calm to light and variable winds late on August 14 set the stage for a stagnation event on August 15. Throughout most of the day August 15, winds were light and variable or were calm. This agrees with the back trajectory which shows very little transport with stagnant conditions prevailing at the ground level; however, it should be noted that the back trajectory for the day before indicated precursor transport from North Carolina into South Carolina. These precursors stagnated near the monitor on August 15 causing exceedances of the ozone standard. The three level back trajectory analysis for August 15 shows stagnation at highest and lowest trajectory levels with some transport from North Carolina at the mid-level trajectory height. All three back trajectories showed air parcels mixing down, indicating that some of the precursors from the higher levels moved to the surface, then stagnated. Although August 15 was a stagnant day; the mid-level trajectory indicates that there was some transport into South Carolina from North Carolina which mixed down to the surface, then stagnated. The back trajectory for August 16, 2007, indicated air parcels moving from southern Georgia northward into western South Carolina. The wind data for August 16 shows that a south to southwesterly wind dominated throughout most of the day with moderate wind speeds. On August 17, air parcels were transported from northern Alabama/southern Tennessee, east-northeastward into western North Carolina, then southeastward into the piedmont of South Carolina.

Figure F-17: Sixth Multi-Day Episode Back Trajectories

Due West August 14, 2007	*Due West August 15, 2007*
	
Due West August 16, 2007	*Due West August 17, 2007*
	

Potential Source Contribution Function (PSCF)

In addition to wind rose and trajectory analyses, identifying areas from where ozone or ozone precursors come from can provide critical clues to the nature of exceedances at a monitor. The Potential Source Contribution Function (PSCF) was first created to understand spatial distributions of sulfur compounds in the Grand Canyon. Other studies have used PSCF to understand spatial distributions of particulate matter emissions. Since PSCF can be used to determine the probability that a certain amount of pollution detected in one area could have come from elsewhere, the function can be used to identify areas from which ozone or ozone precursors were transported.

The PSCF value is defined as:

$$PSCF_{ij} = \frac{m_{ij}}{n_{ij}},$$

where n_{ij} is the number of trajectory end points falling into a grid cell, and m_{ij} is the number of trajectory end points in the same grid cell when the concentration is over a criterion value in a chemical species at a receptor site.

For this study, 36-hour back trajectories were calculated for ozone seasons 2005-2008 and defined as n_{ij}. The highest 20 percent days for each year (2005-2008) were identified and defined a m_{ij}. These trajectory end points were plotted using a Geographic Information System (GIS) and analyzed spatially using the Spatial Analyst extension. Figure F-18 shows the PSCF values at trajectories with ending heights set at 10 meters and 300 meters, respectively. In these maps, the darker colors indicate those areas which had a high probability of a trajectory passing through on high ozone days at the location of the Due West monitor. These high probability areas tend to be oriented on a southwest to northeast axis. These indicate that transported ozone and ozone precursors range from as far north as West Virginia and as far west as Alabama. The elongated pattern of highest PSCF values indicates that ozone concentrations at the Due West monitor are greatly affected by transported ozone and ozone precursors.

Figure F-18: PSCF Values for the Due West Monitor During Highest 20% Daily Ozone Maximum Concentrations: 2005 – 2008

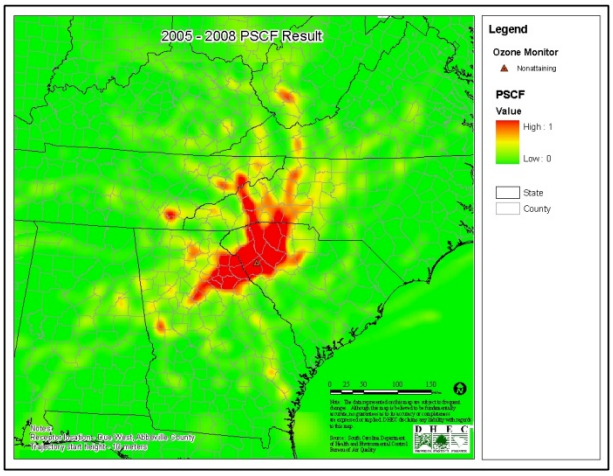
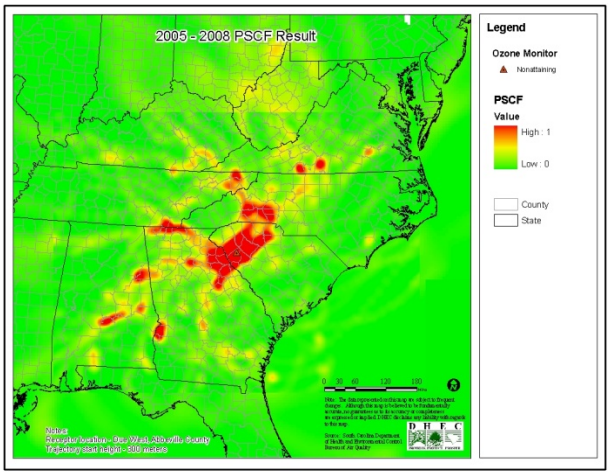
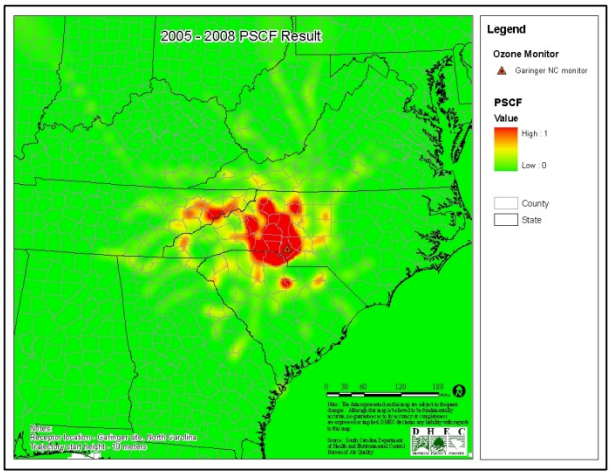
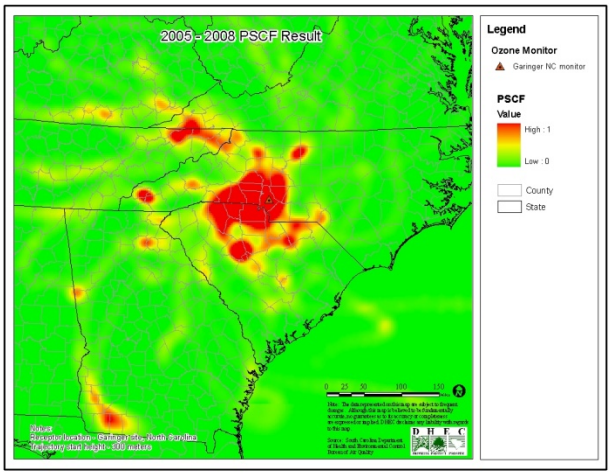
Due West PSCF - 10 meters	Due West PSCF - 300 meters
	

Figure F-19 shows the PSCF values from a Charlotte, NC area monitor. This area is known to have high levels of emissions from local sources. This analysis indicates that higher ozone concentrations for the Charlotte area are caused by local sources, as indicated by the smaller distance covered by the areas of highest PSCF values (as indicated by the darker colors).

Figure F-19: PSCF Values for Charlotte, NC monitor During Highest 20% Daily Ozone Maximum Concentrations: 2005 – 2008

Charlotte, NC PSCF - 10 meters	Charlotte, NC PSCF - 300 meters
	

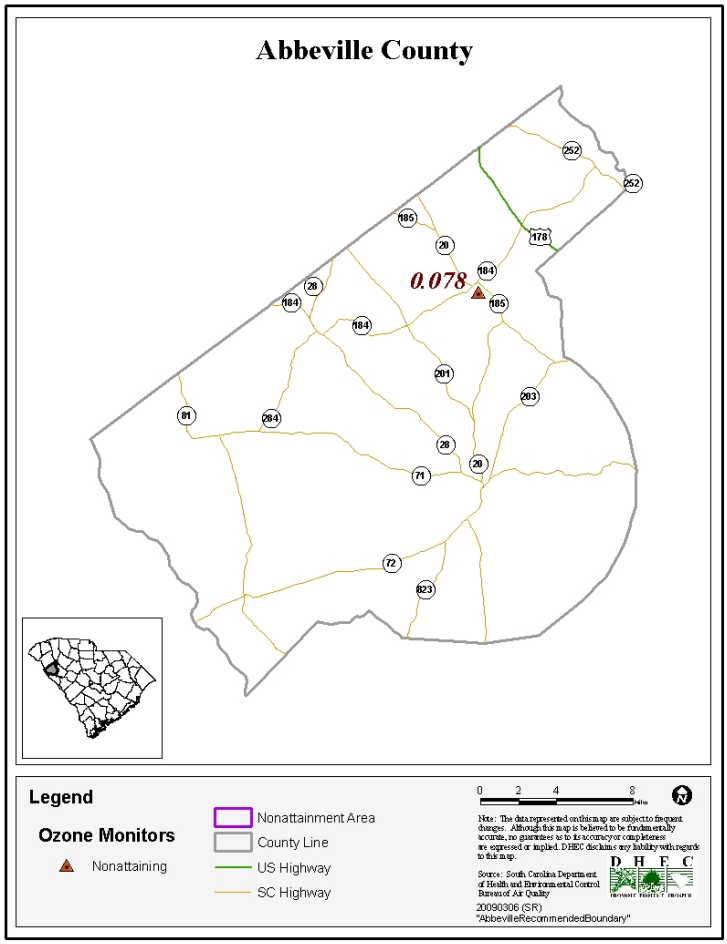
G. Reserved

H. Jurisdictional Boundaries

Figure H-1 shows Abbeville County which includes the Abbeville County Due West ozone monitoring station. Abbeville County is not part of a Metropolitan Planning Organization, a Combined Statistical Area, a Metropolitan Statistical Area or a Core-Based Statistical Area.

In the absence of a local transportation planning agency, the South Carolina Department of Transportation (SC DOT) is designated as the lead transportation planning agency. The transportation planning process is a cooperative effort that involves SC DOT and the Upper Savannah Council of Governments.

Figure H-1: Abbeville County



Aiken Nonattainment Area

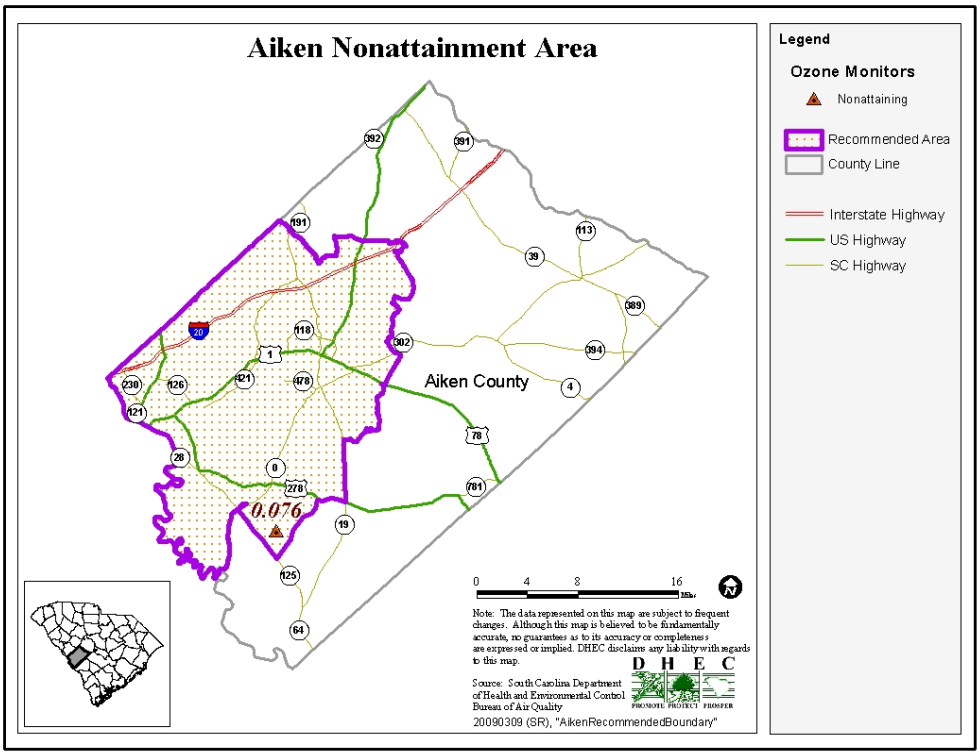
Overview

In accordance with the United States Environmental Protection Agency (EPA) suggested guidance for establishing nonattainment boundaries for the 2008 8-hour ground-level ozone National Ambient Air Quality Standards (Ozone NAAQS), the South Carolina Department of Health and Environmental Control (Department) is submitting its recommendation for Aiken County, South Carolina.

The Department recommends that the portion of Aiken County encompassed by the boundaries of the Augusta Regional Transportation Study (ARTS) Metropolitan Planning Organization (MPO) and the contiguous area encompassing the Jackson Middle School ozone monitoring station (45-003-0003) be designated as nonattainment for the Ozone NAAQS based on 2006 - 2008 ozone monitoring data. The requirements of the State Implementation Plan (SIP) developed for each nonattainment area should be flexible enough to address each area's unique situation. The designation of a separate nonattainment area from the Augusta-Richmond County Core Based Statistical Area (CBSA) would lead to greater efficiency in the development and implementation of local control measures and supports the Department's value of "local solutions to local problems." As the ARTS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity will be conducted much more effectively and efficiently. The Department's previous and current experience with a bi-state nonattainment area has proven challenging, as it has been difficult to maintain and complete nonattainment area requirements in a timely manner. As improving air quality as expeditiously as possible and returning areas to attainment should be the goal of this effort, separate nonattainment areas will streamline this process. Transportation models have been developed for the ARTS area within this boundary. For areas outside the MPO, the South Carolina Department of Transportation (SC DOT) will have to develop more refined modeling capabilities which will be resource intensive. This area will be referred to as the Aiken Nonattainment Area throughout the rest of this document.

The location and boundary of the area that is being recommended for nonattainment are shown in Figure 1.

Figure 1: Aiken Nonattainment Area for the 2008 Ozone NAAQS



While EPA's presumptive Augusta-Richmond County CBSA boundary includes Edgefield County, the data does not support its inclusion. Therefore, none of Edgefield County is being recommended as a part of the Aiken Nonattainment Area. Edgefield County has a low population, few sources that emit pollutants that contribute to ground-level ozone, low daily vehicle miles traveled (DVMT), and, most importantly, monitored ambient ozone levels below the Ozone NAAQS. Therefore, the Department's justification regarding the Aiken Nonattainment Area will focus on Aiken County, South Carolina only.

<u>The factors utilized to recommend the boundary for this nonattainment area designation are as follows:</u>

- The Jackson Middle School ozone monitoring station (45-003-0003) in Aiken County is currently exceeding the Ozone NAAQS and is included in the Aiken Nonattainment Area. As the Trenton ozone monitoring station (45-037-0001), located in Edgefield County, is meeting the Ozone NAAQS, no portion of Edgefield County is recommended as a part of the Aiken Nonattainment Area. The Trenton monitor is representative of the rural portion of Aiken County, thus supporting exclusion of this portion of the county from the Aiken Nonattainment Area.
- Edgefield County and the portion of Aiken County not in the recommended nonattainment area are rural in nature and contain only 15 percent of the point source NO_x emissions for both counties. Therefore, the Department concludes that these rural areas are not causing or contributing to an exceedance of the Ozone NAAQS and, therefore, should not be included in the Aiken Nonattainment Area.

- The population of Aiken County in 2000 was 142,552 and the Aiken Nonattainment Area captures a population of 122,443. The Aiken Nonattainment Area includes 86 percent of the population. NO_x emissions from human activities, such as mobile source emissions and other area sources, are major contributors to ozone formation. Most of the Aiken County emissions from human activities are captured by the Aiken Nonattainment Area, and therefore the recommendation is appropriate.
- Motor vehicle emissions are a significant contributor to ozone formation. The Department has concluded the Aiken Nonattainment Area contains 82 percent of Aiken County's Daily Vehicle Miles Traveled (DVMT), thus the majority of Aiken County's motor vehicle emissions.
- According to the 2000 U.S. Census, 70 percent of workers who live in Aiken County work in the county. The Aiken Nonattainment Area encompasses the major urbanized areas, and the majority of the commuters live and work within the urbanized areas. Automobiles are a major contributor of NO_x emissions and to ozone formation. Therefore, the Department concludes the majority of the commuter flow, and subsequently a majority of the NO_x emissions from vehicles, is contained within the Aiken Nonattainment Area. This supports the recommendation of a separate nonattainment area that includes only partial Aiken County.
- The center of economic development and retail trade, the majority (83 out of 113) manufacturing establishments, and all of the county's urbanized areas are located within the Aiken Nonattainment Area. According to the 2006 American Community Survey, 80 percent of the workers 16 years old or older in Aiken County drove alone to work, and only 0.2 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The majority of the population works and conducts personal activities within the Aiken Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.
- Facilities holding Title V permits which are major sources of NO_x and/or VOC emissions may contribute to ozone formation. The Department has concluded that the Aiken Nonattainment Area captures 90 percent of the Title V point source NO_x emissions and 97 percent of the Title V point source VOC emissions in Aiken County.
- South Carolina has provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing emissions, do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2005, 2006, and 2007, the areas in South Carolina designated as nonattainment for the 1997 8-hour Ozone NAAQS with the effective date deferred were redesignated to attainment. Each of the diverse stakeholders joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.
- Aiken County was one of 45 counties across South Carolina that participated in the Early Action Compact (EAC) process, and while the formal process has ended, our partners continue to support local efforts that improve air quality. The Central Savannah River Area (CSRA) Air Quality Alliance was formed to promote cleaner air for the protection of public health and to improve environmental quality. The Aiken Nonattainment Area is included within the area covered by the CSRA. A few examples of the area's commitment to air quality include:
    - Aiken County committed to supporting state-wide efforts, designated a contact to receive and disseminate air quality education and outreach materials, and participated in regional air quality stakeholder meetings.

- The cities of North Augusta and Aiken adopted open burning bans within city limits.
- The Lower Savannah Council of Governments received one of three federal grants ($680,000.00) to improve vehicle technology with the Aiken County transit program.
- Aiken Electric Cooperative in partnership with Santee Cooper selected a local school for the "Green Power Solar Schools" program to encourage interest in the environment and demonstrate the feasibility and limitations of renewable power generation.
- A local school will implement the federal "Safe Routes to School Program" enhancing bicycling and pedestrian safety in 2009.
- Several schools participate in the state's B^2 (Breathe Better) anti-idling program.
- Kimberly-Clarke uses methane gas from a regional landfill to power a paper products plant; a renewable energy project transporting methane gas over 15 miles.
- ARTS assisted the Department in making necessary revisions to the State Implementation Plan, specifically the Transportation Conformity Memorandum of Agreement (MOA) outlining the interagency consultation procedures for determining conformity of transportation plans, programs and projects. As a signatory to the MOA (June 2008), the necessary interagency consultation procedures outlined in the MOA will be in place should the area be designated nonattainment for any applicable criteria pollutant.

The activities being conducted by the local, county, and regional entities confirm that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of local and regional controls. In fact, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, smaller boundaries preserve the flexibility of implementing strategies, enforceable and directionally sound, tailored to the respective area. Participation in the EAC process proved local stakeholders have an impact on reducing the formation of ozone.

- Section 48-1-50 (Powers of Department) of the South Carolina Pollution Control Act gives the Department the authority to require emission reductions from a source, regardless of where it is located, if the emissions result in pollution in excess of applicable standards. The Department currently has regulations that are more stringent and protective than federal requirements. These actions, such as addressing NO_x emissions from stationary sources, demonstrate our statutory authority and ability to implement controls to improve air quality statewide. A nonattainment boundary does not provide any additional authority to address emissions where appropriate and needed.
- The Department operates a comprehensive ozone-forecasting program that covers 34 counties in our State, including Aiken County. South Carolina's citizens are informed on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as appropriate to better protect their health. The availability of this forecast for all of Aiken County confirms that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of this program. Aiken County is part of the Central Savannah River Forecast Zone. This forecast zone accounts for 210,815 people or 5 percent of the 2000 population of South Carolina. Therefore, the Department concludes ozone forecasting covers a broad area, so everyone inside and outside of the Aiken Nonattainment Area within Aiken County and the surrounding areas will be given the same precautions.

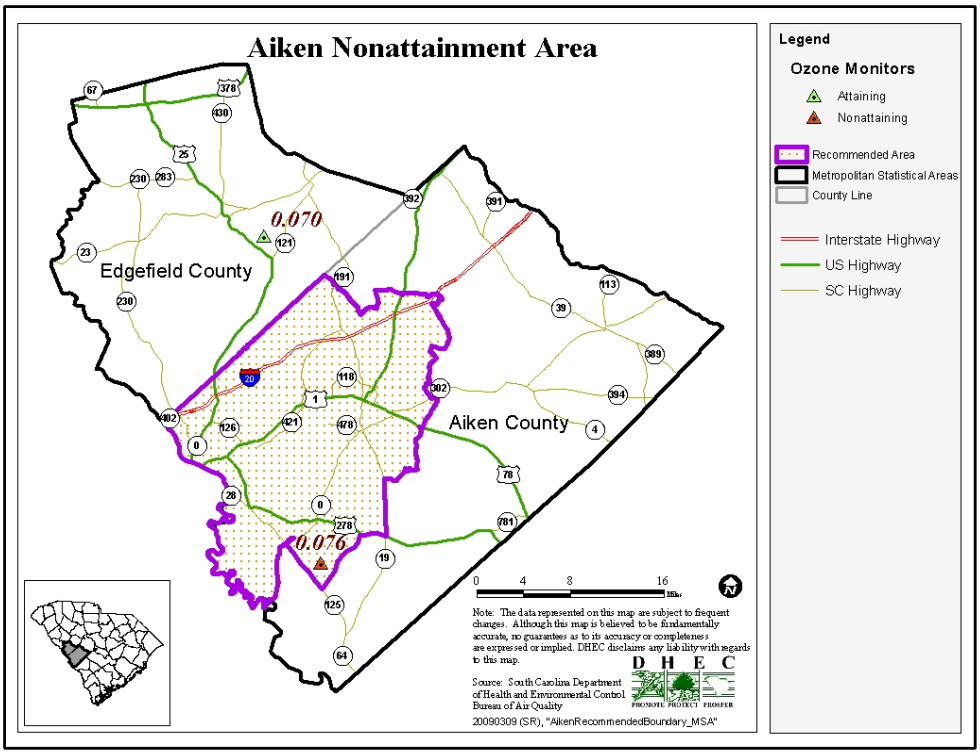
The Department has evaluated air quality data, emissions data, population density and degree of urbanization, traffic and commuting patterns, growth rates and patterns, meteorology, and jurisdictional boundaries to develop the boundary recommendation for the Aiken Nonattainment Area. The following details support the recommendation:

A. Air Quality Data

Figure A-1 shows the location of the Jackson Middle School (Jackson) ozone monitoring station (45-003-0003) within the South Carolina portion of the Augusta-Richmond County MSA. Established on November 8, 1985, this station is in southwestern Aiken County located on Highway 125 in Jackson. The monitor is designed to represent the urban scale (an area of approximately 4-50 kilometers) concentrations of ozone. Based on 2006 - 2008 monitoring data, this monitor is showing a design value above the Ozone NAAQS.

The Trenton ozone monitoring station (45-037-0001) is located in southeastern Edgefield County near Highway U.S. 25. Established on April 3, 1980, this monitor is north of the ARTS MPO in a rural setting and represents urban scale concentrations of ozone.

Figure A-1: Monitor Locations in the South Carolina portion of the Augusta-Richmond MSA



The 2008 ozone design value for the Jackson monitor is 0.076 ppm. The design value for the Trenton monitor is currently 0.070 ppm, well below the Ozone NAAQS. The design value data from the last eight years indicates that, in general, ozone levels in Aiken and Edgefield Counties have been declining.

Figure A-2 presents the 2000 through 2008 8-hour ozone monitoring data for Aiken and Edgefield 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.

Figure A-2: Design Values Trends 2000 – 2008

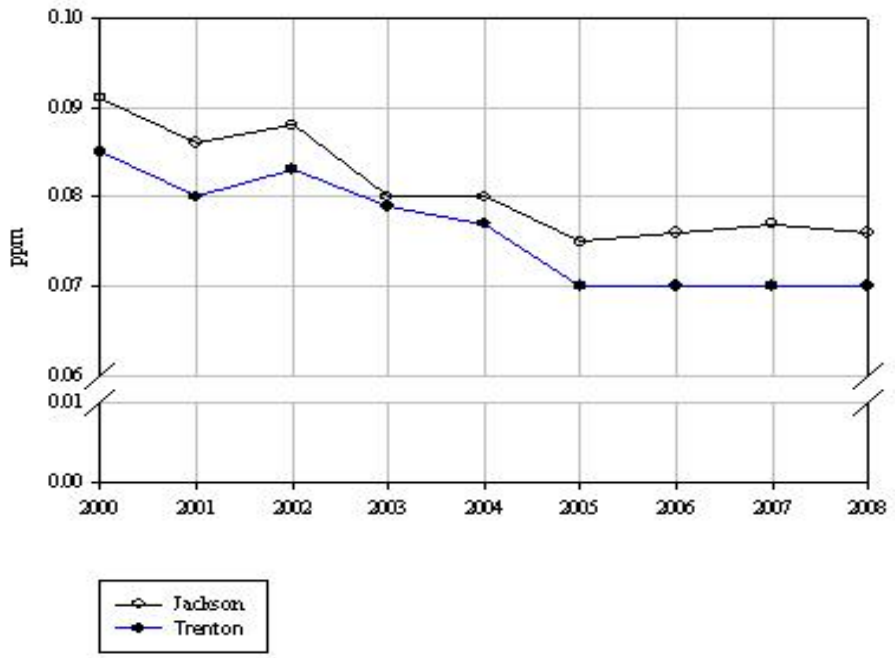
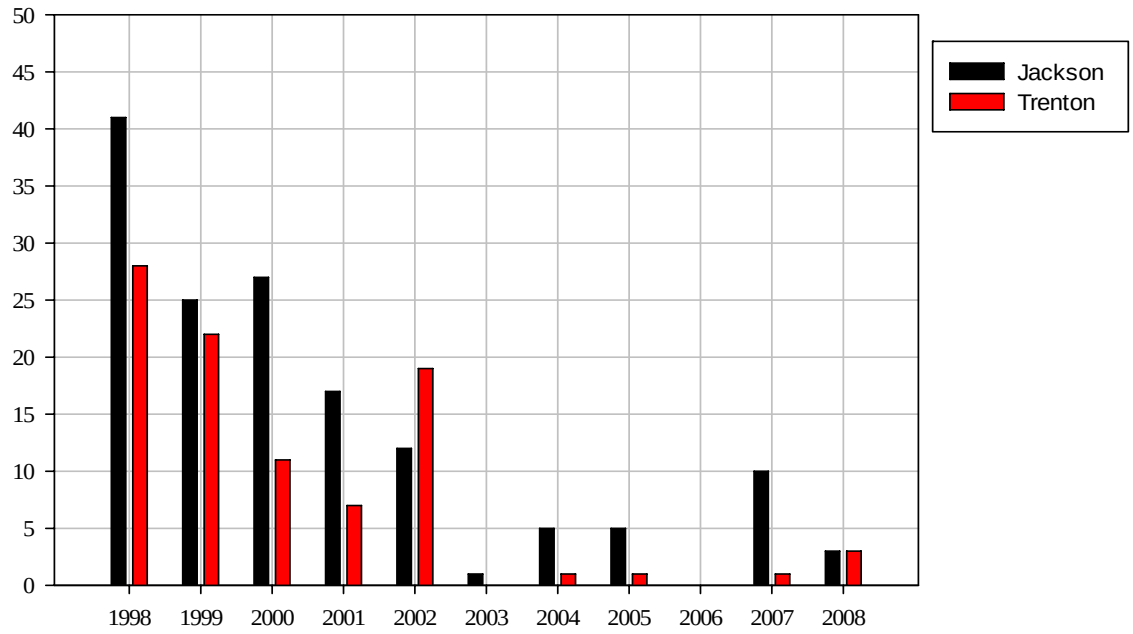


Figure A-3 demonstrates the decline in the total annual number of times that ozone levels at the Jackson and Trenton monitors have been above 0.075 ppm over the past ten years.

Figure A-3: Number of Days Ozone Concentrations Above 0.075 ppm

Number of Days Ozone Concentrations Above 0.075 ppm



B. Emissions Data

It should be noted that South Carolina is a NO_x limited state. On average, about 70 percent of the VOC emissions come from biogenic sources. To evaluate the emissions in Aiken County the Department researched NO_x and VOC emissions using the best and most recent data available for the various source sectors. The source sectors that were evaluated include point, non-point, and on-road and non-road mobile sources. Point source data is state generated data representing calendar year 2005. All other sectors are a combination of state generated and EPA generated data in EPA's final National Emissions Inventory (NEI) form representing calendar year 2002. The data for 2002 was used rather than 2005 for the other sectors since EPA had deemphasized the 2005 NEI to focus efforts on the reinvention of the 2008 inventory. Because of the focus on the 2008 NEI, there was no real attempt to generate 2005 data for sectors other than point sources. Other source sector emissions are largely population based. This means they are not likely to greatly change on an annual basis. However, point sources were thoroughly evaluated in 2005 to account for significant changes in emissions. South Carolina believes the 2002 data is still representative of those sectors for 2005.

Figures B-1 and B-2 show the NO_x and VOC emissions from each of the source sectors.

Figure B-1: NOx Source Sector Emissions

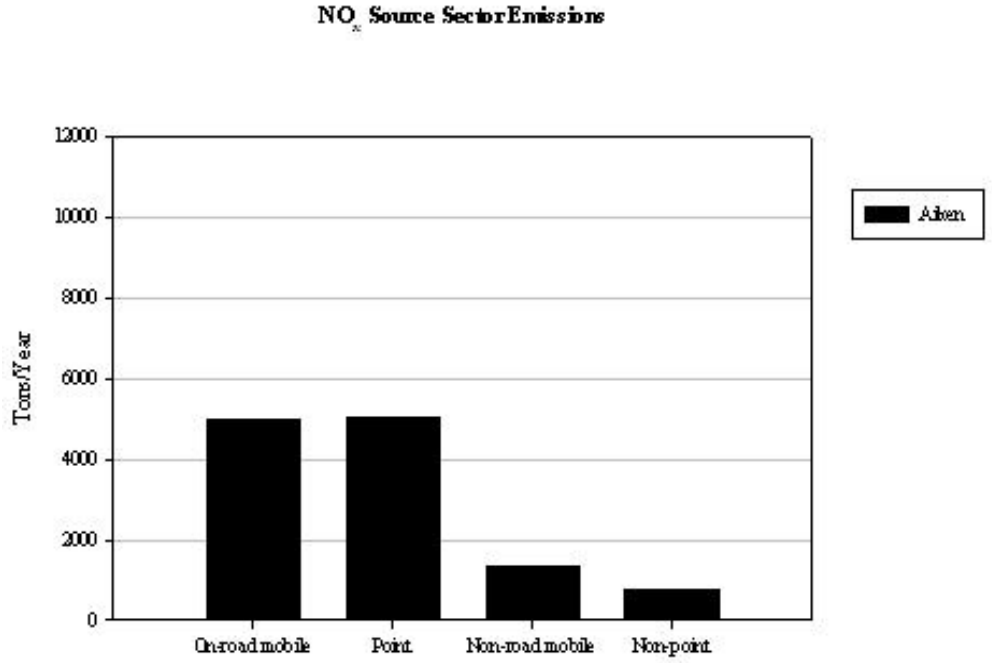
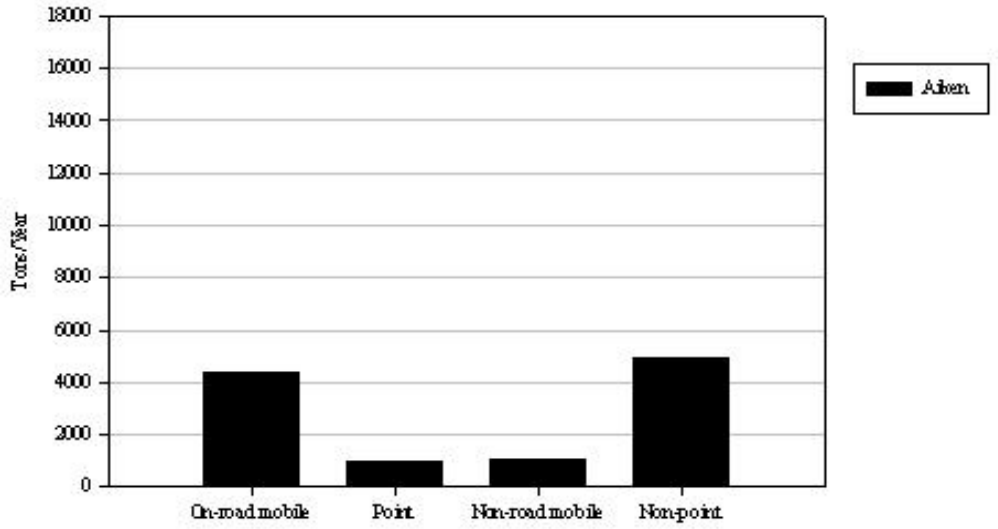


Figure B-2: VOC Source Sector Emissions



Figures B-3 and B-4 show the locaton of the Aiken County NO_x and VOC Title V point sources in operation. There are ten Title V NO_x point sources in Aiken County with nine of these in the recommended boundary. These nine sources account for 90 percent of the total Title V point source NO_x emissions for Aiken County. There are eleven Title V VOC point sources in Aiken County. Ten of these sources are in the recommended boundary. These ten sources account for 97 percent of the total Title V point source VOC emissions for Aiken County.

Figure B-3: Title V Source NOx Emissions

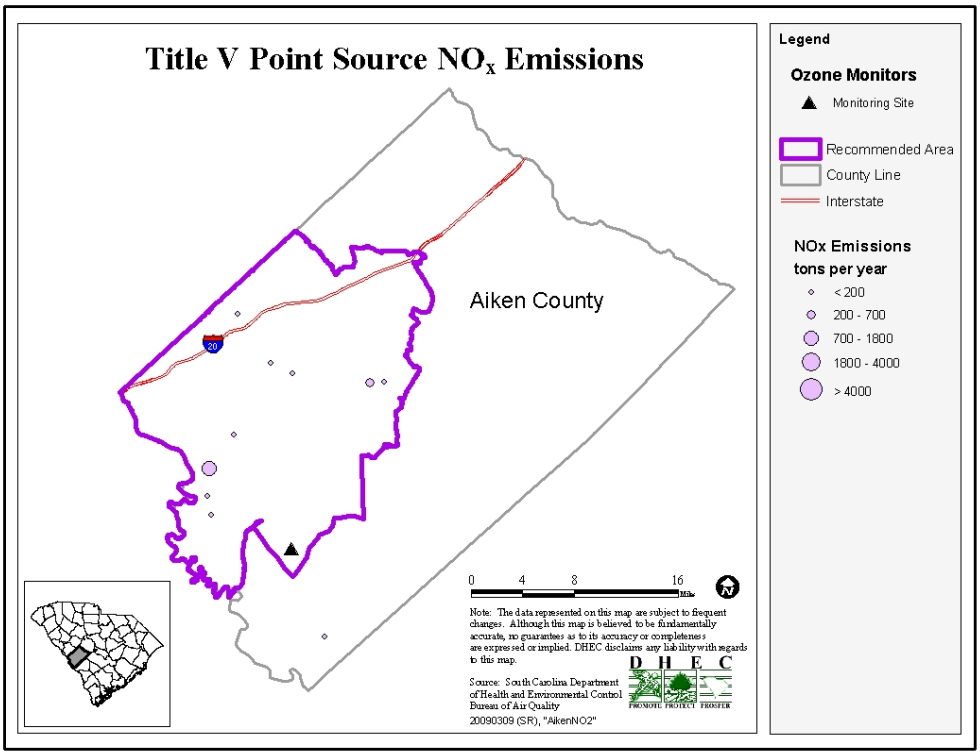
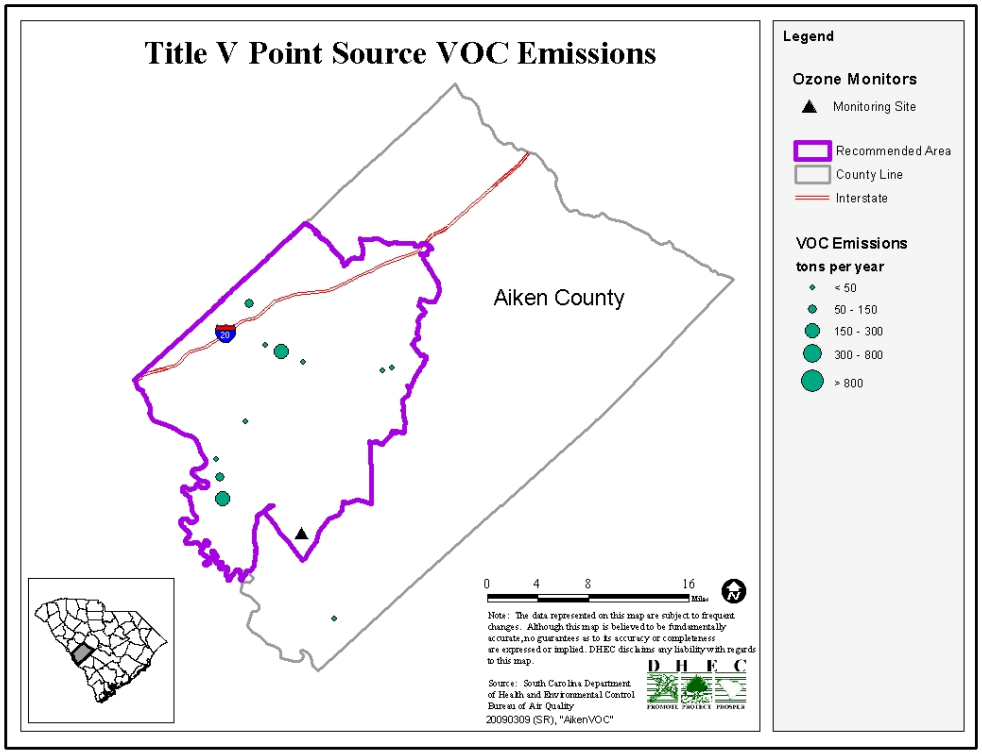


Figure B-4: Title V Source VOC Emissions



Tables B-1 and B-2 list the Aiken County Title V facilities that contribute to the NO_x and VOC emissions. An asterisk next to the name indicates that this facility is captured by the Aiken Nonattainment Area.

Table B-1: Title V Source NO_x Emissions

Aiken County Facility	Permit Number	2005 Est. Emissions Tons/Year
SCE&G Urquhart*	0080-0011	968.67
AGY Aiken LLC*	0080-0117	565.82
Kimberly Clark Corp*	0080-0009	178.11
Owens Corning: Aiken*	0080-0028	86.79
Bridgestone Firestone*	0080-0114	10.91
CGTC Southern Compressor Station*	0080-0107	9.38
Kentucky Tennessee Langley*	0080-0003	8.18
Graniteville Specialty Fabrics*	0080-0027	4.21
Pactiv Corporation*	0080-0057	1.08
Three Rivers Regional MSW Landfill	0080-0112	0.006
Total Tons of Emissions		1,833.16

*Located within Aiken Nonattainment Area

Table B-2: Title V Source VOC Emissions

Aiken County Facility	Permit Number	2005 Est. Emissions Tons/Year
Graniteville Specialty Fabrics*	0080-0027	223.74
Pactiv Corporation*	0080-0057	203.82
Bridgestone Firestone*	0080-0114	129.98
Kimberly Clark Corp*	0080-0009	67.2
Kentucky Tennessee Langley*	0080-0003	24.17
AGY Aiken LLC*	0080-0117	22.67
Owens Corning: Aiken*	0080-0028	18.21
Three Rivers Regional MSW Landfill	0080-0112	9.32
SCE&G Urquhart*	0080-0011	7.92
Parkdale Mills*	0080-0006	1.98
CGTC Southern Compressor Station*	0080-0107	0.06
Total Tons of Emissions		709.07

*Located within Aiken Nonattainment Area

C. Population Density and Degree of Urbanization

According to the U.S. Census Bureau, urban is defined as all territory, population, and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas and urban clusters. Rural is defined as all territory, population, and housing units located outside of urbanized areas and urban clusters.

The Aiken Nonattainment Area contains the urban areas in Aiken County including the towns of Aiken, Jackson, and New Ellenton. Based on the U.S. 2000 census population of the urban portion of Aiken County, the populations of Jackson and New Ellenton and an assumed population outside of town boundaries, the population within the Aiken Nonattainment Area is estimated to be 122,443, which is 85.9 percent of the county population. The Aiken Nonattainment Area captures the majority of the population within the county.

Figure C-1 indicates the extent of the urban areas in Aiken County.

Figure C-1: Aiken County Urban Areas

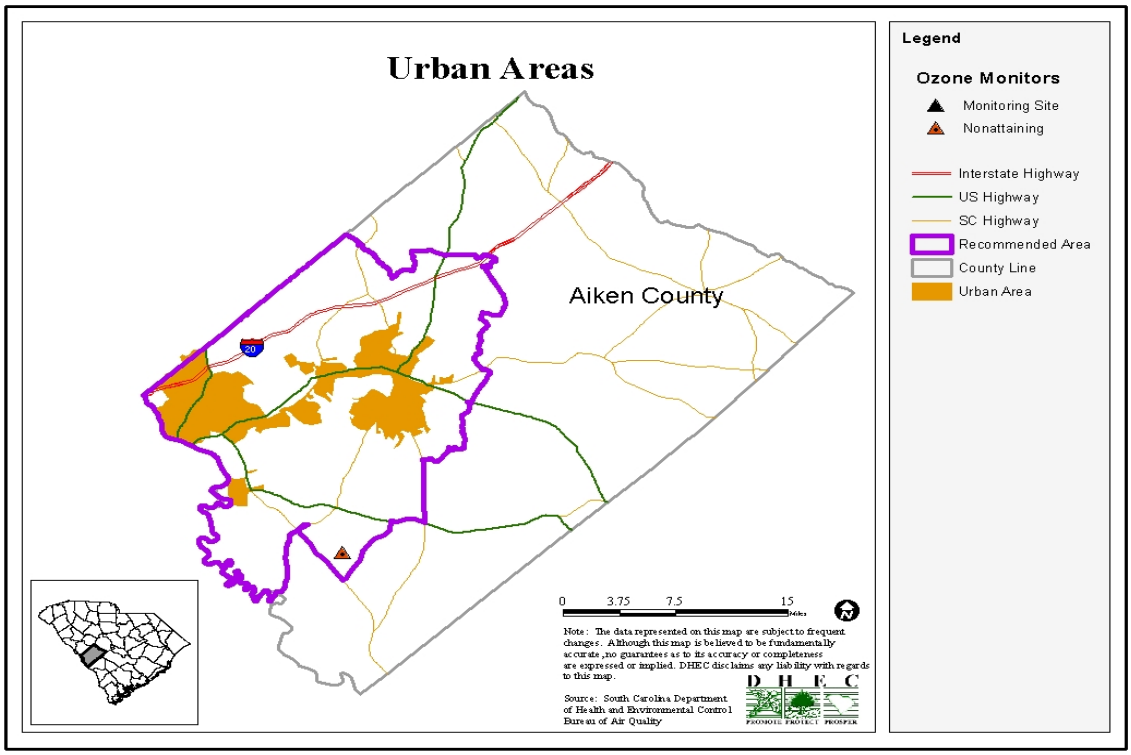


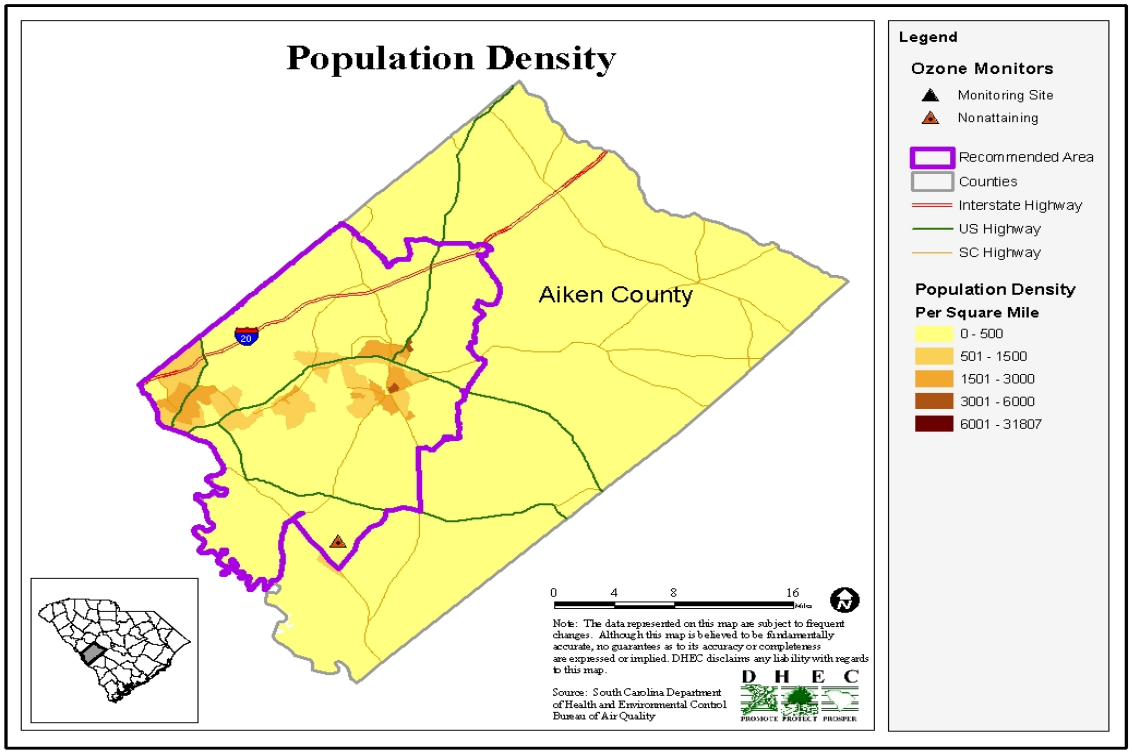
Table C-1 contains population data for both Aiken County and the Aiken Nonattainment Area.

Table C-1: Total Population, Land Area, and Urban/Rural Population, 2000

Aiken County		
	Whole County	**Aiken Nonattainment Area**
Population	142,552	122,443
Land Area (Square Miles)	1,079.7	391.9
Population/Land Area (Square Miles)	132	312.4
Urban Population	86,786	
Percent Urban Population	60.9 %	
Rural Population	55,766	
Percent Rural Population	39.1 %	

Figure C-2 shows the population density for Aiken County relative to the Aiken Nonattainment Area. The land area within the Aiken Nonattainment Area is estimated to be 391.9 square miles. Using the estimated population and land area of the Aiken Nonattainment Area, the population density of this recommended area is calculated to be 312.4 persons per square mile, which is more than twice the county population density. Based on this high population density within the Aiken Nonattainment Area, designation of a partial county for the Aiken Nonattainment Area is appropriate.

Figure C-2: Aiken County Population Density



Aiken County is the fourth largest county in the State with 1,079 square miles of land area. The vast majority, 86 percent, of Aiken County residents live inside the Aiken Nonattainment Area. The majority of Aiken County's land area, 63 percent, falls outside of the Aiken Nonattainment Area. Since the area outside of the Aiken Nonattainment Area represents such a low percent of the population and population density, and a high percentage of land area, it can be concluded that this area does not appreciably impact air quality.

According to the U.S. Census Bureau, manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction. Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included. The retail trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Manufacturing is the largest employment sector in Aiken County. The second and third largest sectors are retail trade and health care/social assistance. Table C-2 shows employment data for Aiken County's three largest business sectors. The Aiken Nonattainment Area contains a majority of the economic development in Aiken County. Of the 113 manufacturing establishments in Aiken County, 83 are located inside the Aiken Nonattainment Area. A total of 547 retail trade establishments that employ 6,664 persons are located in the county.

The center of economic development and retail trade, the majority (83 out of 113) manufacturing establishments, and all of the county's urbanized areas are located within the Aiken Nonattainment Area. In most of South Carolina, public transportation is neither readily available nor utilized. According to the 2006 American Community Survey, 80 percent of the workers 16 years old or older in Aiken County drove alone to work, and only 0.2 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Aiken Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.

Table C-2: Employment in the Three Largest Business Sectors, 2006

Aiken County		
	Number of Employees	**Number of Establishments**
Manufacturing	16,463	106
Retail Trade	6,664	547
Health Care/Social Assistance	5,069	283

D. Traffic and Commuting Patterns

Because ozone is a transportation-related pollutant, the Aiken Nonattainment Area includes the South Carolina portion of the ARTS MPO, responsible for transportation planning in the area. The designation of the Aiken Nonattainment Area as recommended provides greater opportunity to link transportation planning to air quality improvement goals.

Figure D-1 shows the interstate highway, I-20, located within the Aiken Nonattainment Area. This interstate highway is the major corridor of travel between Aiken and Florence Counties. Additionally, there are four other major routes of travel through Aiken County. These include U.S. Highways 1, 278, 78 and 25. There are also numerous state and secondary roads in the area that connect the larger towns.

Figure D-1: Aiken County Highway System

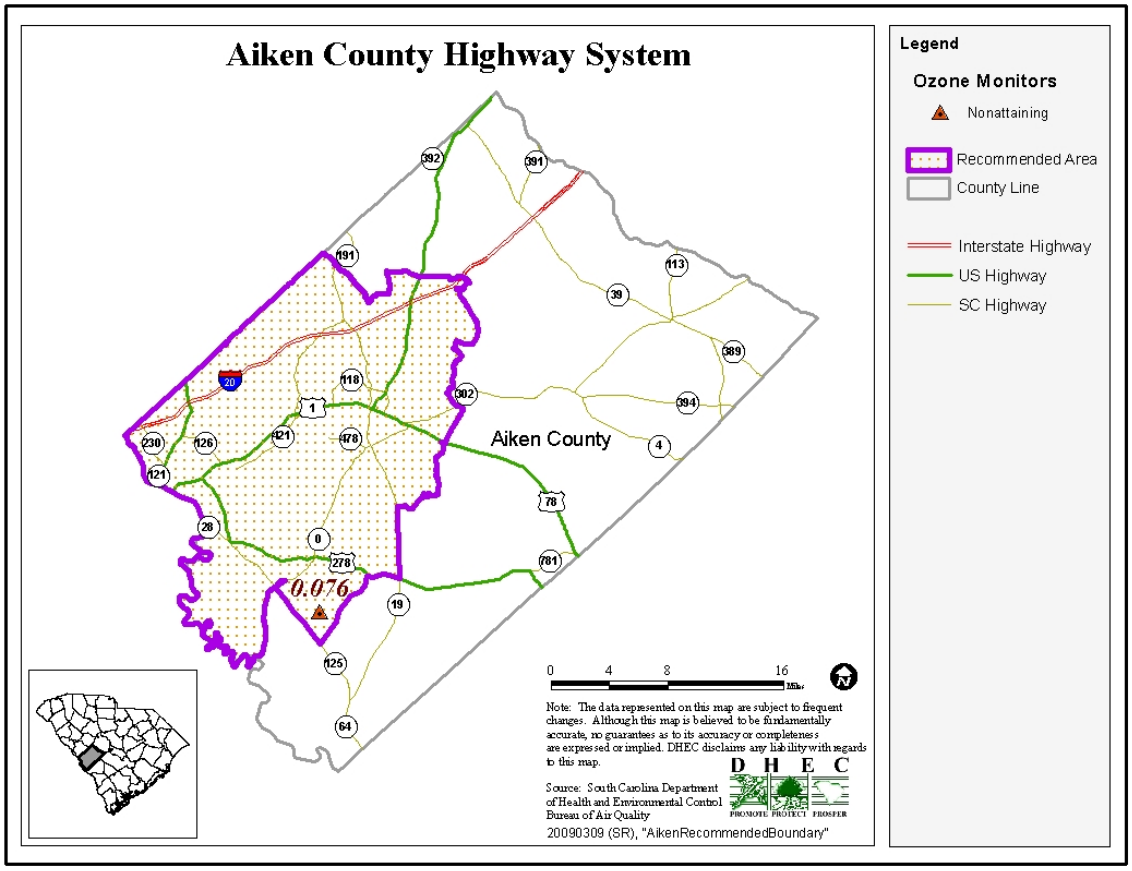


Table D-1 shows where Aiken County residents commute to work. The table shows that approximately 70 percent of workers that live in Aiken County work inside the county. Because the Aiken Nonattainment Area encompasses the major urbanized areas, and the majority of commuters who live in Aiken County work within the urbanized areas, it is reasonable to conclude that the majority of the commuter flow is contained within the Aiken Nonattainment Area.

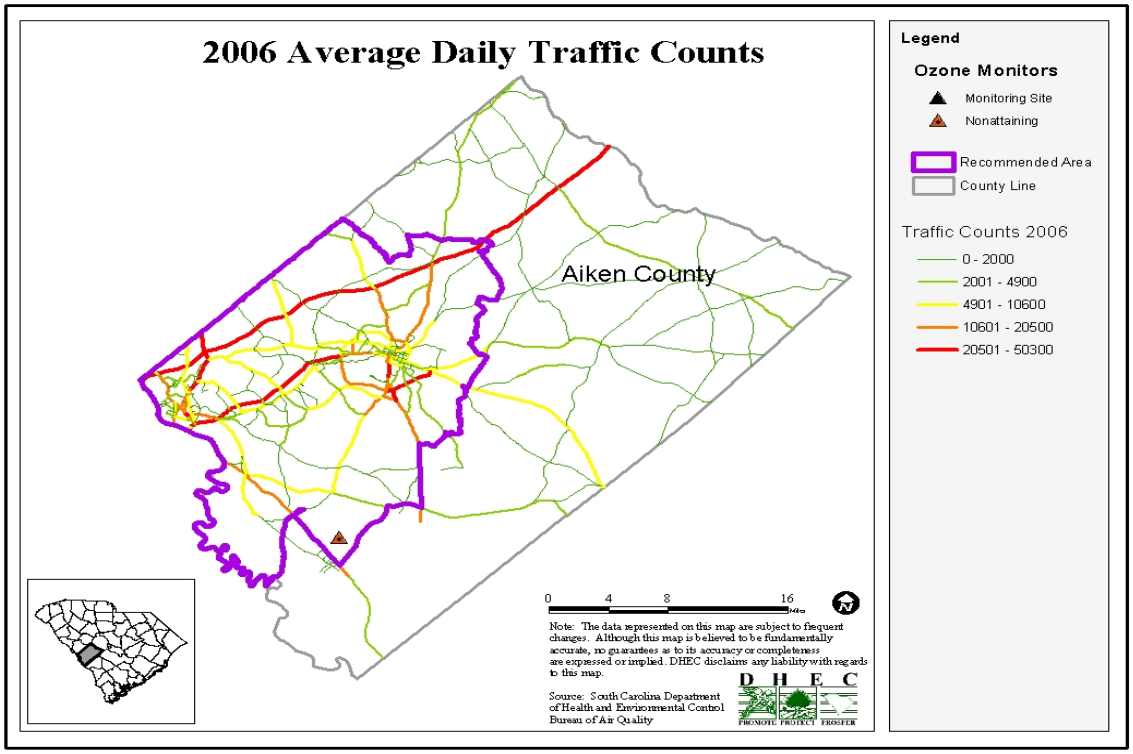
Table D-1: Aiken County Work Commute Patterns

	Workers Living in Aiken County by Work Location	Workers Employed in Aiken County by Residence Location
Abbeville	3	15
Aiken	44,243	44,243
Allendale	50	153
Anderson	10	0
Bamberg	37	174
Barnwell	912	1,451
Beaufort	45	19
Berkeley	19	0
Calhoun	16	12
Charleston	107	25
Cherokee	0	6
Clarendon	0	7
Colleton	8	45
Columbia Co. GA	1,522	3,844
Darlington	5	9
Dorchester	22	0
Edgefield	1,339	2,762
Fairfield	15	9
Florence	0	4
Georgetown	36	0
Greenville	39	54
Greenwood	26	32
Hampton	0	93
Jasper	0	12
Kershaw	7	0
Lancaster	3	0
Laurens	21	34
Lee	16	0
Lexington	1,428	613
McCormick	25	84
Newberry	31	18
Oconee	11	0
Orangeburg	107	265
Other States	563	148
Pickens	9	39
Richland	1,073	118
Richmond Co. GA	10,262	5,051

	Workers Living in Aiken County by Work Location	Workers Employed in Aiken County by Residence Location
Saluda	266	460
Spartanburg	13	20
Sumter	11	0
Unlisted GA Counties	428	633
York	38	11
Total	62,766	60,463

Traffic counts are collected at stations representing different road segments (Figure D-2). Each daily traffic count is multiplied by the length of the corresponding segment to calculate the DVMT. A 2006 GIS traffic count file compiled by SC DOT estimates the traffic count on I-20 at the western edge of the county to be 50,300. This is the highest traffic count estimate in the county. The highest count estimate outside of the Aiken Nonattainment Area, 28,600 is also found on I-20. With the exception of I-20, the highest count estimate outside of the Aiken Nonattainment Area is 13,200. The Aiken Nonattainment Area contains 82 percent of Aiken County's DVMT, and thus the majority of Aiken County's motor vehicle emissions.

Figure D-2: Aiken County 2006 Average Daily Traffic Counts



E. Growth Rates and Patterns

The following conclusions were drawn based on data from 2000, and population projections for 2020 and 2030 as contained in Table E-1. Based on the projected data for 2020 and 2030, the population of Aiken County will continue to grow. Since the Aiken Nonattainment Area includes the urbanized portion of Aiken County, it is concluded that the Aiken Nonattainment Area will encompass the majority of expected population growth.

Table E-1: Historical and Projected Population

Population Data	Aiken County
Population, 2000	142,552
Projected Population, 2020	177,510
Projected Population, 2030	196,500
Projected Population Growth, 2000 - 2020	34,958
Projected Population Growth, 2020 - 2030	18,990
Land Area (Sq. Miles)	1,080
Projected Population/Land Area (Sq. Miles) 2020	164.4
Urban Population, 2000	86,786
Percent Urban Population, 2000	60.9%
Rural Population, 2000	55,766
Percent Rural Population, 2000	39.1%

Figure E-1 shows population growth by historical and projected population data for Aiken County. Figure E-2 shows trends in population density. The Aiken Nonattainment Area captures the area's urban population. Therefore, the Department concludes that the Aiken Nonattainment Area contains the expected population and economic growth for the area in the coming years.

Figure E-1: Aiken County Historical and Projected Population, 2000 – 2030

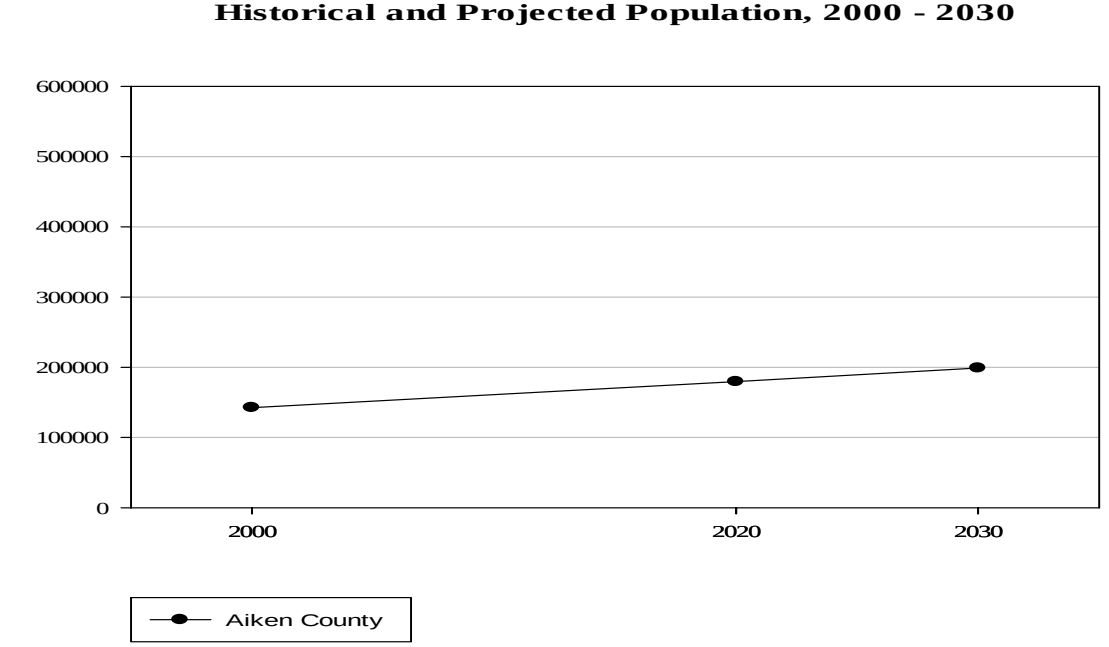
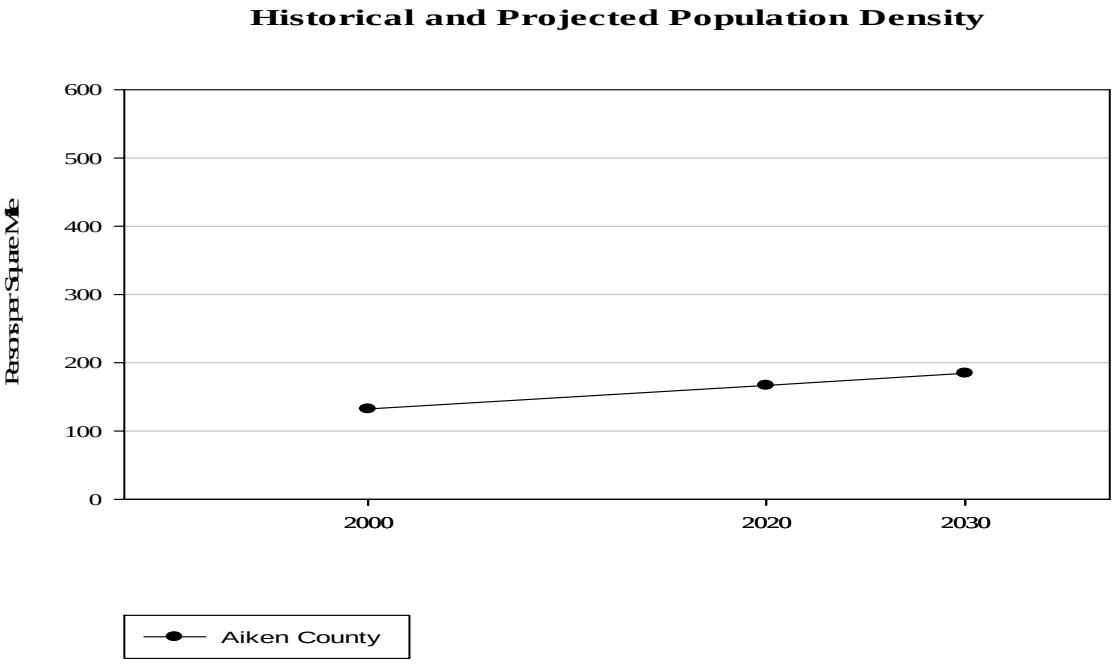


Figure E-2: Aiken County Historical and Projected Population Density



F. Meteorology

The wind rose in Figure F-1 was created using ozone season (April through October) wind data from the 2000 through 2004 meteorological data sets at Bush Field in Augusta, Georgia. This wind data represents the west-central portion of South Carolina. Unlike wind roses from other areas in or near South Carolina, the Augusta wind rose shows a wind direction bias from the north and south. This is due to the Savannah River valley which tends to funnel air flow from the north to the south or from the south to the north.

Figure F-1: Wind Rose for Augusta/Bush Field, GA

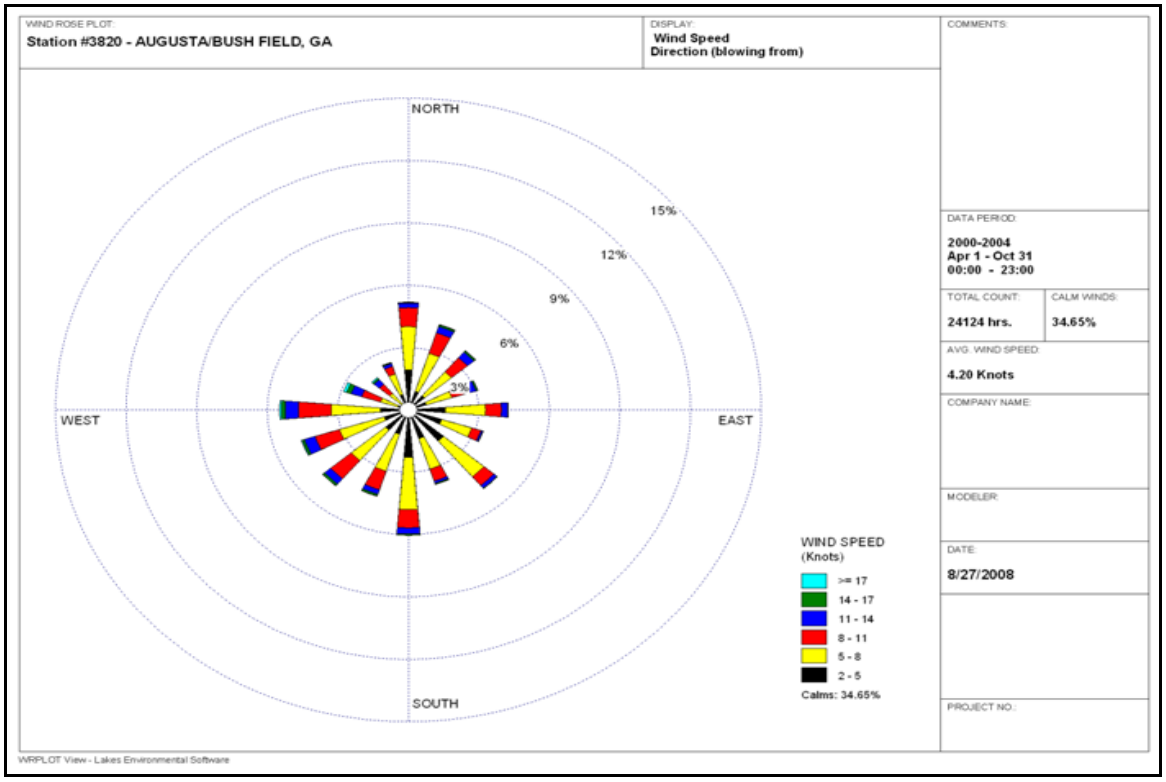
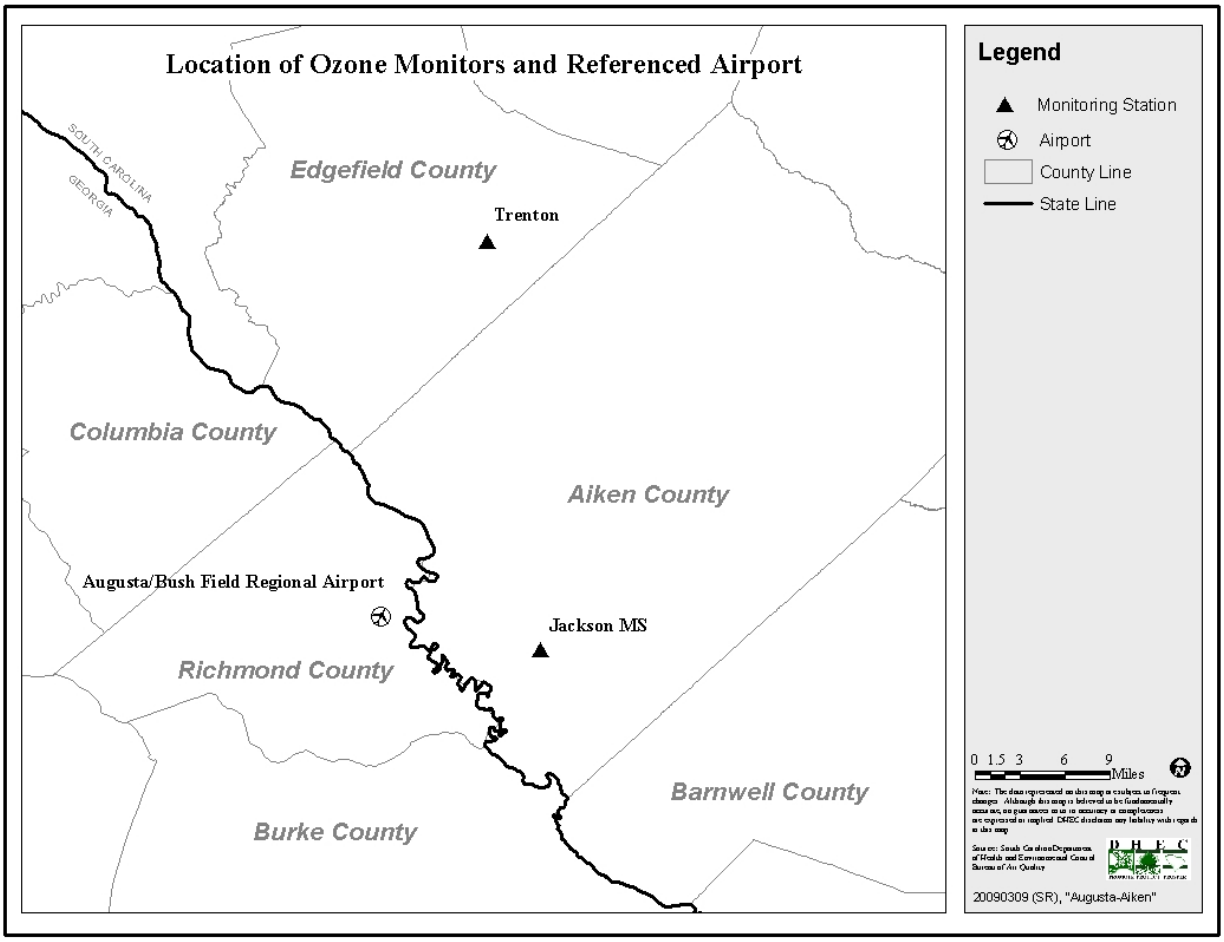


Figure F-2 shows the location of the Augusta Regional airport, where the wind rose data was collected, relative to the Jackson Middle School ozone monitoring station.

Figure F-2: Location of the Augusta Regional Airport Relative to the Jackson Middle School Ozone Monitoring Station



G. Reserved

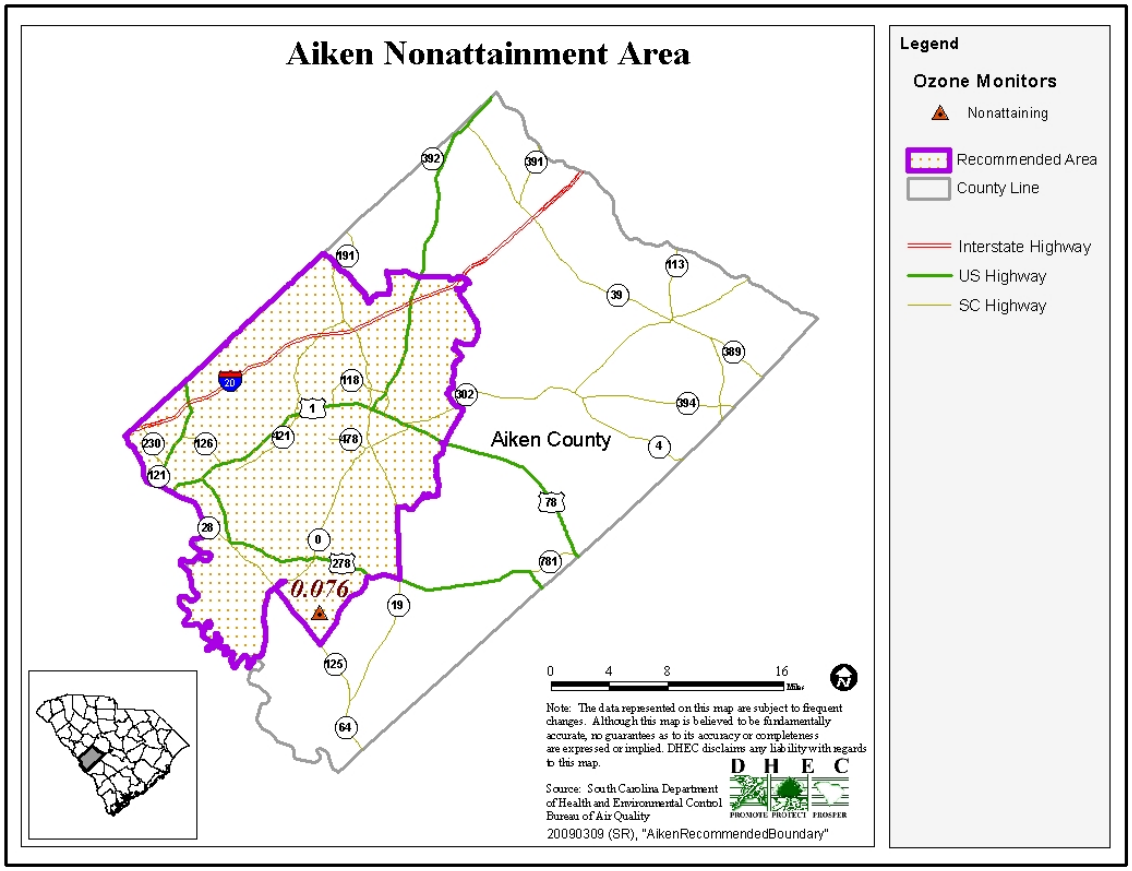
H. Jurisdictional Boundaries

Figure H-1 shows the Department's recommended Aiken Nonattainment Area that is the portion of Aiken County located within the area distinctly defined and known as the ARTS MPO and that portion of Aiken County to include the Jackson ozone monitoring station. The ARTS MPO is designated as the lead transportation planning agency within the Aiken County portion of the Aiken Nonattainment Area and shall have the primary responsibility for developing the Transportation Plan and the Transportation Improvement Program. The South Carolina Department of Transportation (SC DOT) is designated as the lead transportation planning agency for the Aiken Nonattainment Area outside of the ARTS MPO. For the purposes of transportation planning in the Aiken Nonattainment Area, the ARTS MPO and the SC DOT will work in consultation with the parties identified in the South Carolina Transportation

Conformity State Implementation Plan. If the area is designated as nonattainment, the transportation conformity interagency consultation partners, including the ARTS MPO, SC DOT, and the Department have a transportation conformity memorandum of agreement in place so there will be no delay in beginning the transportation conformity process. Transportation models for the area are specific to the ARTS MPO. Modeling for a nonattainment area larger than the MPO would require the development of more refined modeling outside the MPO area and thus, additional resources**.**

On February 16, 2009, the Department received a letter of support for the Aiken Nonattainment Area recommendation from the Aiken County Planning and Development Department. This letter, written on behalf of the South Carolina representatives to the ARTS MPO, stated their support of efforts allowing Aiken County and the state of South Carolina to work together, independent and separate, from Georgia to achieve air quality attainment goals, thereby resulting in an Aiken Nonattainment Area separate from the Georgia area.

Figure H-1: Aiken Nonattainment Area



Greenville/Pickens Nonattainment Area

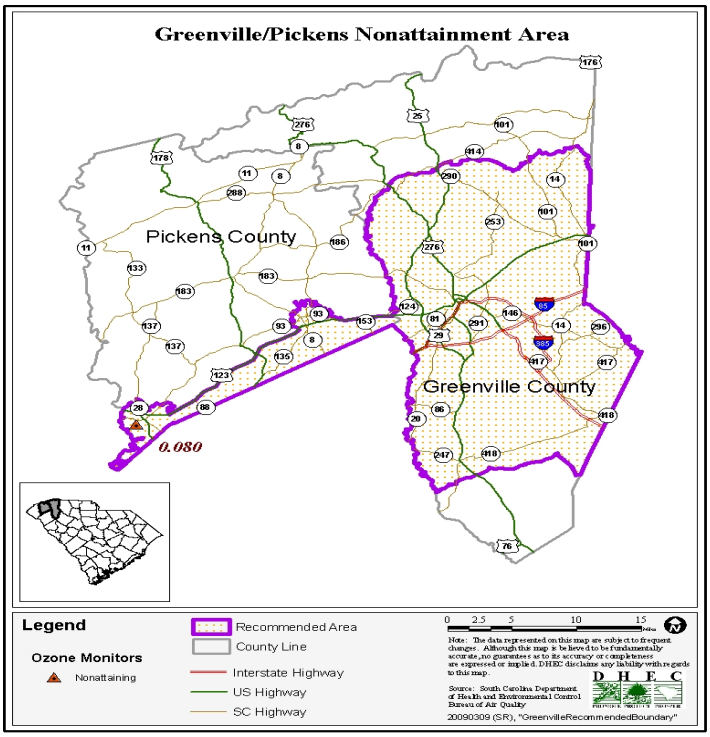
Overview

In accordance with the United States Environmental Protection Agency (EPA) suggested guidance for establishing nonattainment boundaries for the 2008 8-hour ground-level ozone National Ambient Air Quality Standards (Ozone NAAQS), the South Carolina Department of Health and Environmental Control (Department) is submitting its recommendation for Greenville and Pickens Counties.

The Department recommends that the portion of Greenville County encompassed by the boundaries of the Greenville-Pickens Area Transportation Study (GPATS) Metropolitan Planning Organization (MPO) and the contiguous area encompassing the Clemson ozone monitoring station (45-077-0002) be designated a nonattainment area for exceeding the Ozone NAAQS based on 2006 - 2008 monitoring data. The requirements of the State Implementation Plan (SIP) developed for each nonattainment area should be flexible enough to address each area's unique situation. The designation of a portion of Greenville and Pickens Counties would lead to greater efficiency in the development and implementation of local control measures and supports the Department's value of "local solutions to local problems." As the GPATS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity will be conducted much more effectively and efficiently. Transportation models have been developed for the area within this boundary. For areas outside the MPO, the South Carolina Department of Transportation (SC DOT) will have to develop more refined modeling capabilities which will be resource intensive. This area will be referred to as the Greenville/Pickens Nonattainment Area throughout the rest of this document.

The location and boundary of the area that is being recommended for nonattainment are shown in Figure 1.

Figure 1: Greenville/Pickens Nonattainment Area for the Ozone NAAQS



The factors utilized to recommend the boundary for this nonattainment area designation are as follows:

- Greenville County does not have an ozone monitoring station. However, neighboring Pickens and Oconee Counties have ozone monitoring stations that are representative of different areas of Greenville County. The Clemson ozone monitoring station, located in Pickens County, is representative of the central, urban area of Greenville County. The 2008 design value for the Clemson ozone monitoring station indicates exceedance of the Ozone NAAQS. The Long Creek ozone monitoring station (45-073-0001) is sited in the rural, high terrain of Oconee County, and is representative of northern, rural Greenville County. The 2008 design value for the Long Creek ozone monitoring station is 0.071 ppm, well below the Ozone NAAQS. Because these rural areas of Greenville and Pickens Counties are not causing or contributing to an exceedance of the Ozone NAAQS they are not included in the Greenville/Pickens Nonattainment Area boundary recommendation.
- The combined population of Greenville and Pickens Counties in 2000 was 490,373 and the Greenville/Pickens Nonattainment Area captures a population of 403,020. The Greenville/Pickens Nonattainment Area includes 82.2 percent of the population of the two counties. NO_x emissions from human activities, such as mobile source emissions and other area sources, are major contributors to ozone formation. Therefore, the Department concludes that,

based on the high percentage of population captured by the Greenville/Pickens Nonattainment Area, the recommendation is appropriate.

- Motor vehicle emissions are a significant contributor to ozone formation. Daily Vehicle Miles Traveled (DVMT) for 2006, collected by the South Carolina Department of Transportation, are estimated to be 9.67 million within the Greenville/Pickens Nonattainment Area, and 1.51 million in the remainder of Greenville and Pickens Counties. The Department has concluded the Greenville/Pickens Nonattainment Area contains 86.5 percent of Greenville County's Daily Vehicle Miles Traveled (DVMT), thus the majority of Greenville County's motor vehicle emissions.
- According to the 2000 U.S. Census, 87.8 percent of workers who live in Greenville and Pickens Counties work within those two counties. The Greenville/Pickens Nonattainment Area encompasses the majority of the urban area, and the majority of the commuters who live in Greenville and Pickens Counties work within the urban area. Automobiles are a major contributor of NO_x emissions and to ozone formation. Therefore, the Department concludes the majority of the commuter flow, and subsequently a majority of the NO_x emissions from vehicles, is contained within the Greenville/Pickens Nonattainment Area.
- The center of economic development and retail trade, 79.67 percent of the manufacturing establishments, and most of the urban area in the two counties is located within the Greenville/Pickens Nonattainment Area. According to the 2006 American Community Survey, 82.7 percent of the workers sixteen years old or older in Greenville County drove alone to work, and only 0.5 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Greenville/Pickens Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.
- Facilities holding Title V permits are major sources of emissions that contribute to ozone formation. The Department has concluded that the Greenville/Pickens Nonattainment Area captures 80.0 percent of the Title V point source NO_x emissions and 96.26 percent of the Title V point source VOC emissions in Greenville and Pickens Counties.
- South Carolina has provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing emissions, do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2005, 2006, and 2007, the areas in South Carolina designated as nonattainment for the 1997 8-hour ozone NAAQS with the effective date deferred were redesignated to attainment. Greenville was one of those areas. Each of the diverse stakeholders joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.
- Greenville County was one of 45 counties across South Carolina that participated in the Early Action Compact (EAC) process and while the formal process has ended, our partners continue to support local efforts that improve air quality. A few examples of the stakeholders' commitment to air quality include:
    - Greenville County was recognized for their outstanding accomplishments in improving air quality and reducing greenhouse gas emissions through the EPA's Eighth Annual Clean Air Excellence Awards.

- Greenville County has partnered with public and private entities to host campaign activities such as the "Gas Can Exchange", and a "Car Care Clinic." The second Lawn Mower Exchange will be held in April 2009. Focusing on "Greening Your Yard," the event will include the sale of electric yard equipment and native plants.
- Greenville County Council passed ordinances updating Zoning Ordinance and Land Development Regulations; changes focus on adding flexibilities to encourage cluster developments, neo-traditional development and mixed-use developments.
- A regional organization, Upstate Forever, sponsored the conference “Creating Partnerships for Healthy Communities” to discuss issues related to school siting, facilities planning and school transportation.
- The City of Greenville reduced vehicle emissions by implementing the Woodruff Road Signal Timing Project. This synchronization of lights will reduce idling times and traffic congestion on the busy Woodruff Road corridor. Plans are to extend this project to the other congested areas of the city. Efforts continue to upgrade traffic lights throughout the city to energy efficient LED.
- The City of Greenville held its first “Bike2Work Day” event in May 2007, installed 24 bicycle racks throughout downtown, and expanded the trolley route to serve the northern part of downtown. The city also completed a city-wide Trails & Greenways Master Plan to develop a framework for building an integrated system of pathways that will link residents to the outdoors. The trails and greenways will serve transportation and recreation needs and help to encourage quality, sustainable economic growth.
- The City of Greenville vehicle fleet includes trucks running on compressed natural gas that are used daily for yard waste collection, electric vehicles assigned to the parking control officers and beautification crews, and a hybrid-electric vehicle used by the Building and Zoning Administrator. The City continues to expand its fleet of hybrid-electric and alternative fueled vehicles.
- The City of Fountain Inn adopted a Parking and Street Connectivity Ordinance that reduces the parking requirements by more than half and allows for more pedestrian oriented connectivity for new developments.
- Fountain Inn Elementary School held a kickoff for B^2 anti-idling program and ground-breaking for a new outdoor classroom/courtyard. School policy prohibits school bus idling and encourages reduction of car idling. Tree plantings in the new courtyard will provide an outdoor classroom, shade building to reduce energy needs, reduce lawnmower emissions, and reduce pollution from loose soil near school intake vents.
- The B^2 anti-idling program was expanded to several schools within Greenville County, including: Sevier Middle School, Woodland Elementary School, and Oakview Elementary School. Reported results from Woodland Elementary revealed idling decreased from 25 percent to 1 percent of the cars and bi-weekly monitoring indicates that only drivers with medical conditions are consistently idling (to maintain climate control).
- Two Greenville County schools, Augusta Circle Elementary and Fountain Inn Elementary received federal money for the "Safe Routes to School Program". This program provides funding for programs and activities to enhance bicycle and pedestrian

safety. Ninety percent of the funds awarded will be used for infrastructure improvements such as engineering and construction projects to include sidewalks, pathways, intersection improvements, and signage.

- Michelin North America, Inc., based in Greenville is part of EPA's SmartWay Transport Partnership, an innovative collaboration between EPA and the freight industry to increase energy efficiency while significantly reducing greenhouse gases and air pollution.
- The Cliffs Cottage at Furman University is Southern Living magazine's first sustainable Showcase Home built to Leadership in Energy Efficiency and Design (LEED) certification standards.
- GPATS assisted the Department in making necessary revisions to the State Implementation Plan, specifically the Transportation Conformity Memorandum of Agreement (MOA) outlining the interagency consultation procedures for determining conformity of transportation plans, programs and projects. As a signatory to the MOA (June 2008), the necessary interagency consultation procedures outlined in the MOA will be in place should the area be designated nonattainment for any applicable criteria pollutant.

The activities being conducted by the local, county, and regional entities confirm that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of local and regional controls. In fact, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, smaller boundaries preserve the flexibility of implementing strategies, enforceable and directionally sound, tailored to the respective area. Participation in the EAC process proved local stakeholders have an impact on reducing the formation of ozone.

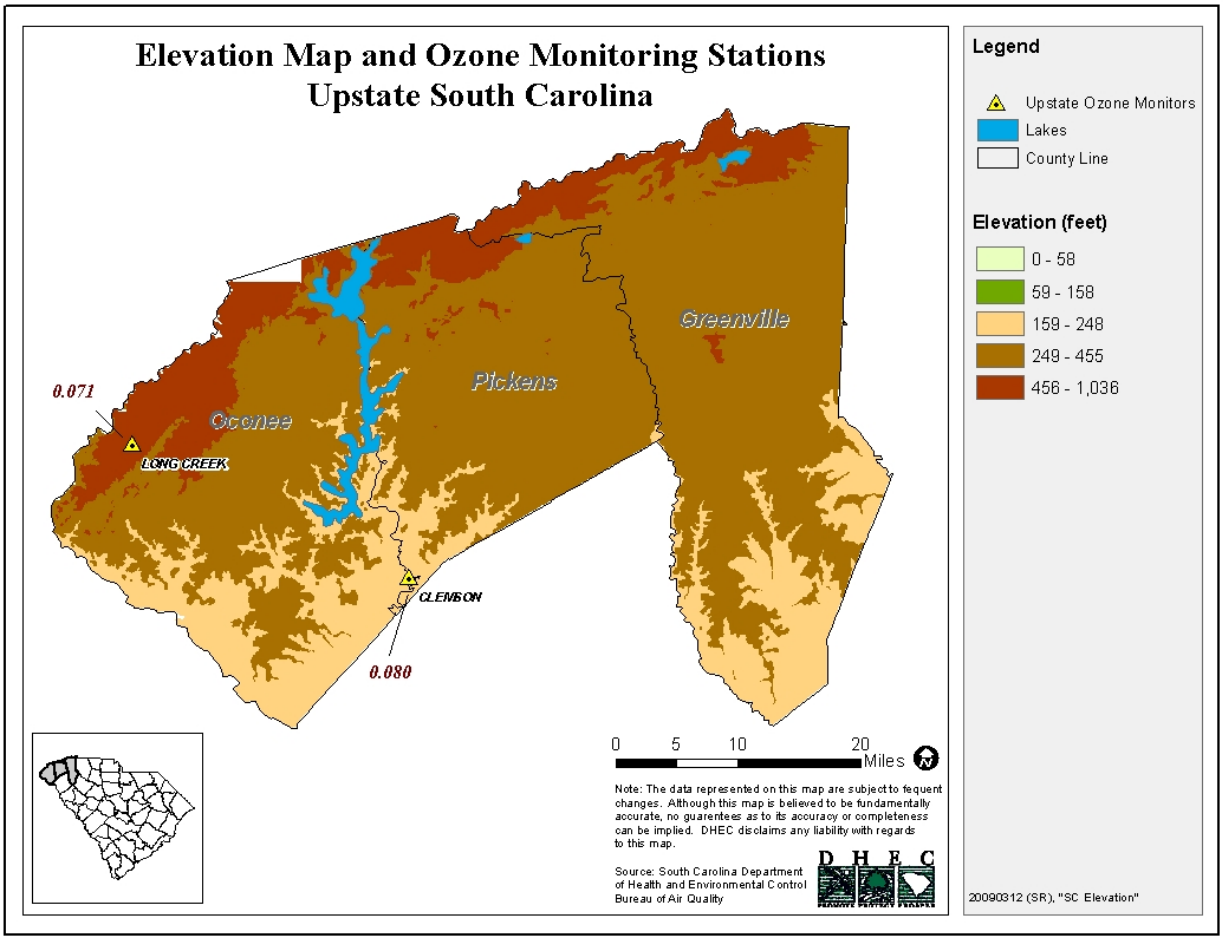
- Section 48-1-50 (Powers of Department) of the South Carolina Pollution Control Act gives the Department the authority to seek emission reductions from any source, regardless of where it is located, if it adversely impacts air quality. The Department currently has regulations that are more stringent and protective than federal requirements. These actions, such as addressing NO_x emissions from stationary sources, demonstrate our statutory authority and ability to implement controls to improve air quality statewide. A nonattainment boundary does not provide any additional authority to address emissions where appropriate and needed.
- The Department operates a comprehensive ozone-forecasting program, based on six forecast zones which cover 34 counties and more than 3.3 million people, approximately 83% of South Carolina citizens. Greenville and Pickens Counties are in the Upstate Forecast Zone. Greenville and Pickens County citizens are informed on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as appropriate to better protect their health. The availability of this forecast for all of Greenville and Pickens Counties confirms that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of this program. Therefore, the Department concludes ozone forecasting covers a broad area, so everyone inside and outside of the Greenville/Pickens Nonattainment Area within Greenville and Pickens Counties and the surrounding areas will be given the same precautions.

The Department has evaluated monitoring data, population, urbanization and growth, traffic, and point source emissions data to develop the boundary recommendation for the Greenville/Pickens Nonattainment Area. The following details support the recommendation.

A. Air Quality Data

Greenville County does not have an ozone monitoring station; however, neighboring Pickens and Oconee Counties have ozone monitoring stations that are representative of Greenville County. The Long Creek ozone monitoring station in Oconee County, which is sited in rural, high terrain, is representative of northern, rural Greenville County, while the Clemson ozone monitoring station in Pickens County is representative of the central, urban area of Greenville County. Figure A-1 shows the location of the Clemson (45-077-0002) ozone monitoring stations with in the Greenville MSA.

Figure A-1: Elevation Map and Ozone Monitoring Stations – Upstate South Carolina



The Long Creek ozone monitoring station is located near a forested area at Round Mountain Fire Tower in northwest Oconee County. The area represented by this sampler is dominated by area sources and was established on May 5, 1983. It is a general-background monitor for measurement of ozone concentration and provides a unique vantage for monitoring the impacts of transported pollutants. The Long Creek ozone monitoring station is sited in rural, high terrain, and is better representative of northern, rural Greenville County. The 2008 design value for the Long Creek monitor is 0.071 ppm which indicates attainment with the Ozone NAAQS.

The Clemson ozone monitoring station is located on the grounds of Clemson University near the western border of Pickens County. The surrounding area of the monitoring site is agricultural. The site was established as a general-background monitor on July 20, 1979. The area represented by this monitor is dominated by area sources. The Clemson ozone monitoring station is representative of the central, urban area of Greenville County. The 2008 design value for the Clemson ozone monitoring station is 0.080 ppm which indicates exceedance of the Ozone NAAQS.

Figure A-2 presents the 2000 - 2008 quality assured 8-hour ozone monitoring data for Pickens 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. Figure A-2 shows that the design values for the Long Creek ozone monitoring station declined from 2000 to 2006 and remained almost steady from 2006 to 2007. The same graph shows that the design values for the Clemson ozone monitoring station declined from 2000 to 2005 then increased slightly from 2005 to 2007.

Figure A-2: Design Values Trends 2000 – 2008

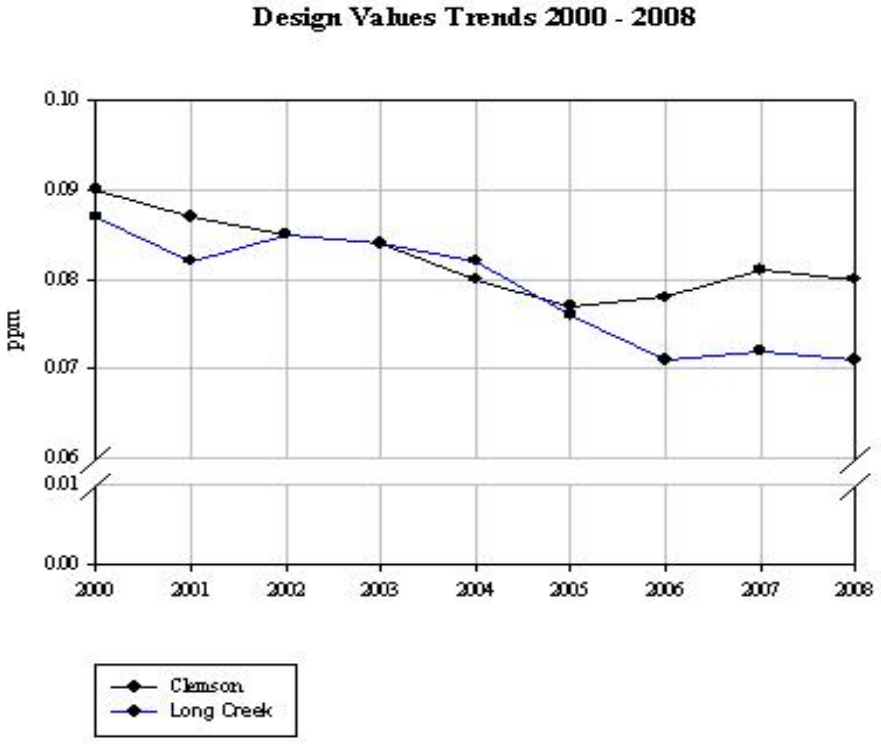
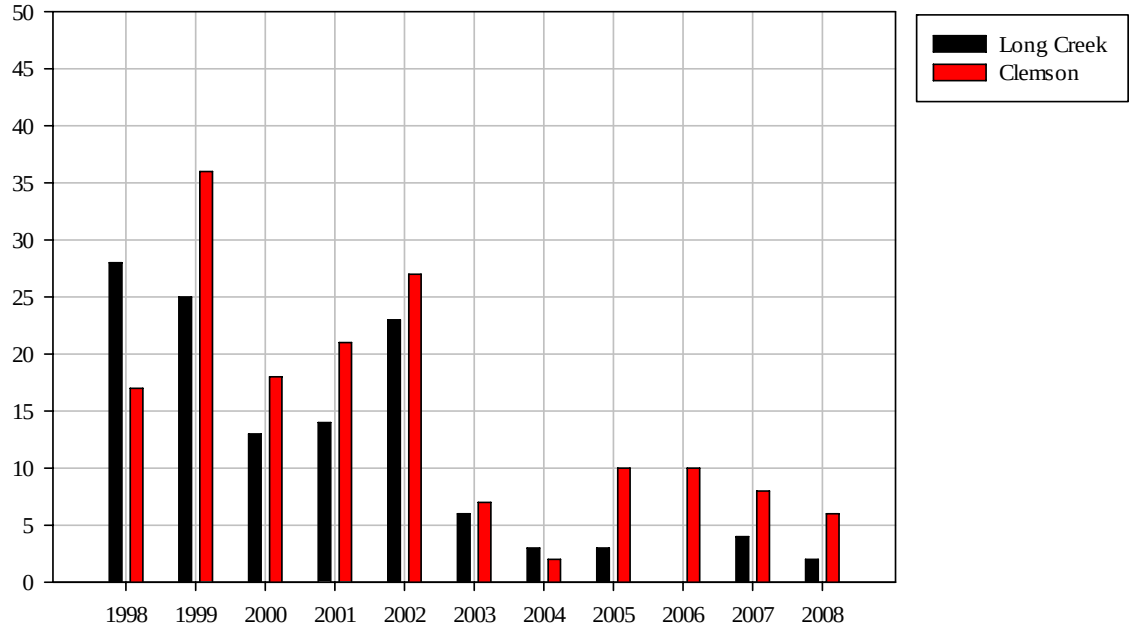


Figure A-3 contains the number of days when the daily 8-hour maximum ozone concentration was above 0.075 ppm for the Long Creek ozone monitoring station and Clemson ozone monitoring station during the past ten years. The graphs show a general decrease in the number of days when the maximum 8-hour ozone concentrations were above 0.075 ppm for both monitors. During the late 1990's through 2002 8-hour ozone exceedance days were more common. The number of exceedance days has been fairly low since 2003.

Figure A-3: Number of Days Ozone Concentration Above 0.075 ppm

Number of Days Ozone Concentrations Above 0.075 ppm



B. Emissions Data

It should be noted that South Carolina is a NO_x limited state. On average, about 70 percent of the VOC emissions come from biogenic sources. To evaluate the emissions in Greenville County and neighboring Pickens County, South Carolina determined oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions using the best and most recent data available for the various source sectors. The source sectors that were evaluated include point, non-point, and on-road and non-road mobile sources. Point source data is state-generated data representing calendar year 2005. All other sectors are a combination of state-generated and EPA-generated data in its final National Emissions Inventory (NEI) form representing calendar year 2002. 2002 data was used rather than 2005 for the other sectors since EPA had de-emphasized the 2005 NEI to focus efforts on the reinvention of the 2008 inventory. Because of the focus on the 2008 NEI, there was no real attempt to generate 2005 data for sectors other than point sources. Other source sector emissions are largely population based. This means they are not likely to greatly change on an annual basis. However, point sources were thoroughly evaluated in 2005 to account for significant changes in emissions. South Carolina believes the 2002 data is still representative of those sectors for 2005.

Figures B-1 and B-2 show the percentages of emissions from each of the source sectors.

Figure B-1: NOx Source Sector Emissions

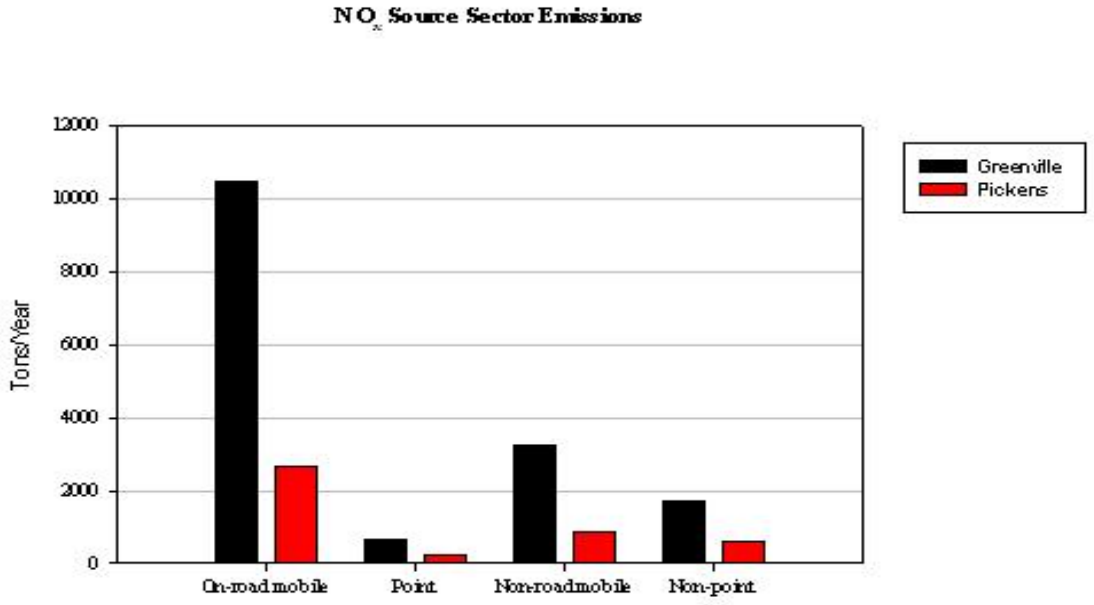
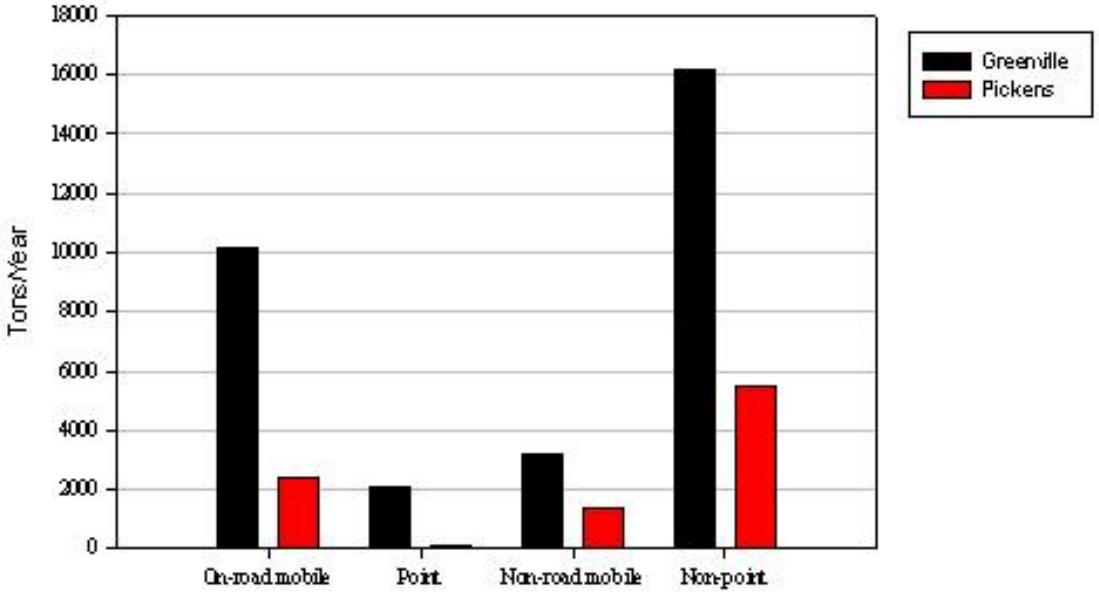


Figure B-2: VOC Source Sector Emissions



Figures B-3 and B-4 show the NO_x and VOC Title V point sources in operation in Greenville and Pickens Counties. There are a total of 27 Title V NO_x point source facilities in Greenville and Pickens Counties with 21 of the facilities located in the nonattainment boundary. There are a total of 27 Title V VOC point source facilities in Greenville and Pickens Counties with 21 of the facilities located in the nonattainment boundary. These sources account for 80.0 percent of the total Title V point source NO_x emissions and 96.27 percent of the total Title V point source VOC emissions for Greenville and Pickens Counties.

Figure B-3: Title V Source NO_xEmissions

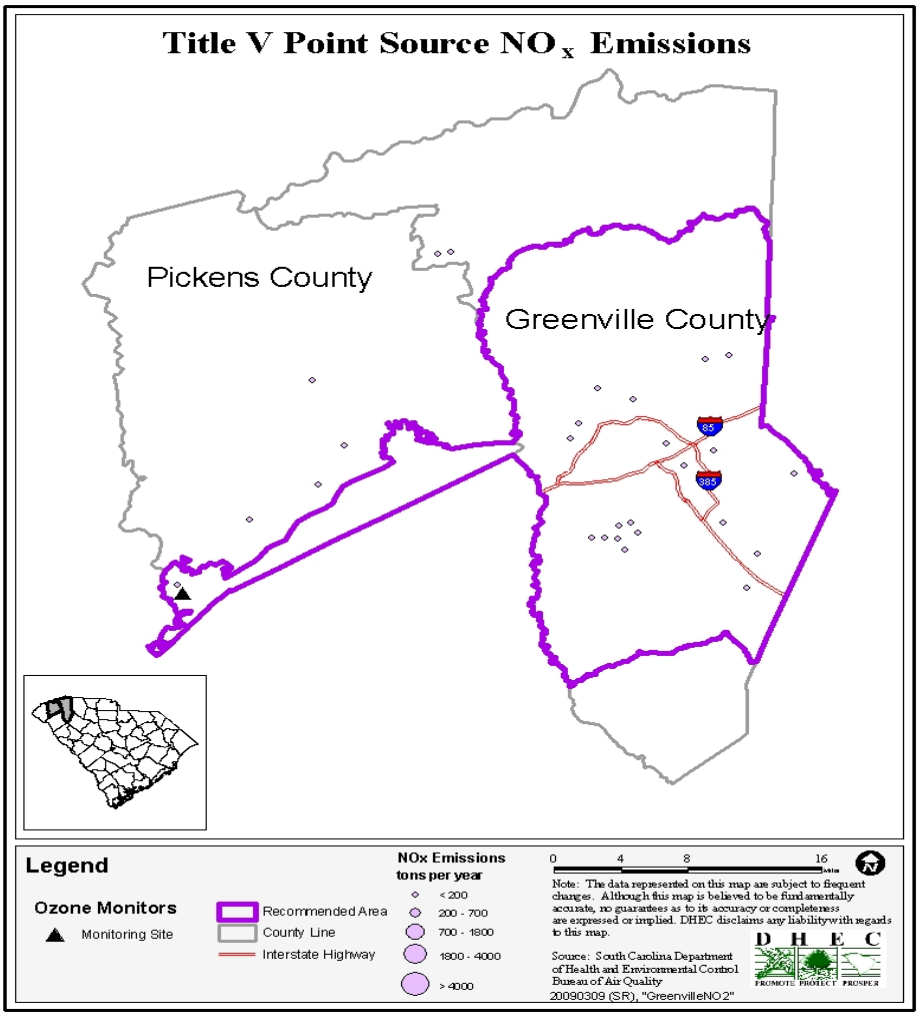
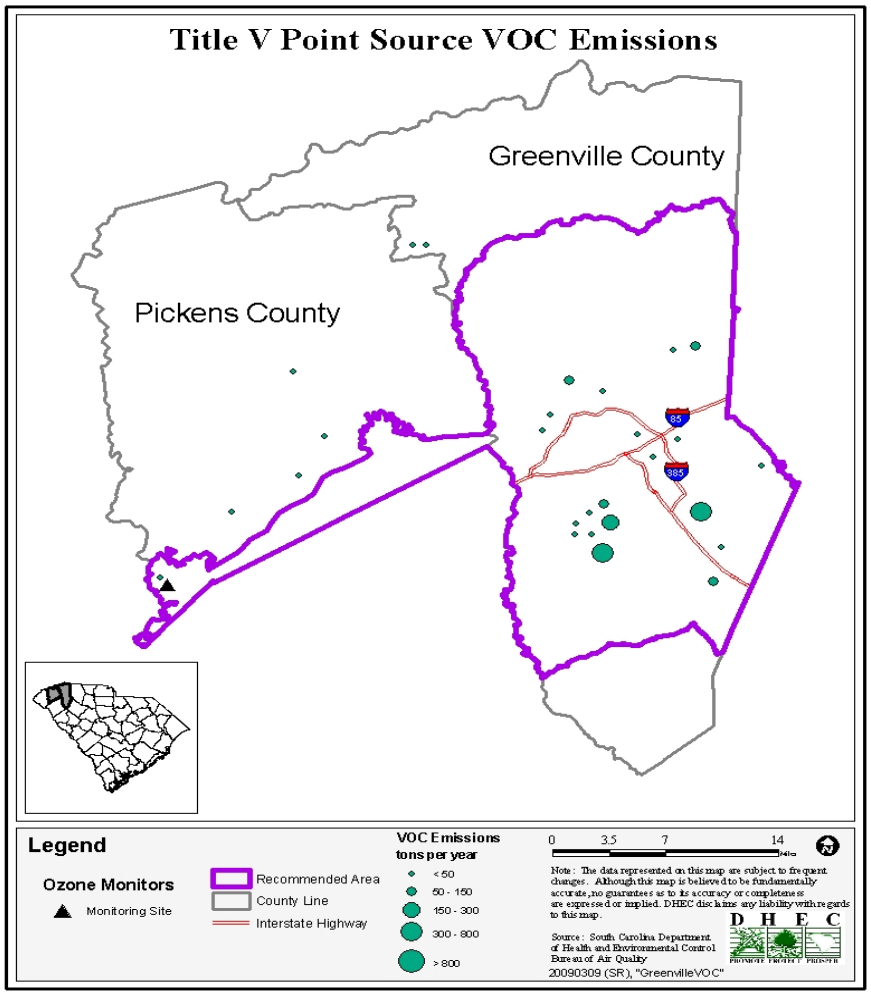


Figure B-4: Title V Source VOC Emissions



Tables B-1 and B-2 list the Greenville County Title V facilities that contribute to the NO_x and VOC emissions. An asterisk next to the name indicates that this facility is captured by the Greenville/Pickens Nonattainment Area.

Table B-1: Title V Source NO_x Emissions

Greenville and Pickens County Facilities	Permit Number	2005 Est. Emissions Tons/Year
Clemson University*	1880-0010	94.86
Caterpillar Fountain Inn*	1200-0246	87.88
Michelin NA U.S.1 Greenville*	1200-0039	78.14
Shaw Industries Group Inc Plant 8T	1880-0007	74.83
Cytec Acrylonitrile Based Carbon Fibers*	1200-0374	68.24
Mitsubishi Polyester Film LLC*	1200-0026	58.17
Caraustar: Taylors*	1200-0013	49.25
Milliken Gayley Mill	1200-0029	44.23
Bob Jones University*	1200-0245	39.04
3M Film Plant*	1200-0073	20.80
GE: Greenville*	1200-0094	15.83
Pickens County Solid Waste Department	1880-0062	15.43
Cryovac Simpsonville (Sealed Air Corp) *	1200-0024	15.09
Ethox Chemicals, LLC*	1200-0171	6.94
Lockheed Martin Aircraft Center*	1200-0149	5.35
Nutra Manufacturing Greenville*	1200-0127	5.34
Milliken Enterprise Plant	1200-0060	3.01
Reynolds Chemical: Greenville*	1200-0247	2.35
3M Tape Plant*	1200-0148	2.21
Milliken Judson Mill*	1200-0028	1.88
Para Chem Southern Inc.*	1200-0099	1.49
One World Industries	1880-0006	1.33
Morgan AM&T*	1200-0121	1.26
Cytec Pitch Based Carbon Fibers Plant*	1200-0373	0.75
Engineered Products Furman Hall Road*	1200-0181	0.28
Enoree Landfill*	1200-0414	0.25
Flexiwall: 208 Carolina Drive	1880-0040	0.015
Total Tons of Emissions		694.24

*Located within Greenville/Pickens Nonattainment Area

Table B-2: Title V Source VOC Emissions

Greenville and Pickens County Facilities	Permit Number	2005 Est. Emissions Tons/Year
Michelin NA U.S.1 Greenville*	1200-0039	534.45
Cryovac Simpsonville (Sealed Air Corp) *	1200-0024	446.35
3M Tape Plant*	1200-0148	210.94
Mitsubishi Polyester Film LLC*	1200-0026	131.08
Caterpillar Fountain Inn*	1200-0246	58.59
3M Film Plant*	1200-0073	56.35
Engineered Products Furman Hall Road*	1200-0181	55.18
Reynolds Chemical: Greenville*	1200-0247	45.12
Cytec Acrylonitrile Based Carbon Fibers*	1200-0374	41.49
Morgan AM&T*	1200-0121	41.15
Shaw Industries Group Inc Plant 8T	1880-0007	36.58
Bob Jones University*	1200-0245	30.46
Para Chem Southern Inc.*	1200-0099	21.63
Clemson University*	1880-0010	20.80
Nutra Manufacturing Greenville*	1200-0127	19.72
Enoree Landfill*	1200-0414	16.50
GE: Greenville*	1200-0094	11.56
Flexiwall: 208 Carolina Drive	1880-0040	11.28
Lockheed Martin Aircraft Center*	1200-0149	10.62
Cytec Pitch Based Carbon Fibers Plant*	1200-0373	8.41
Milliken Enterprise Plant	1200-0060	7.56
Milliken Gayley Mill	1200-0029	7.51
One World Industries	1880-0006	5.75
Milliken Judson Mill*	1200-0028	5.17
Ethox Chemicals, LLC*	1200-0171	3.79
Caraustar: Taylors*	1200-0013	1.11
Pickens County Solid Waste Department	1880-0062	0.00075
Total Tons of Emissions		1839.17

*Located within Greenville/Pickens Nonattainment Area

C. Population Density and Degree of Urbanization

According to the U.S. Census Bureau, urban is defined as all territory, population, and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas and urban clusters. Rural is defined as all territory, population, and housing units located outside of urbanized areas and urban clusters.

Figure C-1 shows that the Greenville/Pickens Nonattainment Area contains the majority of the urban area of Greenville and Pickens Counties. Based on the U.S. 2000 census population, the population of the Greenville/Pickens Nonattainment Area is estimated to be 403,020, which is 82.2 percent of the

population of the two counties. The portion of Greenville and Pickens Counties not captured in the boundary is mostly rural in nature and the Greenville/Pickens Nonattainment Area captures the majority of the population within the county. Figure C-1 shows the extent of the urban areas in Greenville County.

Figure C-1: Greenville and Pickens County Urban Areas

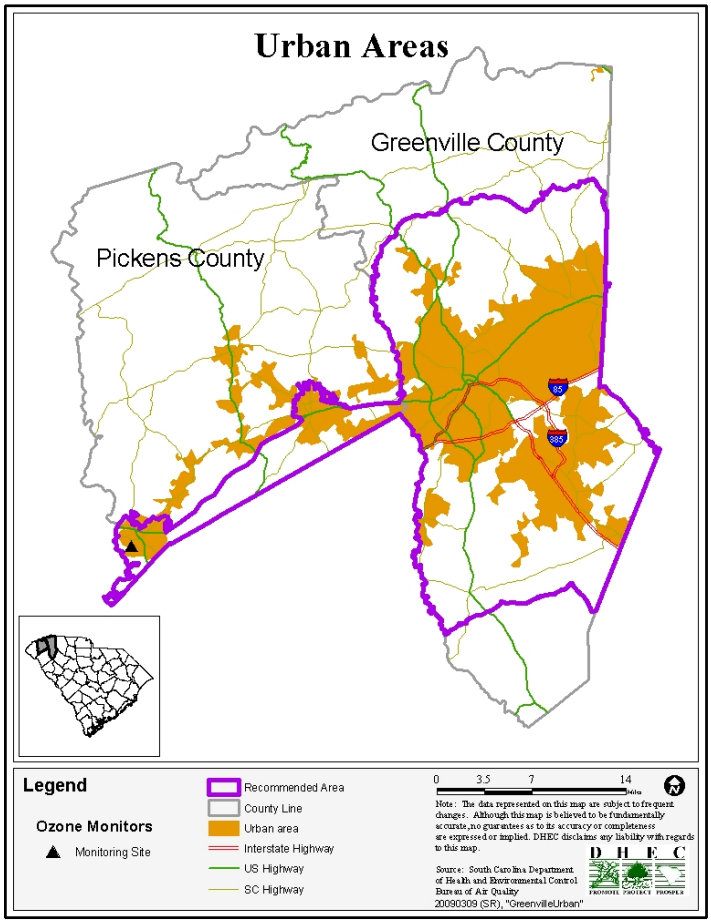


Table C-1 contains the population and land area data for the combined Greenville and Pickens Counties and the Greenville/Pickens Nonattainment Area.

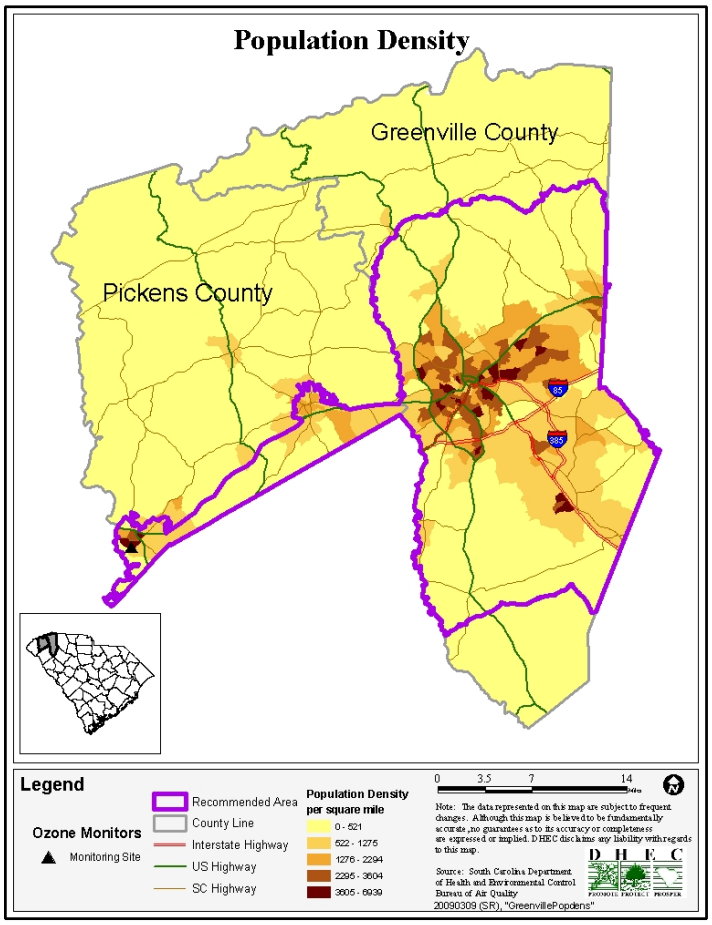
Table C-1: Total Population, Land Area, and Urban/Rural Population, 2000

Greenville and Pickens Counties		
	Combined Counties	**Greenville/Pickens Nonattainment Area**
Population	490,373	403,020
Land Area (Square Miles)	1,306.40	541.43
Persons per Square Mile	375.36	744.37
Urban Population	379,403	
Percent Urban Population	77.37%	

Greenville and Pickens Counties		
	Combined Counties	**Greenville/Pickens Nonattainment Area**
Rural Population	110,970	
Percent Rural Population	22.63%	

Figure C-2 shows the population density for Greenville and Pickens Counties relative to the Greenville/Pickens Nonattainment Area. The land area within the Greenville/Pickens Nonattainment Area is estimated to be 541.43 square miles. Using the estimated population and land area of the Greenville/Pickens Nonattainment Area, the population density of this nonattainment area is calculated to be 744.37 persons per square mile, which is nearly twice the density of the combined Greenville and Pickens Counties. Based on this high population density within the Greenville/Pickens Nonattainment Area, designation of partial counties for the Greenville/Pickens Nonattainment Area is appropriate.

Figure C-2: Greenville and Pickens County Population Density



Greenville and Pickens Counties have a combined 1,306 square miles of land area. Eighty-two percent of the Greenville and Pickens County population resides inside of the Greenville/Pickens Nonattainment Area. The land area outside of the Greenville/Pickens Nonattainment Area contains 59 percent of the total land area of the counties. 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. Since the area outside of the Greenville/Pickens Nonattainment Area represents such a low percent of the population and population density, it can be concluded that this area does not appreciably impact air quality.

According to the U.S. Census Bureau, manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction. Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included. The retail trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Manufacturing is the largest employment sector in both Greenville and Pickens Counties. The second and third largest sectors in Greenville County are administration, support, waste management, and remediation services, and retail trade. The second and third largest sectors in Pickens County are retail trade and accommodation and food services. Tables C-2 and C-3 contain a comparison of manufacturing data for Greenville and Pickens Counties and the Greenville/Pickens Nonattainment Area, and employment data for Greenville and Pickens Counties' three largest business sectors. The employment data in Table C-2 is taken from the U.S. Census. The manufacturing data in Table C-3 is taken from the 2003-2004 South Carolina Industrial Directory.

Table C-2: Employment in the Three Largest Business Sectors, 2006

	Number of Employees	Number of Establishments
Greenville County		
Manufacturing	32,514	589
Administration, Support, Waste Management, Remediation Services	31,342	718
Retail Trade	25,843	1,839
Pickens County		
Manufacturing	6,777	122
Retail Trade	4,624	369
Accommodation and Food Services	3,868	226

Table C-3: Manufacturing Patterns in 2003

Greenville and Pickens Counties	Nonattainment Area	Combined Counties	Percent in Nonattainment Area
Employees	50,363	64,402	78.20%
Establishments	632	782	79.67%

The center of economic development and retail trade, the majority (632 out of 782) of manufacturing establishments, the majority of manufacturing employees (50,363 out of 64,402) and most of the county's urban area are located within the Greenville/Pickens Nonattainment Area. According to the 2006 American Community Survey, 82.7 percent of the workers sixteen years old or older in Greenville and Pickens Counties drove alone to work, and only 0.5 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Greenville/Pickens Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.

D. Traffic and Commuting Patterns

Figure D-1 shows the interstate highways, I-85 and I-385, located within the Greenville/Pickens Nonattainment Area. The interstate highway I-85 is the major corridor of travel between Greenville and Spartanburg Counties, and I-385 is the interstate spur between I-26 and Greenville. U.S Highways 25 and 276 run north and south and U.S. 29 east to west through Greenville County, and U.S. 123 runs east to west through both Greenville and Pickens Counties. There are also numerous state and secondary roads in the area that connect the larger towns.

The Greenville/Pickens Nonattainment Area includes the GPATS MPO, responsible for transportation planning in the area. As the GPATS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity will be conducted much more effectively and efficiently. Transportation models have been developed for the area within this boundary. For areas outside the MPO, SC DOT will have to develop more refined modeling capabilities which will be resource intensive. The designation of the Greenville/Pickens Nonattainment Area as recommended provides greater opportunity to link transportation planning to air quality improvement goals.

Figure D-1: Greenville and Pickens Counties Highway System

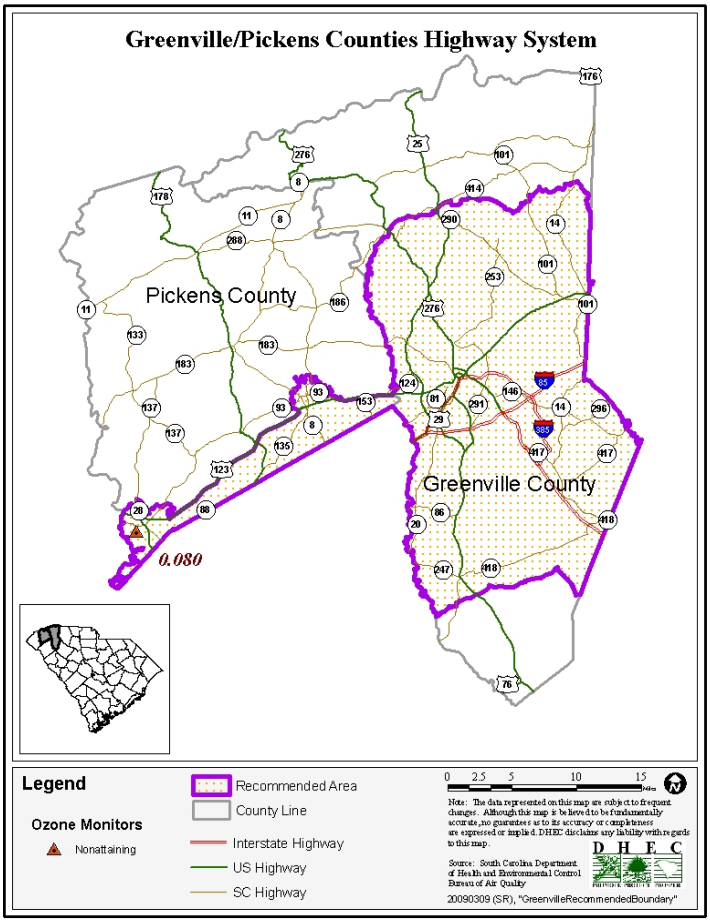


Table D-1 shows where Greenville and Pickens County residents commute to work. The table shows that approximately 87.8 percent of workers that live in Greenville and Pickens Counties also work within the two counties. Because the Greenville/Pickens Nonattainment Area encompasses the major urban areas, and the majority of commuters who live in Greenville and Pickens Counties work within the urban areas, it is reasonable to conclude that the majority of the commuter flow is contained within the Greenville/Pickens Nonattainment Area.

Table D-1: Greenville and Pickens Counties Work Commute Patterns

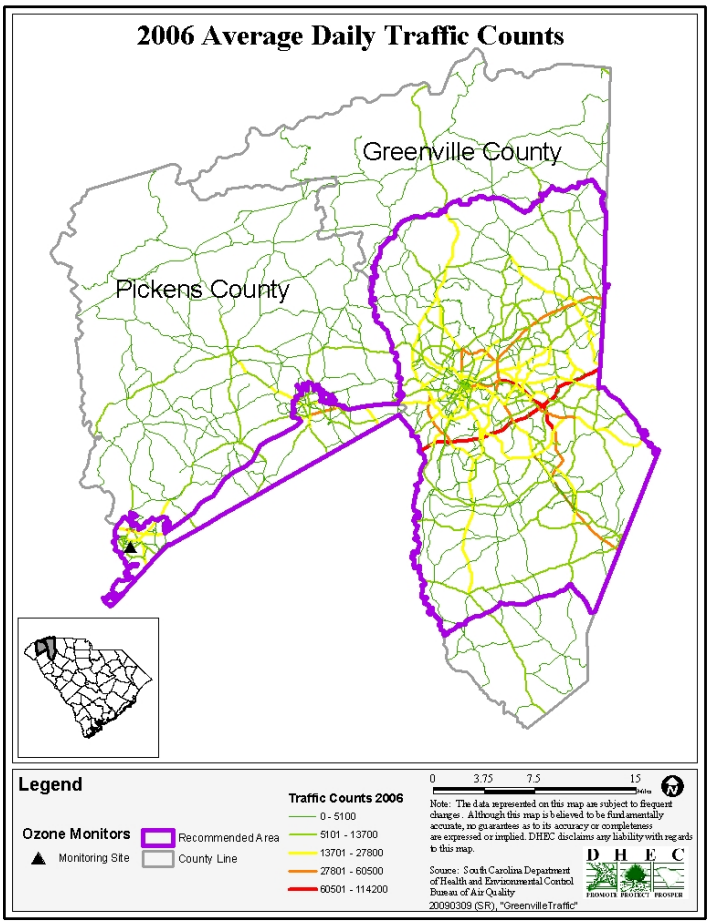
	Workers Living in Greenville and Pickens Counties by Work Location	Workers Employed in Greenville and Pickens Counties by Residence Location
Abbeville	73	612
Aiken	93	48
Anderson	7,015	18,066
Barnwell	7	7
Beaufort	41	20
Berkeley	9	10

	Workers Living in Greenville and Pickens Counties by Work Location	Workers Employed in Greenville and Pickens Counties by Residence Location
Calhoun	0	8
Charleston	204	150
Cherokee	266	447
Chester	11	40
Clarendon	0	7
Colleton	20	18
Darlington	17	30
Dorchester	40	35
Edgefield	3	10
Fairfield	0	5
Florence	27	53
Georgetown	0	34
Greenville	177,001	164,472
Greenwood	445	924
Hampton	8	3
Horry	19	37
Kershaw	7	66
Lancaster	42	8
Laurens	1,725	8,100
Lee	18	6
Lexington	148	146
McCormick	6	53
Marion	20	9
Newberry	78	98
Oconee	2,727	5,634
Orangeburg	0	8
Pickens	31,517	28,951
Other	105	0
Other States	3,305	3,853
Richland	303	240
Saluda	6	46
Spartanburg	11,989	198
Sumter	22	28
Union	167	300
Williamsburg	0	14
York	106	87
Total	237,461	232,881

Traffic counts are collected at stations representing different road segments (Figure D-2). Each daily traffic count is multiplied by the length of the corresponding segment to calculate the DVMT. The highest traffic counts in Greenville and Pickens Counties, 74,500 to 114,000, are found on I-85 in the central part of Greenville County. I-385, also inside the Greenville/Pickens Nonattainment Area, has

traffic counts up to 84,500. The highest traffic count outside of the Greenville/Pickens Nonattainment Area, 19,200, is on Highway 8 in Pickens County between Easley and Pickens. The Greenville/Pickens Nonattainment Area contains 78 percent of the DVMT in Greenville and Pickens Counties, and thus the majority of motor vehicle emissions from the two counties.

Figure D-2: Greenville and Pickens Counties 2006 Average Daily Traffic Counts



E. Growth Rates and Patterns

Based on the projected data for 2020 and 2030, the population of Greenville County will continue to grow. Since the Greenville/Pickens Nonattainment Area includes the urban portion of Greenville County, it is concluded that the Greenville/Pickens Nonattainment Area will encompass the majority of expected population growth.

The following conclusions were drawn based on data from 2000, and population projections for 2020 and 2030 as contained in Table E-1.

Table E-1: Historical and Projected Population

Population Data	Greenville/Pickens Counties
Population, 2000	490,373
Projected Population, 2020	628,810
Projected Population, 2030	692,710
Projected Population Growth, 2000 - 2020	28.23%
Projected Population Growth, 2020 - 2030	10.16%
Land Area (Sq. Miles)	1,306.40
Projected Population/Land Area (Sq. Miles) 2020	481.33
Urban Population, 2000	379,403
Percent Urban Population, 2000	77.37%
Rural Population, 2000	110,970
Percent Rural Population, 2000	22.63%

Figure E-1 shows population growth by historical and projected population data for Greenville and Pickens Counties. Figure E-2 shows trends in population density. The Greenville/Pickens Nonattainment Area captures the area's urban population. Therefore, the Department concludes that the Greenville/Pickens Nonattainment Area contains the expected population and economic growth for the area in the coming years.

Figure E-1: Historical and Projected Population, 2000 - 2030

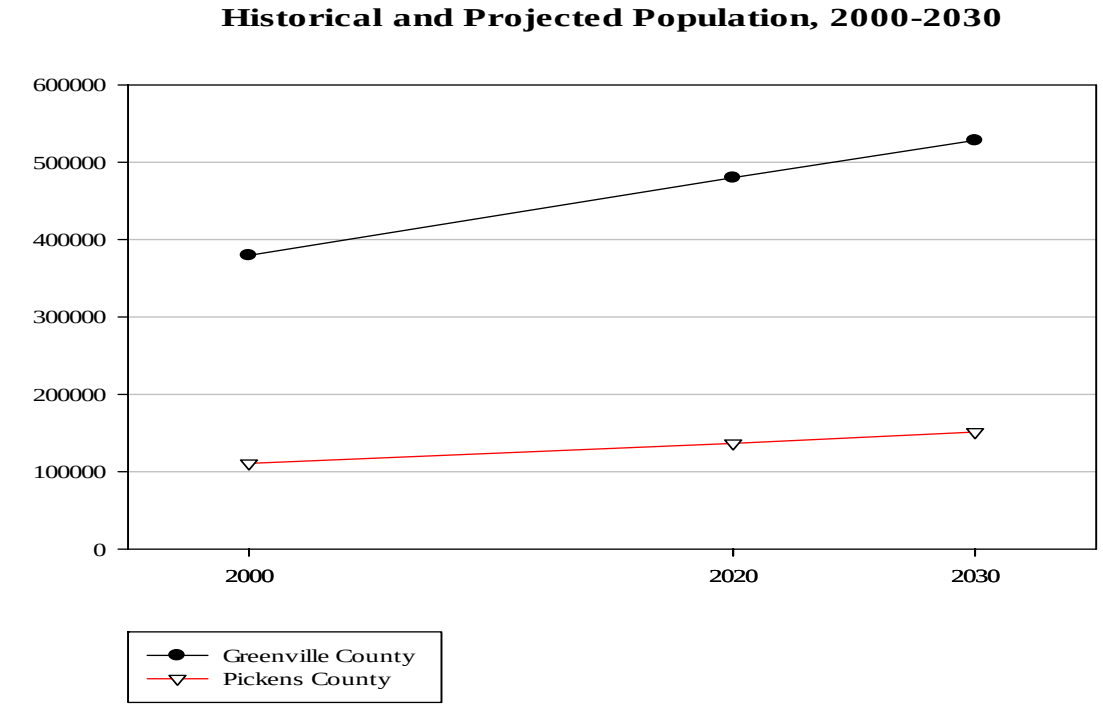
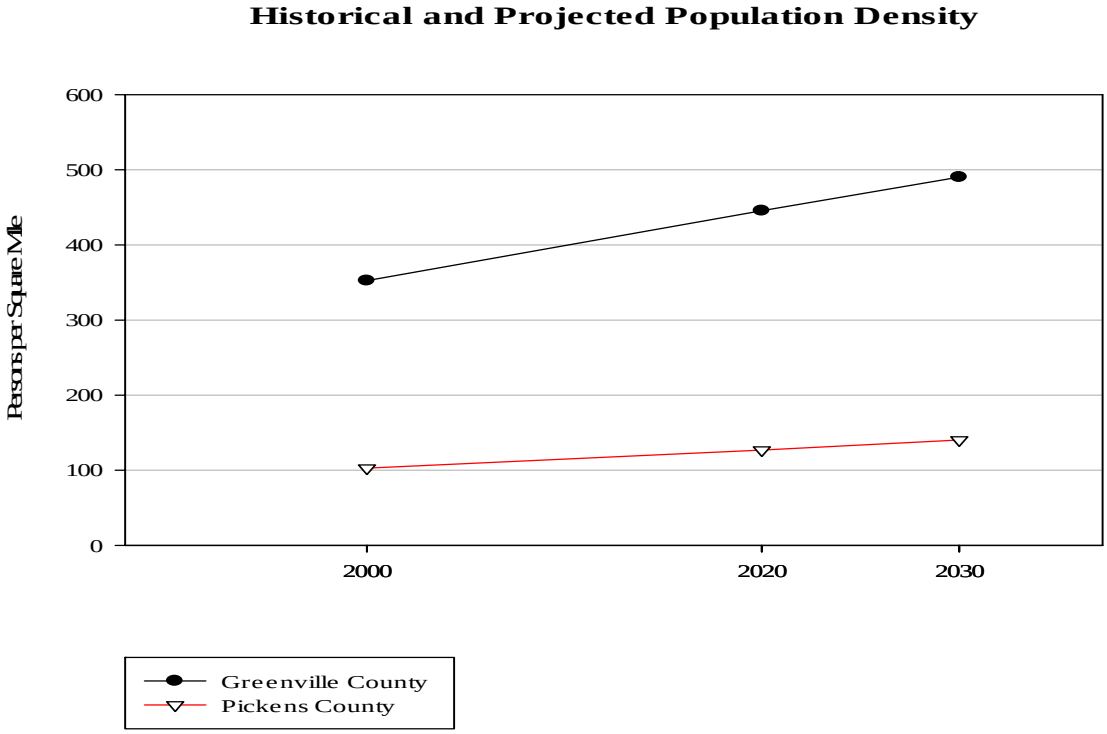


Figure E-2: Historical and Projected Population Density



F. Meteorology

The wind rose below was created using wind data from the 2000 through 2004 Greenville-Spartanburg National Weather Service Office meteorological data sets The wind data from the Greenville-Spartanburg station represents the Upstate region of SC. Since ozone season runs from spring to autumn, a wind rose was created for the ozone season which runs from April 1st through October 31st. The wind rose (Figure F-1) below shows that a southwesterly and northeasterly wind direction dominates the Greenville area during ozone season. The southwesterly and northeasterly wind directions are most likely enhanced by the Appalachian Mountains, situated just to the north and west of the Greenville area. This wind rose indicates that precursor transport from the southwest and northeast is likely during the ozone season across the Upstate region of SC.

Figure F-1: Wind Rose for Greenville/Pickens Counties

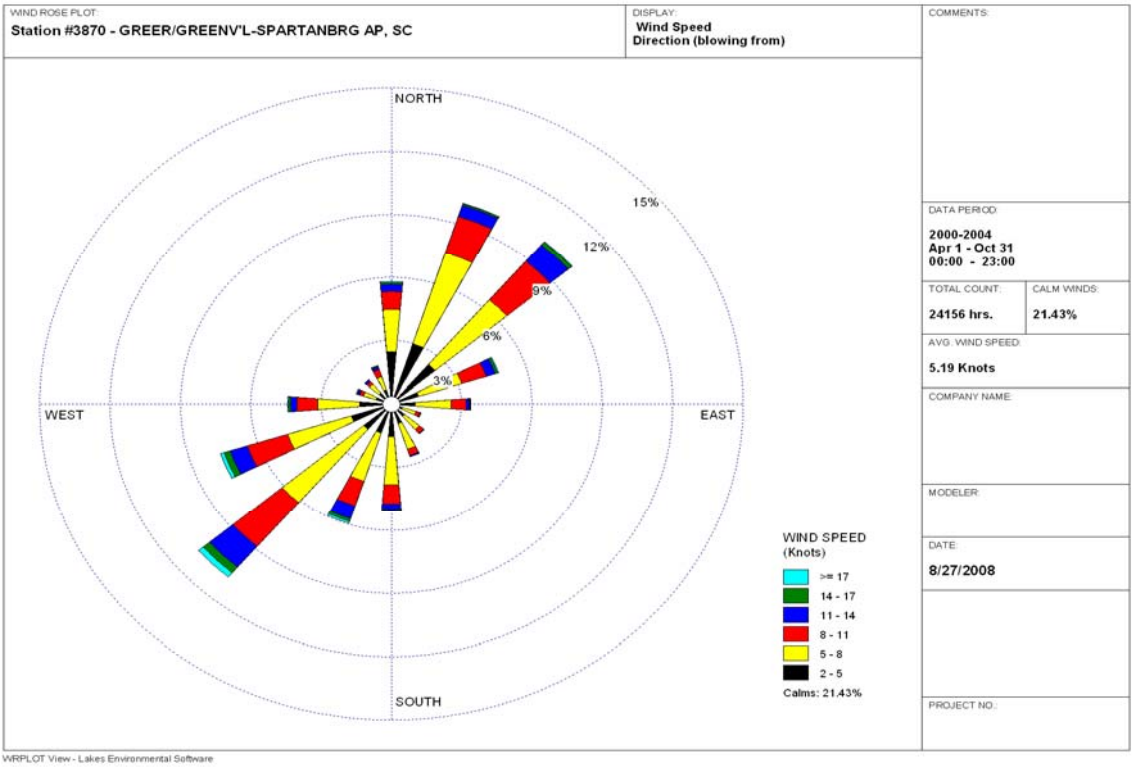
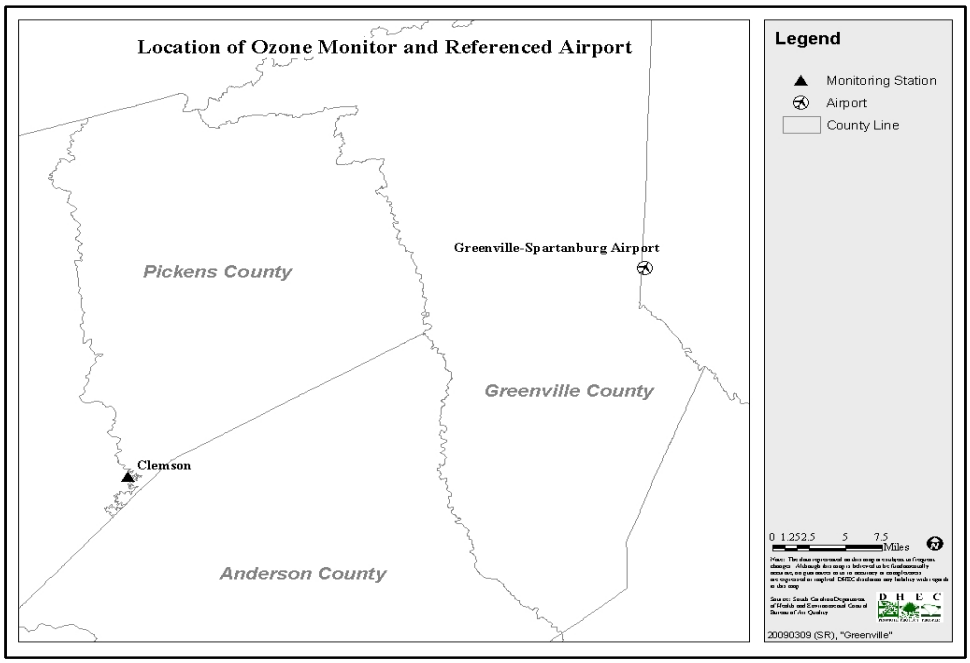


Figure F-2 shows the location of the Greenville-Spartanburg Airport, where the wind rose data was collected, relative to the Clemson ozone monitoring station.

Figure F-2: Location of the Greenville-Spartanburg Airport Relative to the Clemson Ozone Monitoring Station

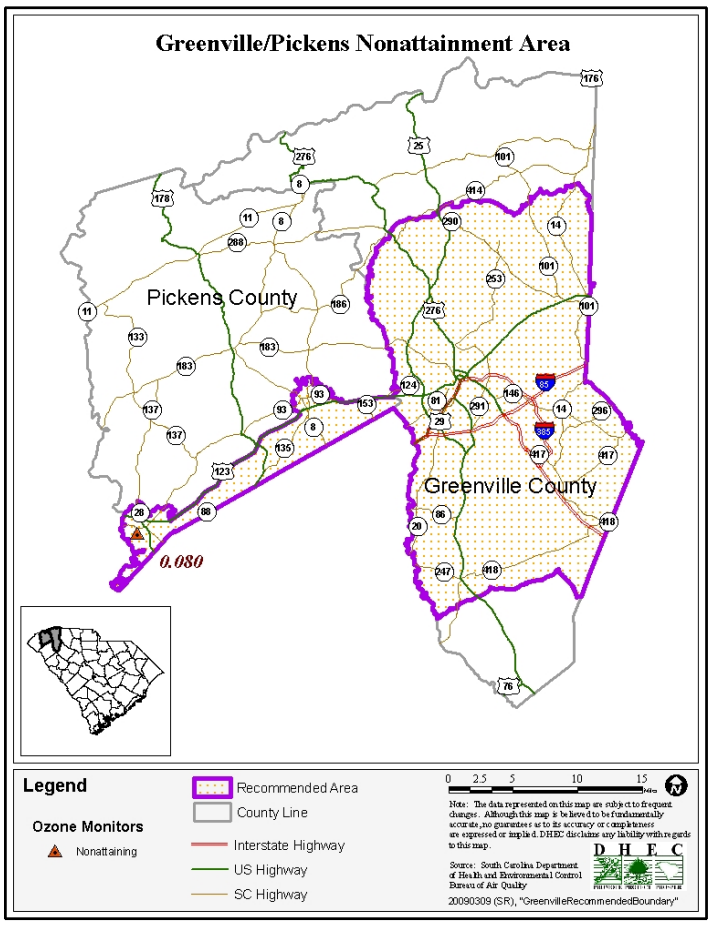


G. Reserved

H. Jurisdictional Boundaries

Figure H-1 shows the Department's recommended Greenville/Pickens Nonattainment Area, that portion of Greenville County located within the area distinctly defined and known as the Greenville-Pickens Area Transportation Study (GPATS) Metropolitan Planning Organization (MPO) and that portion of Pickens County to include the Pickens County ozone monitoring station (Clemson). The GPATS MPO is designated as the lead transportation planning agency within the Greenville County portion of the Greenville/Pickens Nonattainment Area and shall have the primary responsibility for developing the Transportation Plan and the Transportation Improvement Program. The South Carolina Department of Transportation (SC DOT) is designated as the lead transportation planning agency for the Greenville/Pickens Nonattainment Area outside of the GPATS MPO. For the purposes of transportation planning in the Greenville/Pickens Nonattainment Area, the GPATS MPO and the SC DOT will work in consultation with the parties identified in the South Carolina Transportation Conformity State Implementation Plan. If the area is designated as nonattainment, the transportation conformity interagency consultation partners, including the GPATS MPO, SC DOT, and the Department have a transportation conformity memorandum of agreement in place so there will be no delay in beginning the transportation conformity process. Transportation models for the area are specific to the GPATS MPO. Modeling for a nonattainment area larger than the MPO would require the development of more refined modeling outside the MPO area and thus, additional resources**.**

Figure H-1: Greenville/Pickens Nonattainment Area



Lexington/Richland Nonattainment Area

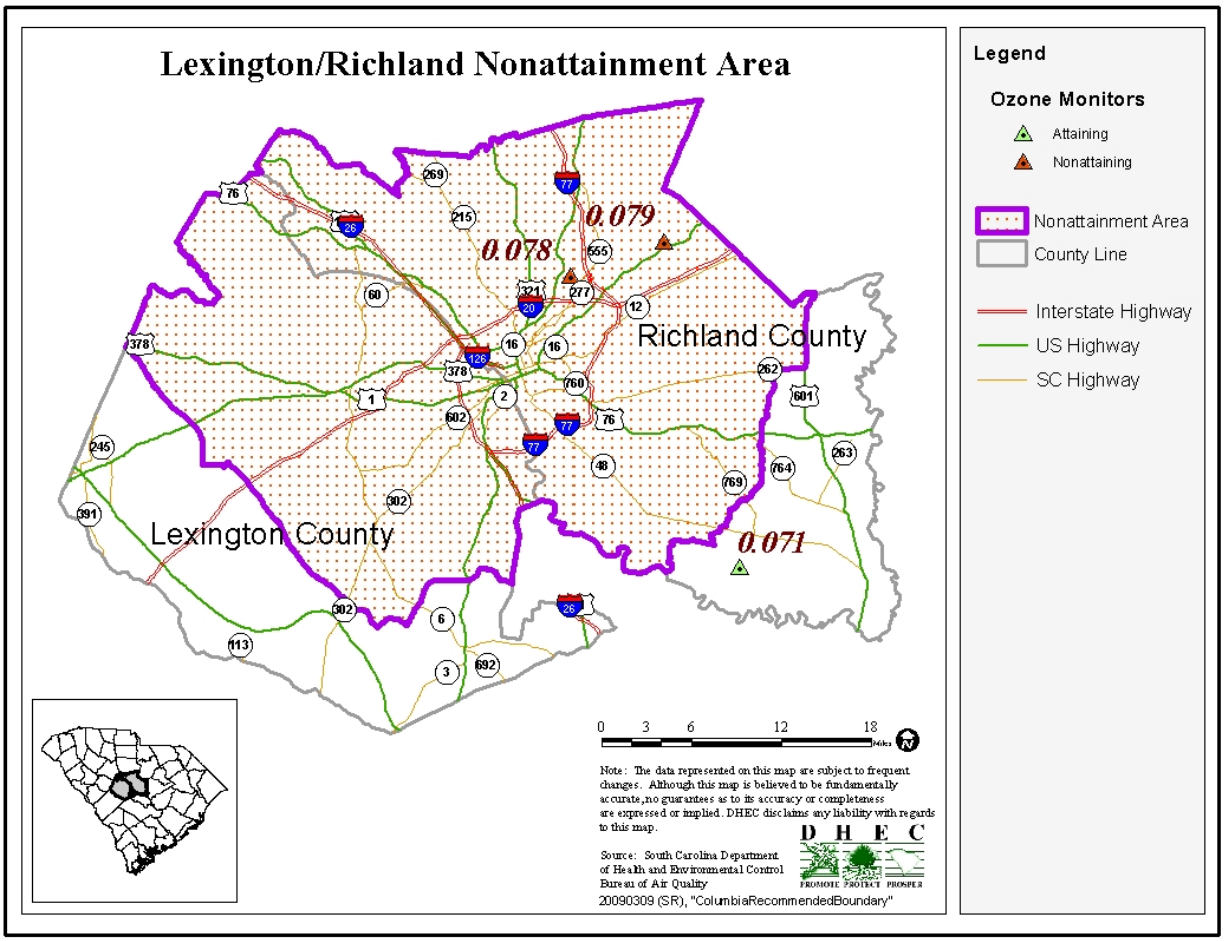
Overview

In accordance with the United States Environmental Protection Agency (EPA) suggested guidance for establishing nonattainment boundaries for the 2008 8-hour ground-level ozone National Ambient Air Quality Standards (Ozone NAAQS), the South Carolina Department of Health and Environmental Control (Department) is submitting its recommendation for Lexington and Richland Counties in South Carolina.

The Department recommends that the portion of Lexington and Richland Counties encompassed by the boundaries of the Columbia Area Transportation Study (COATS) Metropolitan Planning Organization (MPO) be designated as nonattainment for the Ozone NAAQS based on 2006 - 2008 ozone monitoring data. The requirements of the State Implementation Plan (SIP) developed for each nonattainment area should be flexible enough to address each area's unique situation. The designation of a portion of Lexington and Richland Counties would lead to greater efficiency in the development and implementation of local control measures and supports the Department's value of "local solutions to local problems." As the COATS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity will be conducted much more effectively and efficiently. Transportation models have been developed for the area within this boundary. For areas outside the MPO, SC DOT will have to develop more refined modeling capabilities which will be resource intensive. This area will be referred to as the Lexington/Richland Nonattainment Area throughout the rest of this document.

The location and boundary of the area that is being recommended for nonattainment are shown in Figure 1.

Figure 1: Lexington/Richland Nonattainment Area for the Ozone NAAQS



The rural portions of Lexington and Richland Counties outside of the boundaries of COATS are not being recommended for the boundary because the data does not support its inclusion. The rural portions of the counties have low population and low vehicle miles traveled (VMT), and, most importantly, monitored ambient ozone levels below the Ozone NAAQS. Therefore, the Department's justification regarding the Lexington/Richland Nonattainment Area will focus on the COATS MPO only.

<u>The factors utilized to recommend the boundary for this nonattainment area designation are as follows:</u>

- The Parklane and Sandhill ozone monitoring stations in Richland County are currently exceeding the Ozone NAAQS and are included in the Lexington/Richland Nonattainment Area. As the Congaree Bluff monitoring station, located south of COATS, is meeting the Ozone NAAQS, the southern portions of Lexington and Richland Counties are not recommended as part of the Lexington/Richland Nonattainment Area.
- The combined population of Lexington and Richland Counties in 2000 was 536,691 and the Lexington/Richland Nonattainment Area captures a population of 499,906. The

Lexington/Richland Nonattainment Area includes 93.1 percent of the population. NO_x emissions from human activities, such as mobile source emissions and other area sources, are major contributors to ozone formation. Therefore, the Department concludes that, based on the high percentage of population captured by the Lexington/Richland Nonattainment Area, the recommendation is appropriate.

- Motor vehicle emissions are a significant contributor to ozone formation. The Department has concluded the Lexington/Richland Nonattainment Area contains 98 percent of Lexington and Richland Counties' Daily Vehicle Miles Traveled (DVMT), thus the majority of Lexington and Richland counties' motor vehicle emissions.
- According to the 2000 U.S. Census, 94.7 percent of workers who live in Lexington and Richland Counties work in one of those two counties. The Lexington/Richland Nonattainment Area encompasses the major urbanized areas, and the majority of the commuters who live in these counties work within the urbanized areas. Automobiles are a major contributor of NO_x emissions and to ozone formation. Therefore, the Department concludes the majority of the commuter flow, and subsequently a majority of the NO_x emissions from vehicles, is contained within the Lexington/Richland Nonattainment Area.
- The center of economic development and retail trade, the majority (464 out of 489) manufacturing establishments, and all of the county's urbanized areas are located within the Lexington/Richland Nonattainment Area. According to the 2006 American Community Survey, 79 percent of the workers sixteen years old or older in Lexington and Richland Counties drove alone to work, and only 0.9 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Lexington/Richland Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.
- Facilities holding Title V permits are major sources of NO_x and/or VOC emissions contribute to ozone formation. The Department has concluded that the Lexington/Richland Nonattainment Area captures 31.4 percent of the Title V point source NO_x emissions and 81.5 percent of the Title V point source VOC emissions in Lexington and Richland Counties. There are two significant NO_x sources outside of the proposed boundary: SCE&G-Wateree and International Paper-Eastover. SCE&G-Wateree has installed Selective Catalytic Reduction (SCR) emission control devices to significantly reduce its NO_x emissions from 38.4 tons per day to 12.94 tons per day, resulting in a 66 percent daily reduction during the ozone season. International Paper-Eastover is subject to the State's federally approved NO_x SIP Call. As part of the Early Action Compact (EAC) process, in 2004, International Paper-Eastover entered into a Memorandum of Agreement with the Department imposing facility wide reduction limits. Inclusion of these facilities into the nonattainment area would not necessarily result in further NO_x reductions or reductions of ground level ozone.
- South Carolina has provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing oxide of nitrogen emissions do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2006, 2007 and 2008, the areas in South Carolina designated as nonattainment for the 1997 8-hour ozone standard with the effective date deferred were redesignated to attainment. This area was one of those areas. Each of the diverse stakeholders

joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.

- The commitment from both Lexington and Richland Counties to participate in the EAC process further supports designating a smaller boundary. The commitment from each of these counties confirmed that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of local and regional controls. Therefore, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, local stakeholders do have an impact on reducing the formation of ozone.
    - Richland and Lexington Counties, the Central Midlands Council of Governments, state agencies and other stakeholders in the region organized to address air quality issues at the regional level.
    - Air Quality Improvement Policies were adopted by both counties to include idling restrictions, encourage carpooling, and practicing energy conservation.
    - Richland and Lexington County Councils strengthened the county outdoor burning ordinances to be more stringent than state regulations.
    - The City of Cayce switched over to biodiesel in the fall of 2006 and implemented an anti-idling policy for city vehicles.
    - The Town of Lexington synchronized traffic lights to improve traffic flow and reduce congestion.
    - The City of Columbia hosted a statewide "Green is Good for Business" conference in October 2008. The conference showcased exhibits and ideas that can help businesses grow while caring for the environment. Another conference is planned for later this year.
    - The National Association of Counties presented Richland County with the 2008 Achievement Award for the 2007 Richland-Lexington Lawn Mower Exchange. The second Midlands "Mow Down Pollution" event (2008) replaced 126 gas-powered mowers with 125 discounted electric mowers. Another event is planned for later this year.
    - Shaw Industries, Lexington County installed fluorescent lighting throughout the facility; streamlined the workings of steam boilers, and installed capacitors on motors to reduce electricity consumption.
    - Rosewood Elementary School in Richland County received federal money in 2007 for the "Safe Routes to School Program."
    - The 2007 Clean School Bus USA grant provided a plug-in hybrid electric bus with a 2007 emission compliant diesel engine fueled with ultra-low sulfur diesel in Richland County.
    - The B^2 anti-idling program was expanded to include Batesburg-Leesville Middle School, the Sunshine House Daycare Center in West Columbia, and Lonnie B. Nelson Elementary School.
    - SmartRide is a park and ride service offered by SC Department of Transportation, and offers service between Columbia and outlying Camden, Sumter and Newberry. County

employees and visitors to Richland County from the Camden, Sumter, and Newberry/Chapin areas are encouraged to ride SmartRide.

- COATS assisted the Department in making necessary revisions to the State Implementation Plan, specifically the Transportation Conformity Memorandum of Agreement (MOA) outlining the interagency consultation procedures for determining conformity of transportation plans, programs and projects. As a signatory to the MOA (June 2008), the necessary interagency consultation procedures outlined in the MOA will be in place should the area be designated nonattainment for any applicable criteria pollutant.

The activities being conducted by the local, county, and regional entities confirm that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of local and regional controls. In fact, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, smaller boundaries preserve the flexibility of implementing strategies, enforceable and directionally sound, tailored to the respective area. Participation in the EAC process proved local stakeholders have an impact on reducing the formation of ozone. Our partners continue to work on local efforts to improve air quality.

- Section 48-1-50 (Powers of Department) of the South Carolina Pollution Control Act gives the Department the authority to require emission reductions from a source, regardless of where it is located, if the emissions result in pollution in excess of applicable standards. The Department currently has regulations that are more stringent and protective than federal requirements. These actions, such as addressing NO_x emissions from stationary sources, demonstrate our statutory authority and ability to implement controls to improve air quality statewide. A nonattainment boundary does not provide any additional authority to address emissions where appropriate and needed.

- The Department operates a comprehensive ozone-forecasting program that covers 34 counties in our State, including Lexington and Richland Counties, which are in the Central Midlands Forecast Zone. The forecasting program covers over 3,500,000, or nearly 88.6 percent of South Carolina residents. South Carolina's citizens are informed on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as appropriate to better protect their health. The availability of this forecast for all of Lexington and Richland Counties confirms that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of this program. Therefore, the Department concludes ozone forecasting covers a broad area, so everyone inside and outside of the Lexington/Richland Nonattainment Area within Lexington and Richland Counties and the surrounding areas will be given the same precautions.

The Department has evaluated monitoring data, population, urbanization and growth, traffic, and point source emissions data to develop the boundary recommendation for the Lexington/Richland Nonattainment Area. The following details support the recommendation:

A. Air Quality Data

There are currently three ozone monitoring stations in Richland County. Data from all three of the monitors were used for this boundary determination. Lexington County does not have an ozone monitoring station. The monitors in Richland are designed to be representative of the population in Lexington and similar areas.

The first Richland County ozone monitoring station, Congaree Bluff (45-079-0021), has replaced the Congaree Swamp station. This site was established on January 19, 2000. 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. The monitoring objective for Congaree Bluff site is to measure ozone concentrations for general background.

The second Richland County ozone monitoring station, Parklane (45-079-0007), is located in a suburban area across a four-lane street from residential zoning. The site was established on January 6, 1980 and is approximately 110 meters above sea level. It is near the State Park Health Center and located in a field off of Parklane 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 (U.S. 1) and the SC-277/I-77 interchange. The monitoring objective for the Parklane site is to measure maximum ozone concentrations.

The third Richland County ozone monitoring station, Sandhill (45-079-1001), is in a rural setting on agricultural land that is 134 meters above sea level. This site was established on April 18, 2002. 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 U.S. 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 U.S. 1 was constructed to gain easier access to U.S. 1 and I-20. The monitoring objective for Sandhill Experiment Station is to measure ozone concentrations for upwind background.

Figure A-1 shows the location of the Congaree Bluff, Parkland and Sandhill ozone monitoring stations with in the Columbia MSA.

Figure A-1: Monitor Locations in the Columbia MSA

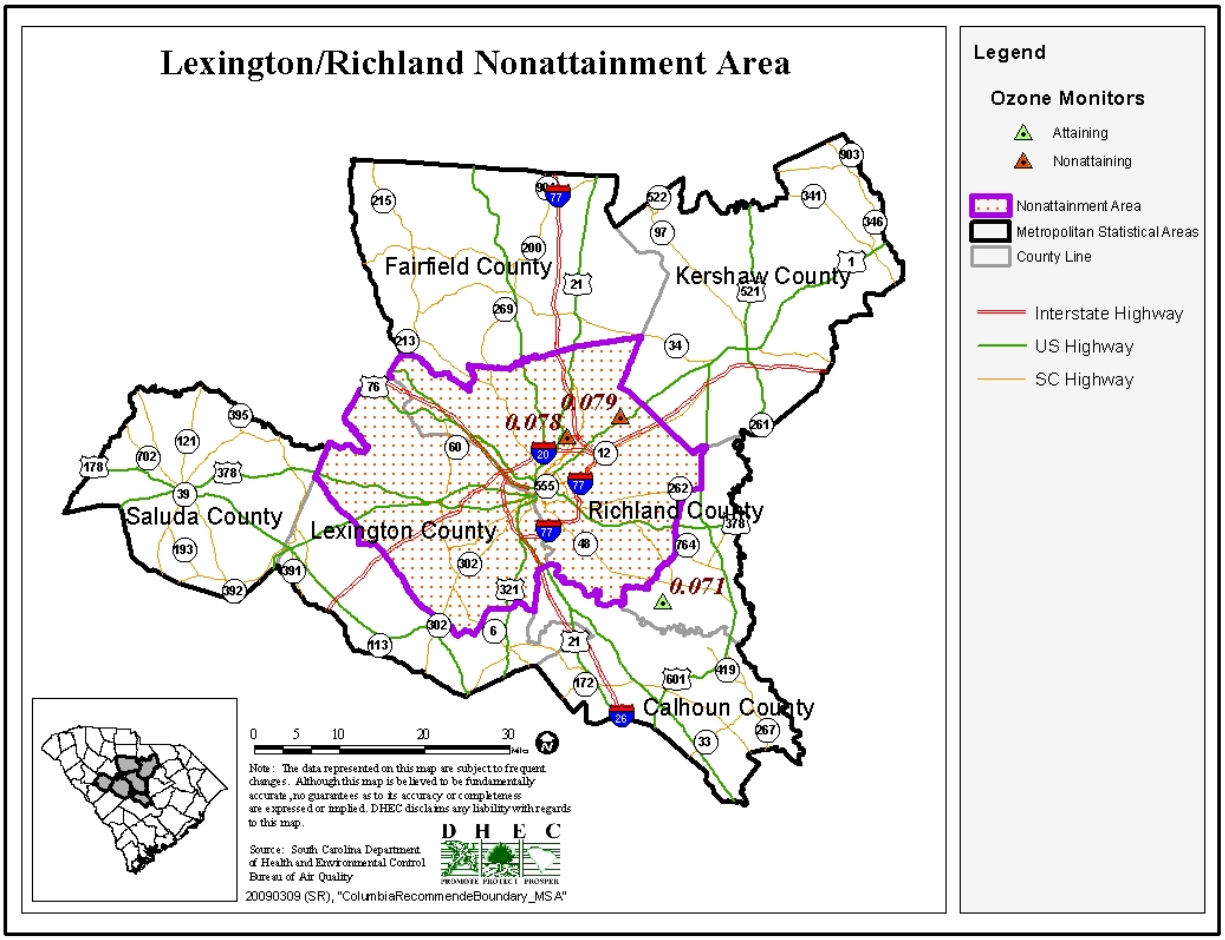


Figure A-2 presents the 2000 - 2008 quality assured 8-hour ozone monitoring data from Richland County. These monitors represent not only Richland but also surrounding areas. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. As seen in Figure A-2, there is a general decrease in design values for most of the Richland County monitors from 2000 to 2008; however, the Parklane and Sandhill design values are above the Ozone NAAQS.

Figure A-2: Design Values Trends 2000 - 2008

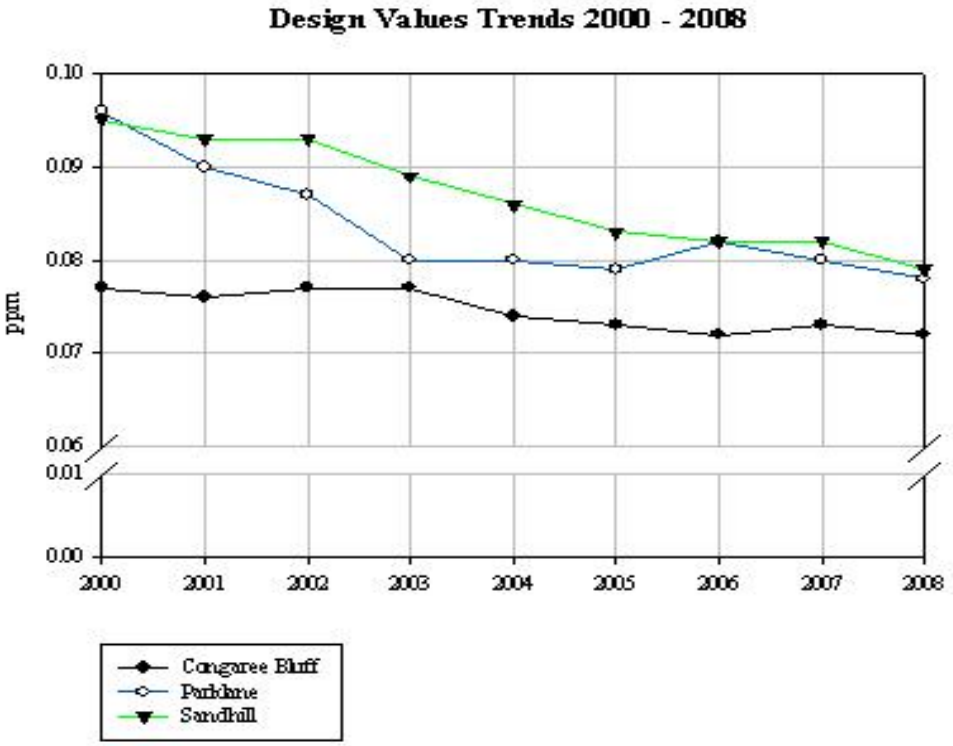
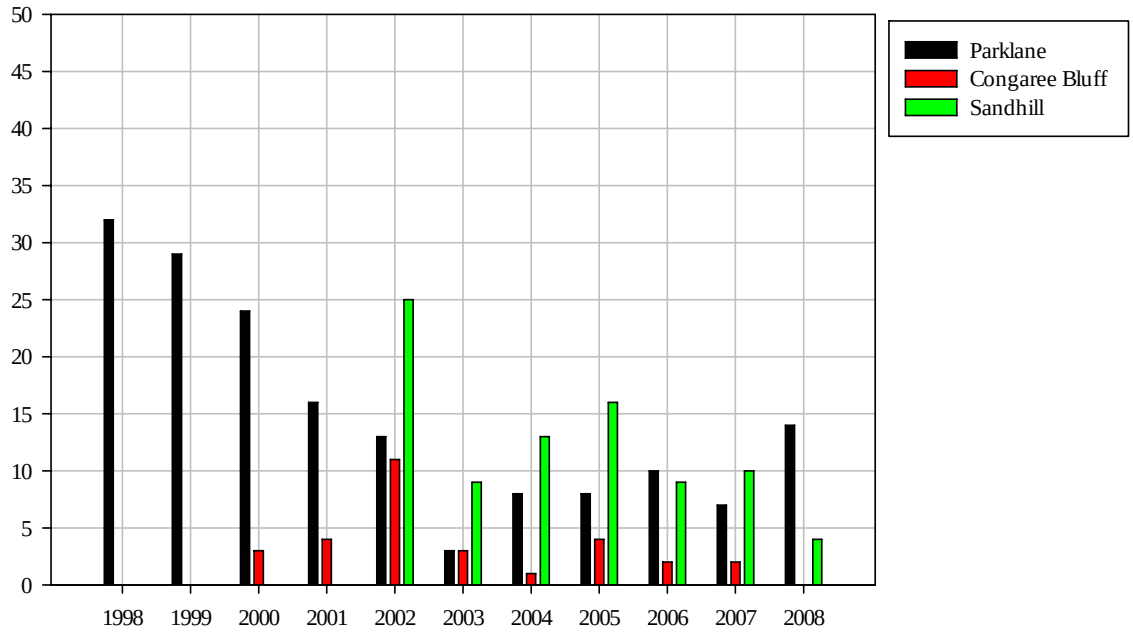


Figure A-3 demonstrates the total annual number of days that ozone levels at the Richland County monitors (Congaree, Parklane, and Sandhill) have been above 0.075 ppm over the past ten years. Overall, this trend shows a decline in the number of exceedances and an overall improvement of air quality.

Figure A-3: Number of Days Ozone Concentrations Above 0.075 ppm

Number of Days Ozone Concentrations Above 0.075 ppm



B. Emissions Data

It should be noted that South Carolina is a NO_x limited state. On average, about 70 percent of the VOC emissions come from biogenic sources. To evaluate the emissions in Lexington and Richland Counties, South Carolina determined NO_x and VOC emissions using the best and most recent data available for the various source sectors. The source sectors that were evaluated include point, non-point, and on-road and non-road mobile sources. Point source data is state-generated data representing calendar year 2005. All other sectors are a combination of state-generated and EPA-generated data in EPA's final National Emissions Inventory (NEI) form representing calendar year 2002. The data for 2002 was used rather than 2005 for the other sectors since EPA had de-emphasized the 2005 NEI to focus efforts on the reinvention of the 2008 inventory. Because of the focus on the 2008 NEI, there was no real attempt to generate 2005 data for sectors other than point sources. Other source sector emissions are largely population based. This means they are not likely to greatly change on an annual basis. However, point sources were thoroughly evaluated in 2005 to account for significant changes in emissions. South Carolina believes the 2002 data is still representative of those sectors for 2005.

Figures B-1 and B-2 show the NO_x and VOC emissions from each of the source sectors.

Figure B-1: NOx Source Sector Emissions

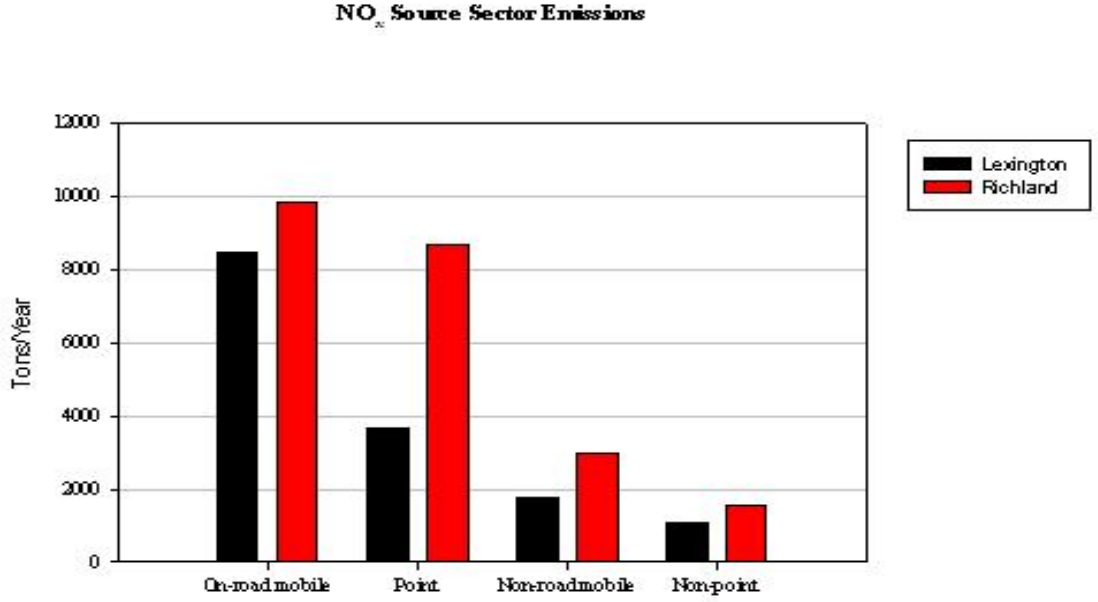
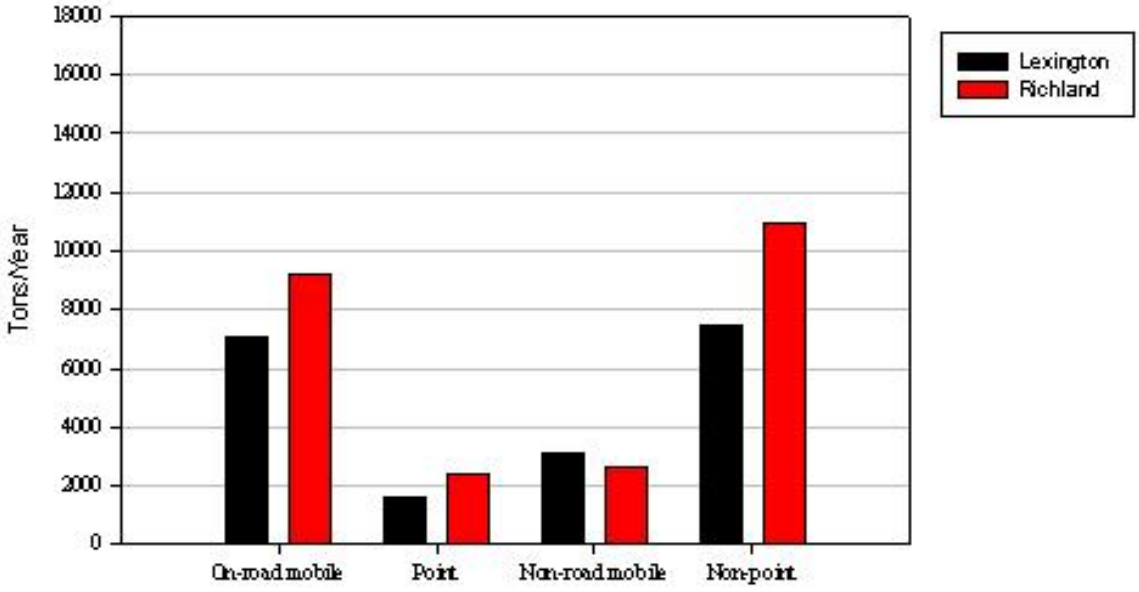


Figure B-2: VOC Source Sector Emissions



Figures B-3 and B-4 identify the location of NO_x and VOC Title V point sources in operation in Lexington and Richland Counties. There are 19 Title V NO_x point sources in the two counties, with 17 of these in the Lexington/Richland Nonattainment Area. These 17 sources account for 30 percent of the total Title V point source NO_x emissions for Lexington and Richland Counties. There are 21 Title V VOC point sources in Lexington and Richland Counties. Nineteen of these sources are in the Lexington/Richland Nonattainment Area. These 19 sources account for 75 percent of the total Title V point source VOC emissions for Lexington and Richland Counties. There are two NO_x sources outside of the proposed boundary: SCE&G-Wateree and International Paper-Eastover. As a part of the EAC processs, SCE&G-Wateree agreed to install and operate SCR emission control devices required under the NO_x SIP Call. This will significantly reduce NO_x emissions from 38.4 tons per day to 12.94 tons per day, resulting in a 66 percent daily reduction during the ozone season. As part of the EAC process, International Paper-Eastover imposed voluntary facility wide reduction limits. Inclusion of these facilities into the nonattainment area would not necessarily result in further NO_x reductions or reductions of ground level ozone as the Department has the authority to require controls where needed.

Figure B-3: Title V Source NOx Emissions

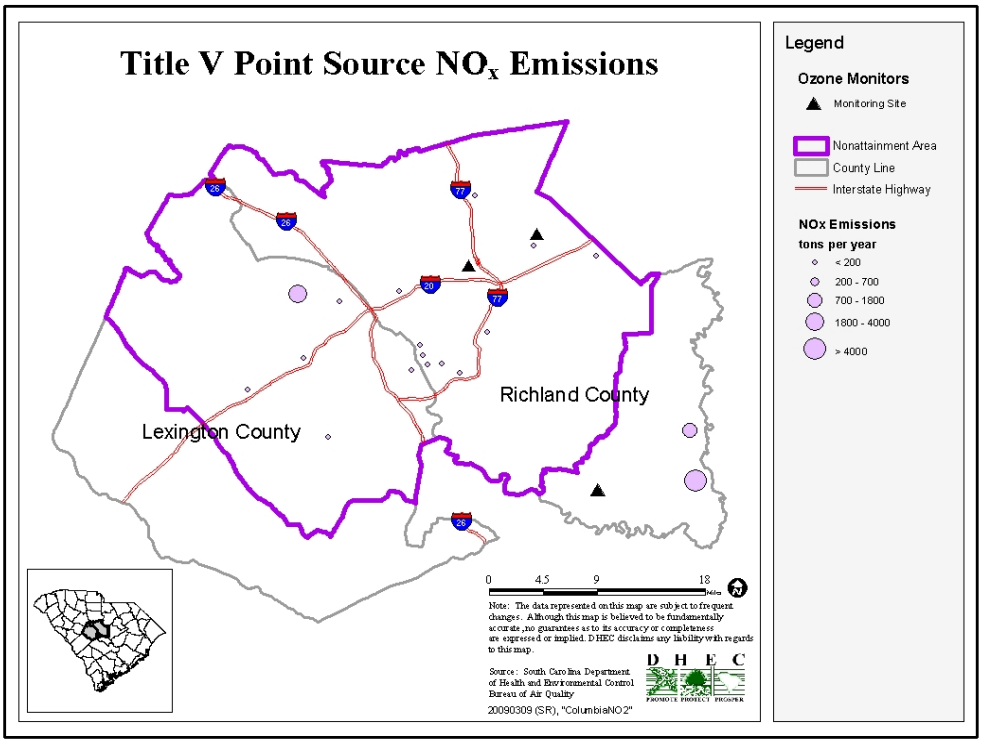
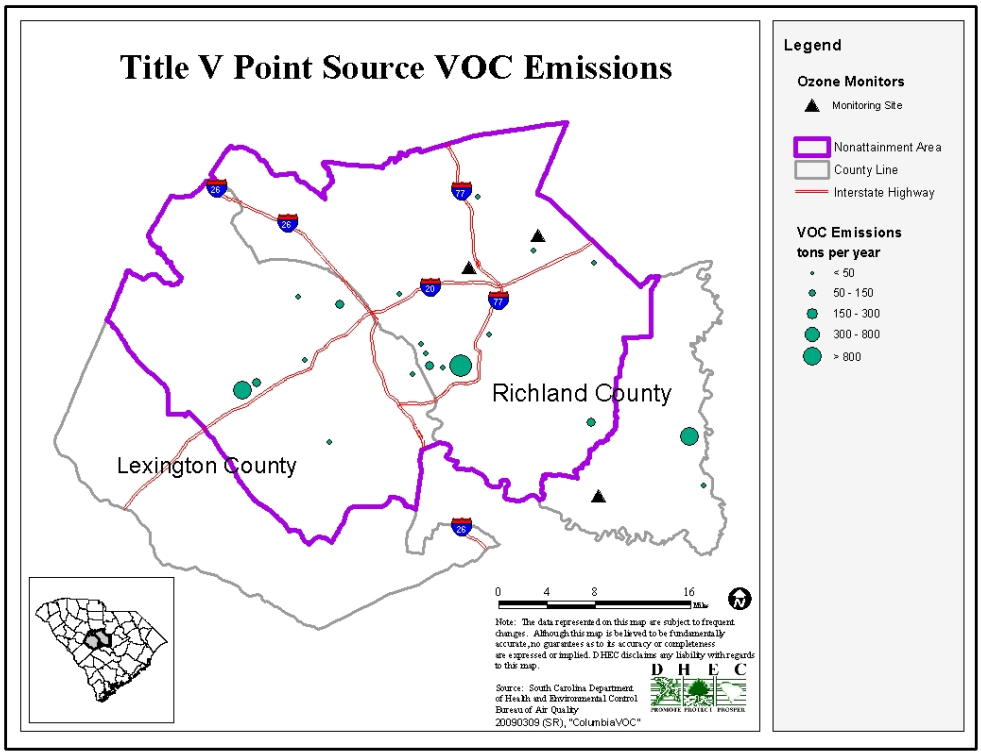


Figure B-4: Title V Source VOC Emissions



Tables B-1 and B-2 list the Lexington and Richland County Title V facilities that contribute to the NO_x and VOC emissions. An asterisk next to the name indicates that this facility is captured by the Lexington/Richland Nonattainment Area.

Table B-1: Title V Source NO_x Emissions

Lexington and Richland County Facilities	Permit Number	2005 Est. Emissions Tons/Year
SCE&G McMeekin *	1560-0003	3,146.3
U.S. Silica*	1560-0005	3.52
Boral Bricks Inc: Lexington*	1560-0006	12.08
Shaw Industries Group Inc Plant 8S*	1560-0016	60.25
Michelin NA U.S. 5 Lexington*	1560-0042	26.90
CMC Steel SC*	1560-0087	133.63
CMC Steel SC Spray Forming International*	1560-0148	0.049
Hanson Brick Columbia Plant*	1900-0010	76.13
Richland Landfill*	1900-0148	37.6
USC Columbia Campus Energy Facility*	1900-0143	31.66
Intertape Polymer Group*	1900-0033	30.78
U.S. Army Fort Jackson*	1900-0016	21.95
Consolidated Systems Inc*	1900-0040	8.81
Coveright Surfaces*	1900-0093	7.21

Lexington and Richland County Facilities	Permit Number	2005 Est. Emissions Tons/Year
SCE&G Coit*	1900-0132	5.68
FN Manufacturing LLC*	1900-0052	1.15
Engineered Composites Inc*	1900-0212	0.01
SCE&G Wateree	1900-0046	6,692.26
International Paper Eastover	1900-0013	1,701.10
Total Tons of Emissions		11997.09

*Located within Lexington/Richland Nonattainment Area

Table B-2: Title V Source VOC Emissions

Lexington and Richland County Facilities	Permit Number	2005 Est. Emissions Tons/Year
Intertape Polymer Group*	1900-0033	1,342.18
CMC Joist: Eastover Plt*	1900-0150	71.95
Consolidated Systems Inc*	1900-0040	67.54
U.S. Army Fort Jackson*	1900-0016	20.81
Coveright Surfaces*	1900-0093	14.73
FN Manufacturing LLC*	1900-0052	12.55
Engineered Composites Inc*	1900-0212	10.34
Hanson Brick Columbia Plant*	1900-0010	9.49
Richland Landfill*	1900-0148	5.64
USC Columbia Campus Energy Facility*	1900-0143	1.75
SCE&G Coit*	1900-0132	0.06
SCE&G McMeekin*	1560-0003	14.46
U.S. Silica*	1560-0005	0.22
Boral Bricks Inc: Lexington*	1560-0006	1.86
Shaw Industries Group Inc Plant 8S*	1560-0016	61.64
Michelin NA U.S. 5 Lexington*	1560-0042	371.42
CMC Steel SC*	1560-0087	11.50
Michelin NA U.S. 7 Lexington Facility*	1560-0113	86.52
CMC Steel SC Spray Forming International*	1560-0148	0.07
SCE&G Wateree	1900-0013	45.97
International Paper Eastover	1900-0046	652.45
Total Tons of Emissions		2803.16

*Located within Lexington/Richland Nonattainment Area

C. Population Density and Degree of Urbanization

According to the U.S. Census Bureau, urban is defined as all territory, population and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas

and urban clusters. Rural is defined as all territory, population and housing units located outside of urbanized areas and urban clusters.

The Lexington/Richland Nonattainment Area contains the contiguous urbanized area in Lexington and Richland Counties and the towns of Chapin, Blythewood and Lexington. Based on the 2000 U.S. census population of the urban portion of Lexington and Richland Counties, including the populations of Chapin, Blythewood and Lexington and an assumed population outside of the town boundaries, the population within the Lexington/Richland Nonattainment Area is estimated to be 499,902, which is 93.1 percent of the population. The Lexington/Richland Nonattainment Area captures the majority of the population. Figure C-1 indicates the extent of the urban areas in Lexington and Richland Counties.

Figure C-1: Urban Areas in Lexington and Richland Counties

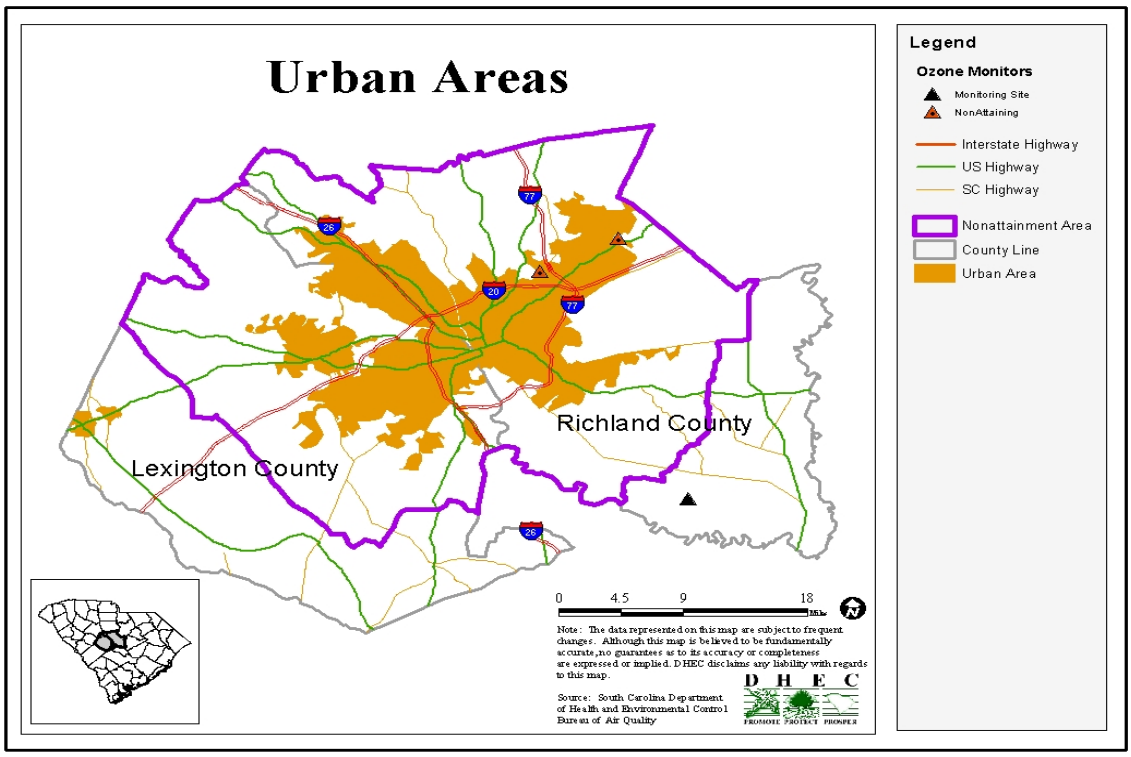


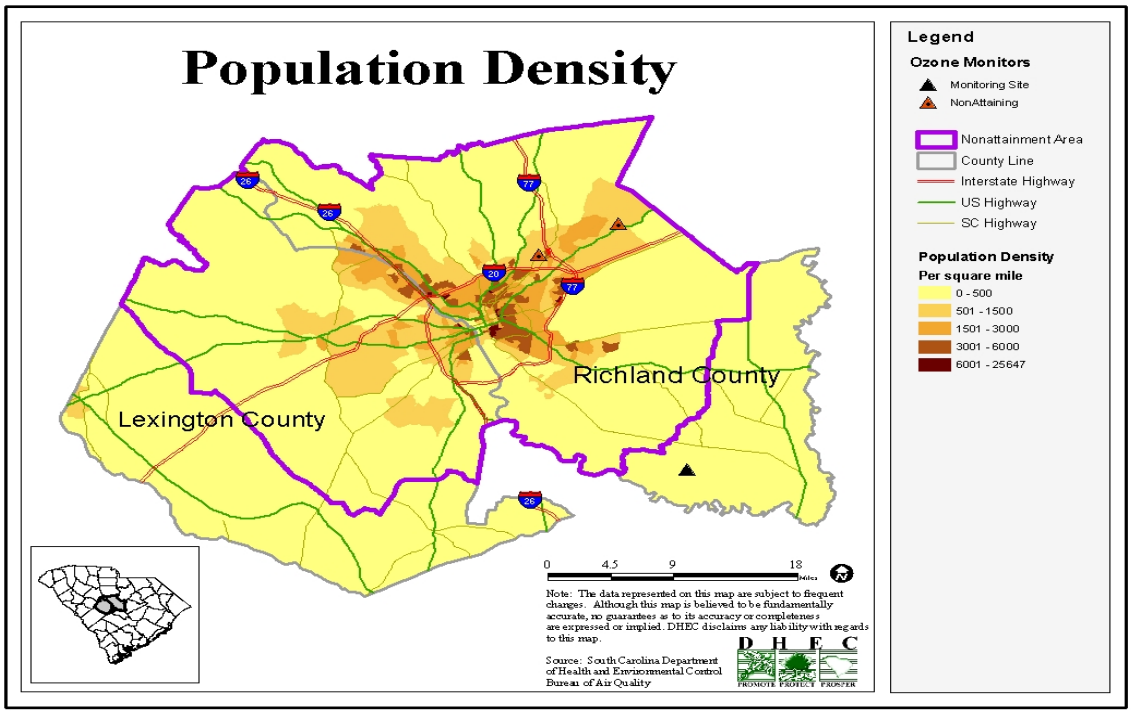
Table C-1 contains the population data for Lexington and Richland Counties and the Lexington/Richland Nonattainment Area.

Table C-1: Total, Population, Land Area, and Urban/Rural Population

Lexington and Richland Counties		
	Combined Counties	**Nonattainment Area**
Population	536,691	499,902
Land Area (Square Miles)	1528.41	1030.2
Population/Land Area (Square Miles)	351	485.3
Urban Population	422,761	
Percent Urban Population	78.77	
Rural Population	113,930	
Percent Rural Population	21.23	

Figure C-2 shows the population density for Lexington and Richland Counties relative to the Lexington/Richland Nonattainment Area. The land area within the Lexington/Richland Nonattainment Area is estimated to be 1,030.2 square miles. Using the estimated population and land area of the Lexington/Richland Nonattainment Area, the population density is calculated to be 485.3 persons per square mile, which is 30 percent more dense than the combined counties and more than six times the density of the portion that falls outside of the nonattainment area, which has 73.8 persons per square mile. Based on this high population density within the Lexington/Richland Nonattainment Area, designation of a partial county for the Lexington/Richland Nonattainment Area is appropriate.

Figure C-2: Total Population, Land Area, and Urban/Rural Population



Lexington and Richland Counties have a combined 1,528.4 square miles of land area. Only seven percent of Lexington and Richland County residents live outside of the Lexington/Richland Nonattainment Area. Lexington and Richland County land area that falls outside of the Lexington/Richland Nonattainment Area accounts for 32.6 percent of the total land area. Since the area outside of the Lexington/Richland Nonattainment Area represents such a low percent of the population and such a low population density, it can be concluded that this area does not appreciably impact air quality.

Retail trade is the largest employment sector in Lexington County, followed by manufacturing and health care and social assistance. Health care and social assistance is the largest employment sector in Richland County, followed by retail trade and accommodation and food services. Table C-2 shows employment data for the three largest business sectors in Lexington and Richland Counties. Of the 489 manufacturing establishments in Lexington and Richland Counties, 464 are located inside the Lexington/Richland Nonattainment Area. A total of 2,398 retail trade establishments that employ 34,793 persons are located in the two counties. It should be noted that the data in Table C-2 differs from the data in Table C-3 due to the source of the data. The manufacturing data in Table C-2 is taken from the 2003 – 2004 South Carolina Industrial Directory. The employment data in Table C-3 is taken from the U.S. Census.

The center of economic development and retail trade, the majority (464 out of 489) of manufacturing establishments and nearly all of the county's urbanized areas are located within the Lexington/Richland Nonattainment Area. According to the 2006 American Community Survey, 79 percent of the workers 16 years old or older in Lexington and Richland Counties drove alone to work, and only 0.9 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Lexington/Richland Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.

Table C-2: Employment in the Three Largest Business Sectors, 2006

	Number of Employees	Number of Establishments
Lexington County		
Retail Trade	12,214	913
Manufacturing	10,759	232
Health Care/Social Assistance	9,780	423
Richland County		
Health Care/Social Assistance	27,003	976
Retail Trade	22,579	1,485
Accommodation and Food Services	18,668	802
Combined Counties		
Retail Trade	34,793	2,398
Health Care/Social Assistance	36,783	1,399

Table C-3: Manufacturing Patterns in 2003

	Nonattainment Area	Combined Lexington and Richland Counties	Percent in Nonattainment Area
Employees	39,102	41,439	94.4
Establishments	464	489	94.9

D. Traffic and Commuting Patterns

Figure D-1 shows the Interstates that are located within the Lexington/Richland Nonattainment Area. There are three interstates (I-20, I-26 and I-77). I-20 is the major corridor of travel between Lexington-Richland 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 U.S. Highways 601, 1, 76, 378, 176, 321 and 21. There are also numerous State and secondary roads that connect the larger towns.

The Lexington/Richland Nonattainment Area includes the COATS MPO, responsible for transportation planning in the area. As the COATS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity will be conducted much more effectively and efficiently. Transportation models have been developed for the area within this boundary. For areas outside the MPO, SC DOT will have to develop more refined modeling capabilities which will be resource intensive. The designation of the Lexington/Richland Nonattainment Area as recommended provides greater opportunity to link transportation planning to air quality improvement goals.

Figure D-1: Lexington and Richland Counties Highway Systems

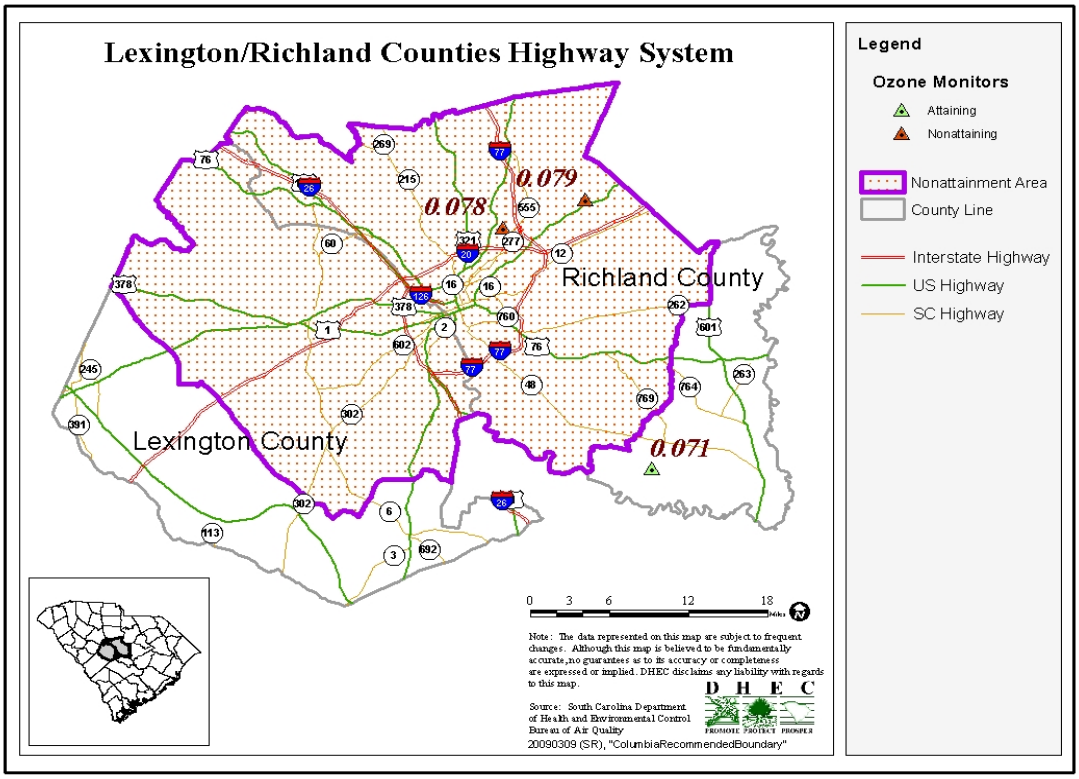


Table D-1 shows where Lexington and Richland County residents commute to work. The table shows that approximately 94.7 percent of workers that live in Lexington or Richland Counties work in one of the two counties. Approximately 87.8 percent of all workers commuting to jobs in Lexington and Richland Counties reside in one of the two counties. Because the Lexington/Richland Nonattainment Area encompasses the major urbanized areas, and the majority of commuters live and work within the urbanized areas, it is reasonable to conclude that the majority of the commuter flow is contained within the Lexington/Richland Nonattainment Area.

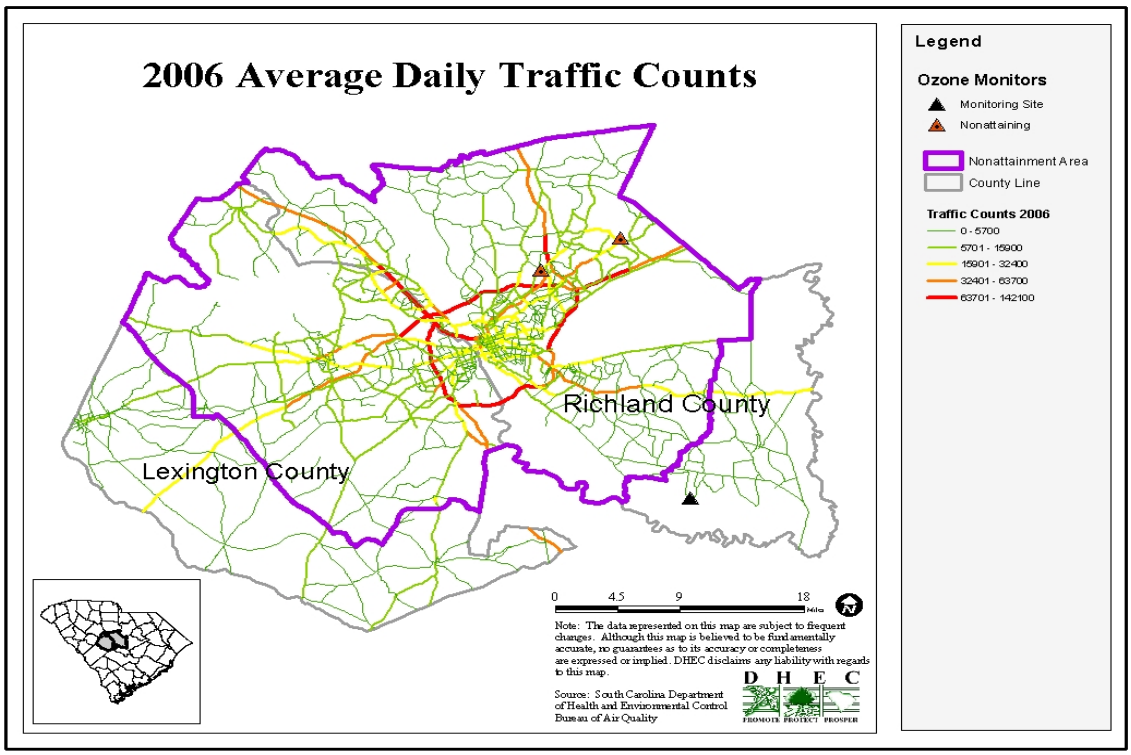
Table D-1: Lexington and Richland Counties Commute Patterns

	Workers Living in Lexington and Richland Counties by Work Location	Workers Employed in Lexington and Richland Counties by Residence Location
Abbeville	15	38
Aiken	731	2,501
Allendale	37	24
Anderson	25	128
Bamberg	115	205
Barnwell	41	246
Beaufort	141	48
Berkeley	98	188
Calhoun	354	2,256
Charleston	451	246

	Workers Living in Lexington and Richland Counties by Work Location	Workers Employed in Lexington and Richland Counties by Residence Location
Cherokee	46	20
Chester	71	131
Chesterfield	36	29
Clarendon	38	231
Colleton	31	97
Darlington	105	155
Dillon	7	48
Dorchester	40	186
Edgefield	80	137
Fairfield	1,982	3,239
Florence	252	425
Georgetown	18	60
Greenville	351	320
Greenwood	163	57
Hampton	8	32
Horry	158	200
Jasper	0	13
Kershaw	1,169	7,481
Lancaster	590	356
Laurens	79	103
Lee	89	259
Lexington	77,858	103,235
McCormick	0	12
Marion	17	51
Marlboro	9	29
Newberry	1,300	3,316
Oconee	138	36
Orangeburg	931	2,919
Other States	2,780	3,534
Other	107	n/a
Pickens	35	131
Richland	173,284	147,907
Saluda	261	2,225
Spartanburg	145	94
Sumter	746	2,514
Union	14	45
Williamsburg	16	101
York	265	299
Total	265,227	285,907

Traffic counts are collected at stations representing different road segments (Figure D-2). Each daily traffic count is multiplied by the length of the corresponding segment to calculate the DVMT. A 2006 GIS traffic count file compiled by SC DOT estimates the traffic count on I-26 just north of I-20 to be 142,100. This is the highest traffic count estimate in the two counties and falls within the Lexington/Richland Nonattainment Area. The highest count estimate outside of the Lexington/Richland Nonattainment Area, 53,200, is found on I-26 in the southeastern corner of Lexington County. DVMT for the Lexington/Richland Nonattainment Area is estimated to be approximately 15.8 million for 2006. DVMT for the remaining portion of the two counties is estimated at approximately 293,953 for 2006. The Lexington/Richland Nonattainment Area contains an estimated 98 percent of Lexington-Richland County's DVMT, and thus the majority of Lexington and Richland County's motor vehicle emissions.

Figure D-2: Lexington and Richland Counties 2006 Average Daily Traffic Counts



E. Growth Rates and Patterns

The following conclusions were drawn based on data from 2000, and population projections for 2020 and 2030 as contained in Table E-1. Based on the projected data for 2020 and 2030, the population of Lexington and Richland Counties will continue to grow. Since the Lexington/Richland Nonattainment Area includes most of the urbanized portion of Lexington and Richland Counties, it is concluded that the Lexington/Richland Nonattainment Area will encompass the majority of expected population growth.

Table E-1: Historical and Projected Population

Population Data	Lexington and Richland Counties
Population, 2000	536,691
Projected Population, 2020	690,430
Projected Population, 2030	759,140
Projected Population Growth, 2000 - 2020	28.6%
Projected Population Growth, 2020 - 2030	9.9%
Land Area (Sq. Miles)	1,528.41
Projected Population/Land Area (Sq. Miles) 2020	451.73
Urban Population, 2000	422,761
Percent Urban Population, 2000	78.77
Rural Population, 2000	113,930
Percent Rural Population, 2000	21.22

Figure E-1 shows population growth by historical and projected population data for the combined Lexington and Richland Counties. Figure E-2 shows trends in population density. The Lexington/Richland Nonattainment Area captures the area's urban population. Therefore, the Department concludes that the Lexington/Richland Nonattainment Area contains the expected population and economic growth for the area in the coming years.

Figure E-1: Lexington and Richland Counties Historical and Projected Population, 2000 - 2030

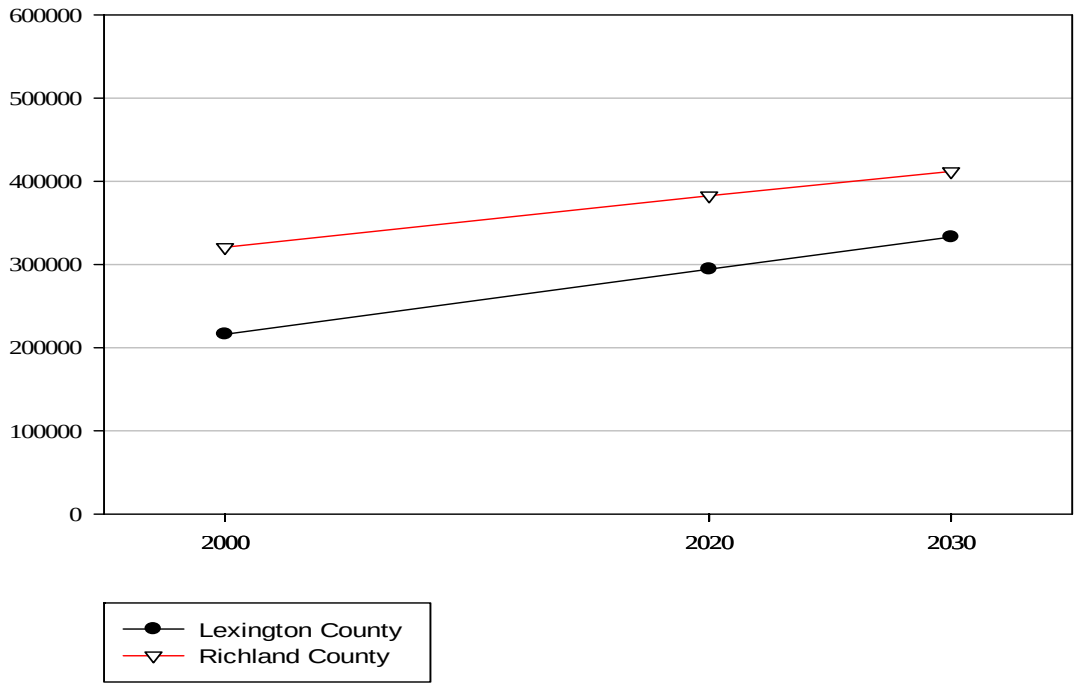
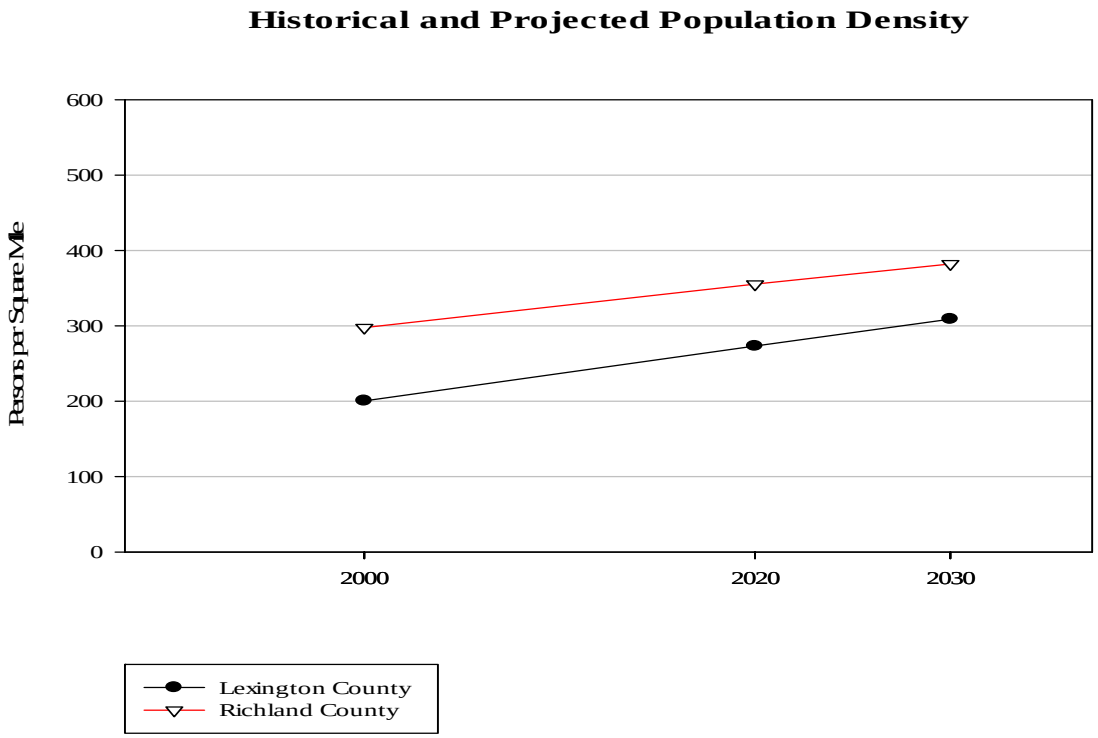


Figure E-2: Lexington and Richland Counties Historical and Projected Population Density



F. Meteorology

The wind rose in Figure F-1 was created using ozone season (April through October) wind data from 2000 through 2004 meteorological data sets at Columbia National Weather Service Office. This wind data represents the central portion of South Carolina during the ozone season. The wind rose shows that a variety of wind directions occur during the ozone season; however, there is a slight maximum wind direction from the west and west-southwest. Figure F-2 shows the location of the Columbia Metropolitan Airport, where the wind rose data was collected, relative to the Congaree Bluff, Parklane and Sandhill ozone monitoring stations.

Figure F-1: Wind Rose for Lexington and Richland Counties

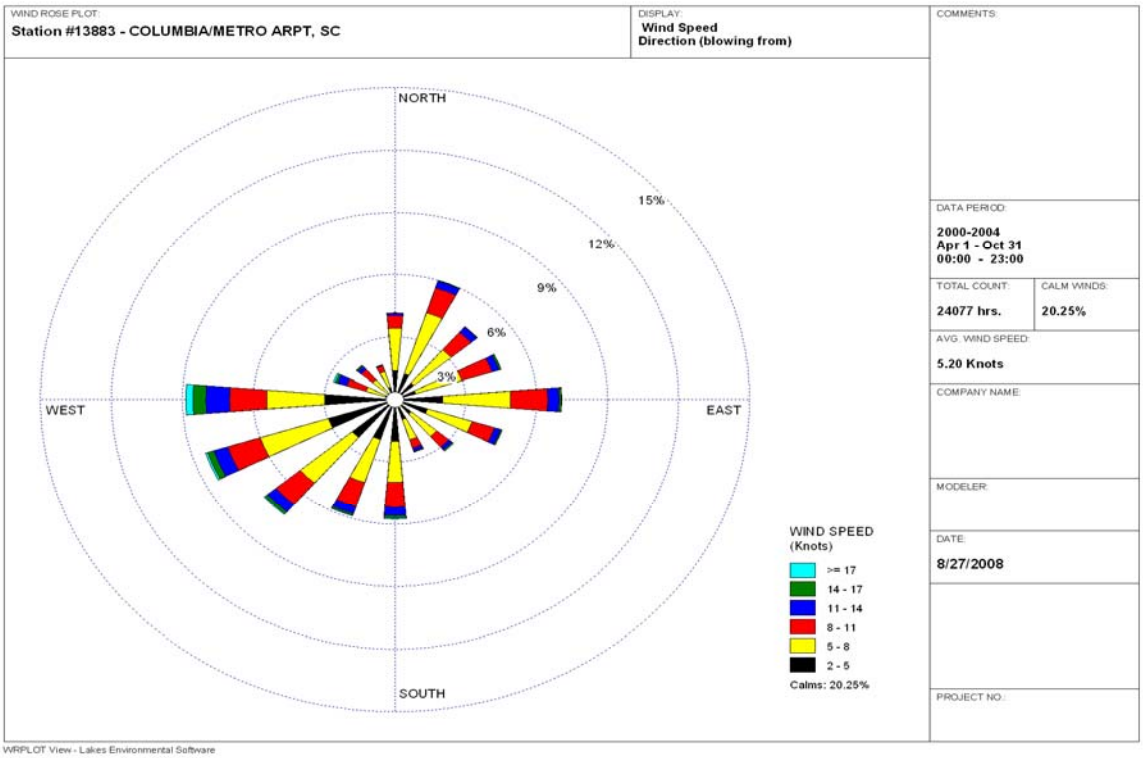
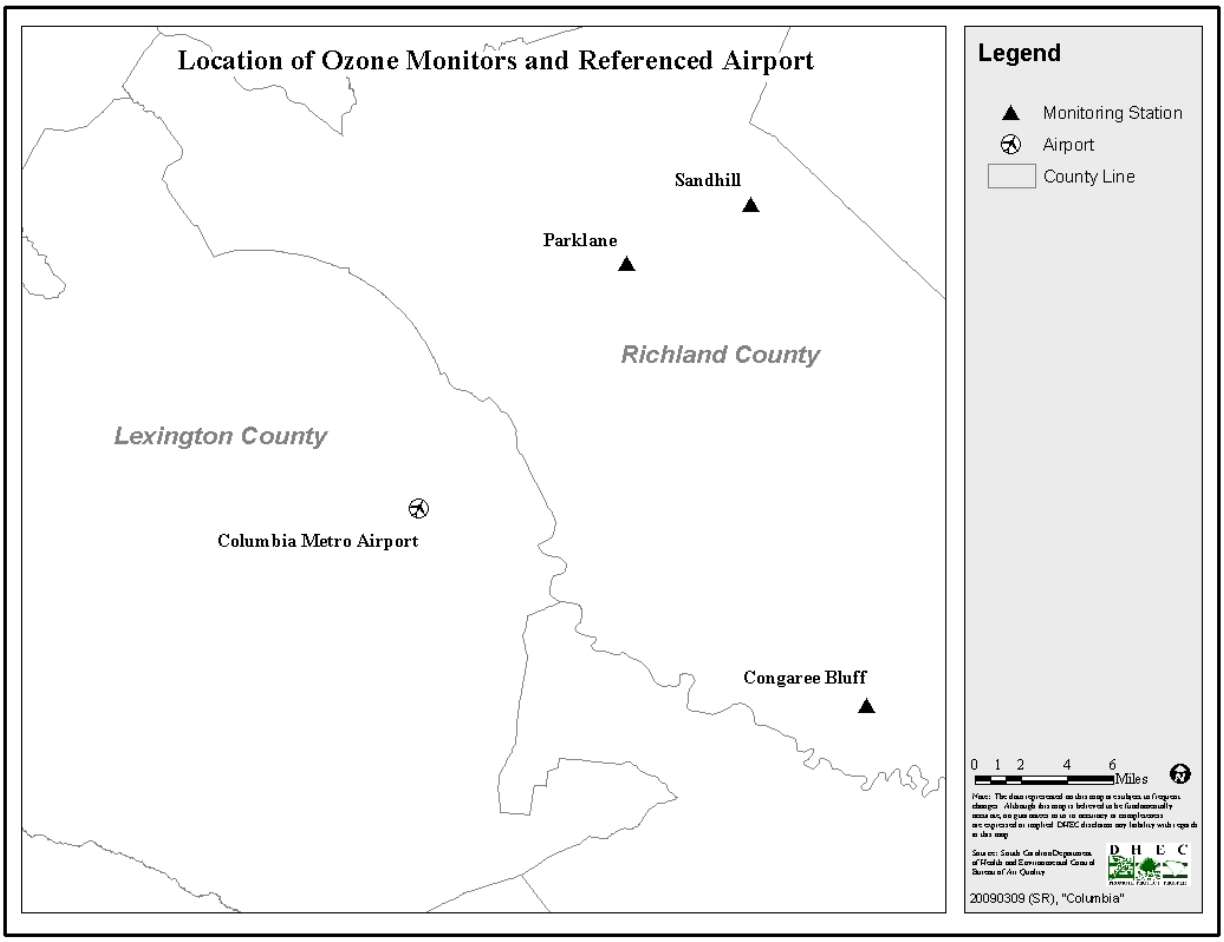


Figure F-2: Location of the Columbia Metropolitan Airport Relative to the Congaree Bluff, Parklane and Sandhill Ozone Monitoring Stations

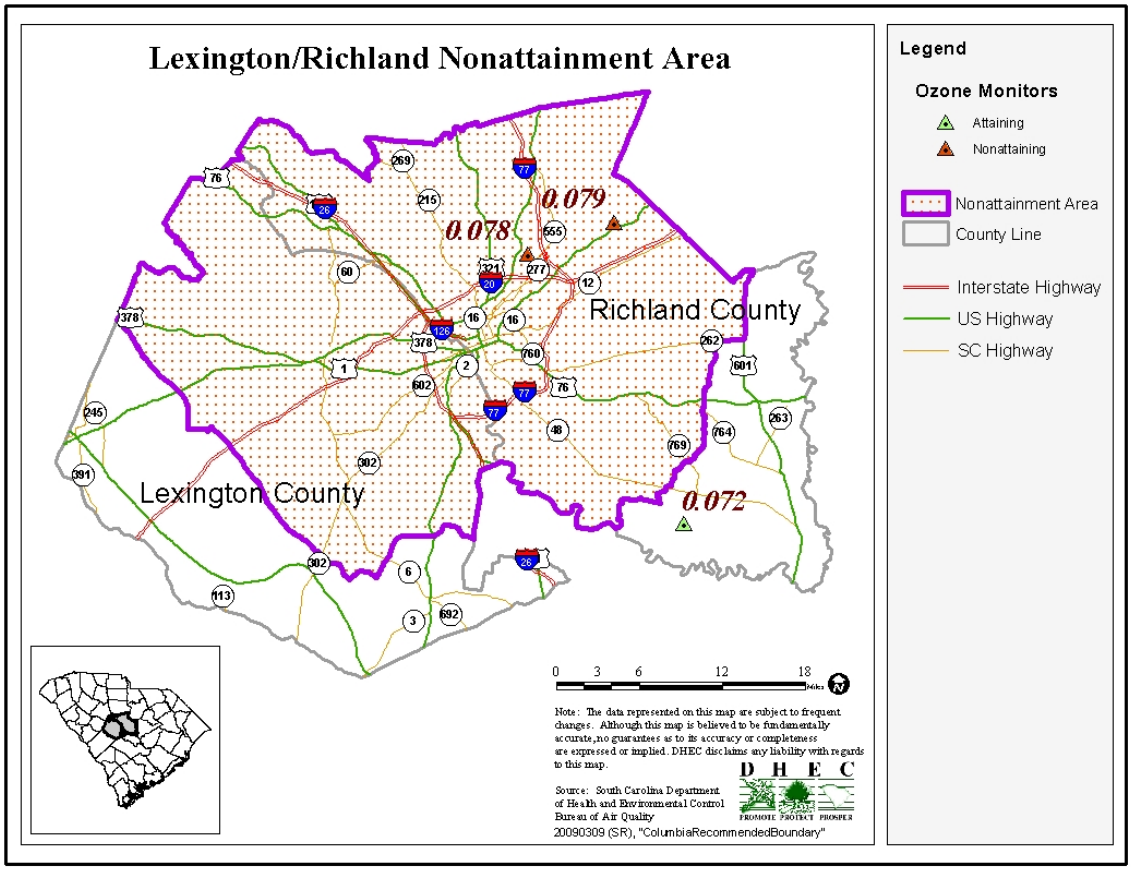


G. Reserved

H. Jurisdictional Boundaries

Figure H-1 shows the recommended Lexington/Richland Nonattainment Area, which is the portion of Lexington and Richland Counties located within the area distinctly defined and known as the COATS MPO. The COATS MPO is designated as the lead transportation planning in the Lexington/Richland Nonattainment Area and has the primary responsibility for developing the Transportation Plan and the Transportation Improvement Program. If the area is designated as nonattainment, the transportation conformity interagency consultation partners, including the COATS MPO, SC DOT, and the Department have a transportation conformity memorandum of agreement in place so there will be no delay in beginning the transportation conformity process. Transportation models for the area are specific to the COATS MPO. Modeling for a nonattainment area larger than the MPO would require the development of more refined modeling outside the MPO area and thus, additional resources**.**

Figure H-1: Lexington/Richland Nonattainment Area



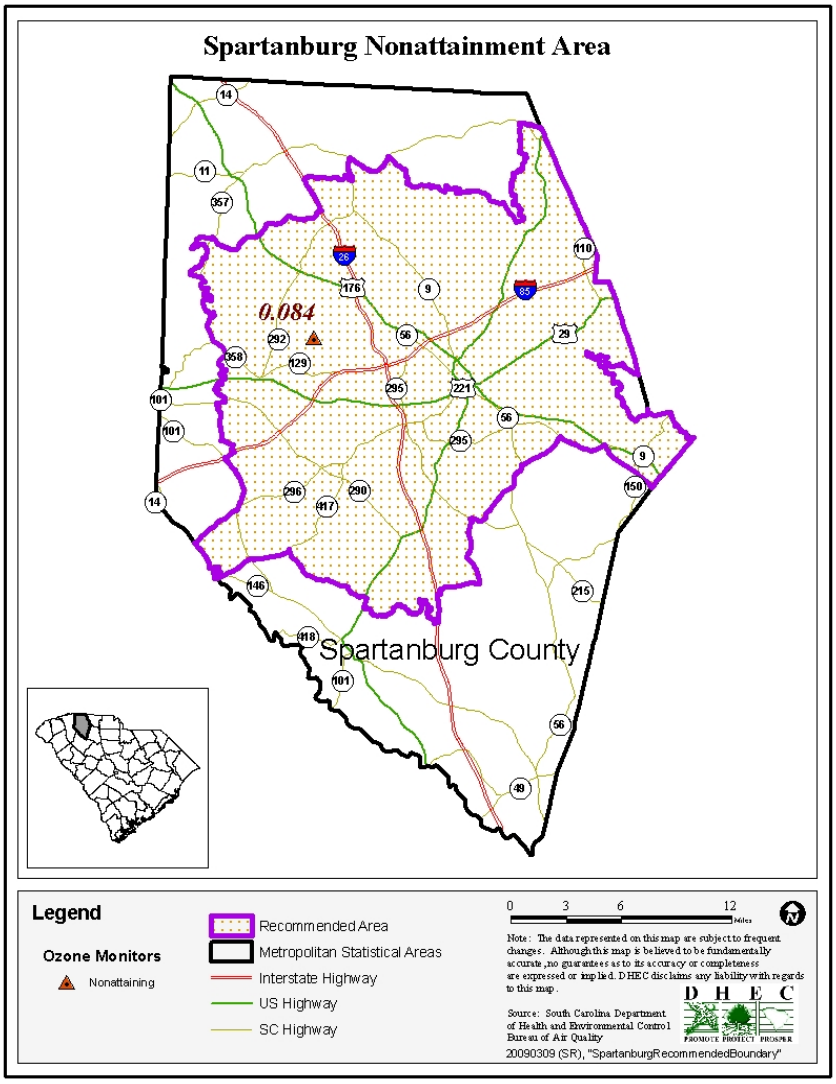
Spartanburg Nonattainment Area

Overview

In accordance with the United States Environmental Protection Agency (EPA) guidance pertaining to the 2008 8-hour ground-level ozone National Ambient Air Quality Standards (Ozone NAAQS), the South Carolina Department of Health and Environmental Control (Department) is submitting its recommendation for Spartanburg County, South Carolina.

The Department recommends that the portion of Spartanburg County encompassed by the boundaries of the Spartanburg Area Transportation Study (SPATS) Metropolitan Planning Organization (MPO), which contains North Spartanburg Fire Station ozone monitoring station (45-083-0009), be designated a nonattainment area for exceeding the Ozone NAAQS based on 2006 - 2008 quality assured ozone monitoring data. The requirements of the State Implementation Plan (SIP) developed for each nonattainment area should be flexible enough to address each area's unique situation. The designation of a portion of Spartanburg County would lead to greater efficiency in the development and implementation of local control measures and supports the Department's value of "local solutions to local problems." As the SPATS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity will be conducted much more effectively and efficiently. Transportation models have been developed for the area within this boundary. For areas outside the MPO, the South Carolina Department of Transportation (SC DOT) will have to develop more refined modeling capabilities which will be resource intensive. This area will be referred to as the Spartanburg Nonattainment Area throughout the rest of this document. The location and boundary of the area that is being recommended for nonattainment are shown in Figure 1.

Figure 1: Spartanburg Nonattainment Area



The factors utilized to recommend the boundary for this nonattainment area designation are as follows:

- The North Spartanburg Fire Station ozone monitoring station in Spartanburg County is currently exceeding the Ozone NAAQS and is included in the Spartanburg Nonattainment Area. The northern part of Spartanburg County has hilly to mountainous terrain. The Cowpens ozone monitoring station (45-021-0002) in northwestern Cherokee County has similar terrain to the northern part of Spartanburg and is more representative of northern Spartanburg County than the North Spartanburg Fire Station ozone monitoring station. The Cowpens ozone monitoring station is attaining the Ozone NAAQS. The Long Creek ozone monitoring station (45-073-0001) located in Oconee County is also representative of northern Spartanburg County and also indicates attainment. Since both the Cowpens ozone monitoring station and the Long Creek ozone monitoring station monitors currently have design values less than the Ozone NAAQS, the Department believes that the northern portion of Spartanburg County should be designated as

attainment. The portion of Spartanburg County not in the recommended nonattainment area is rural in nature and contains only two percent of the county's point source NO_x emissions. Therefore, the Department concludes that these rural areas are neither causing nor contributing to an exceedance of the Ozone NAAQS and, therefore, should not be included in the Spartanburg Nonattainment Area.

- The population of Spartanburg County in 2000 was 253,791 and the Spartanburg Nonattainment Area captures a population of 195,501. The Spartanburg Nonattainment Area includes 77 percent of the population. NO_x emissions from human activities, such as mobile source emissions and other area sources, are major contributors to ozone formation. Therefore, the Department concludes that, based on the high percentage of population captured by the Spartanburg Nonattainment Area, the recommendation is appropriate.
- Motor vehicle emissions are a significant contributor to ozone formation. Daily Vehicle Miles Traveled (DVMT) for 2006, collected by the South Carolina Department of Transportation, is estimated to be 6.17 million within the Spartanburg Nonattainment Area and 1.69 million in the remainder of Spartanburg County. The Department concludes that the Spartanburg Nonattainment Area contains 78 percent of Spartanburg County's DVMT, thus the majority of Spartanburg County's motor vehicle emissions.
- According to the 2000 U.S. Census, 82 percent of workers who live in Spartanburg County work in the county. The Spartanburg Nonattainment Area encompasses 85 percent of the urbanized area, and the majority of commuters who live in Spartanburg County work within the urbanized area. Automobiles are a major contributor of NO_x emissions and to ozone formation. Therefore, the Department concludes the majority of the commuter flow, and subsequently a majority of the NO_x emissions from vehicles, is contained within the Spartanburg Nonattainment Area.
- The center of economic development and retail trade, the majority (353 out of 413) of manufacturing establishments, the majority of manufacturing employees (31,026 out of 38,202) and most of the county's urbanized area are located within the Spartanburg Nonattainment Area. According to the 2006 American Community Survey, 85 percent of the workers sixteen years old or older in Spartanburg County drove alone to work, and only 0.3 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Spartanburg Nonattainment Area and single-occupant vehicles are the primary mode of transportation.
- Facilities holding Title V permits which are major sources of NO_x and or VOC emissions may contribute to ozone formation. There are seventeen Title V NO_x point sources in Spartanburg County with fourteen of these in the Spartanburg Nonattainment Area. There are eighteen Title V VOC point sources in Spartanburg County. Fifteen of these sources are in the Spartanburg Nonattainment Area. The Department has concluded that the Spartanburg Nonattainment Area captures 98 percent of the Title V point source NO_x emissions and 82 percent of the Title V point source VOC emissions in Spartanburg County.
- South Carolina has provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing oxides of nitrogen emissions do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2005, 2006, and 2007, the areas in South Carolina designated as nonattainment for the 1997 8-hour ozone standard with the effective date deferred were

redesignated to attainment. Spartanburg was one of these areas. Each of the diverse stakeholders joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.

- Spartanburg County was one of 45 counties across South Carolina that participated in the Early Action Compact (EAC) process. A few examples of the stakeholders' commitment to air quality include:
    - Spartanburg County formed an Air Quality Committee in October 2006, comprised of local businesses, government, and medical professionals.
    - Spartanburg County implemented congestion management projects, including installation of intersection and signalization improvements to alleviate traffic congestion to reduce emissions from idling vehicles and installation of Intelligent Traffic Systems such as automated advisory/alert messages to drivers on interstate highways.
    - Intersection and signalization projects were implemented within the City of Spartanburg and along the SC 9 corridor in the Boiling Springs area, which is the number one transportation priority and congested road in Spartanburg County.
    - Two area schools, Lone Oak Elementary School and Pine Street Elementary School were both awarded the "Safe Routes to School" grant for the 2007 funding cycle.
    - The City of Spartanburg has been nationally designated as a Bronze Level, Bicycle-Friendly Community from The League of American Bicyclists and proclaimed as the first city in South Carolina to receive such an honor.
    - In a program called "Wofford Recyclers," part of the campus' efforts for "going green," bicycles will be used and enjoyed by the campus community – students, faculty and staff. The bicycles are available as needed in various locations around campus.
    - At the July 16, 2007, county council meeting, the county appointed a resident-driven Air Quality Advisory committee to create an action plan to improve Spartanburg air quality. The committee continues to work closely with the Department to develop a list of air quality improvement initiatives.
    - Spartanburg County held a Lawn Mower Exchange on May 31, 2008. Fifty gas-powered lawn mowers were removed from use.
    - Pine Street Elementary began participation in the B^2 program in November 2008.
    - Inman Elementary participates in the "Safe Routes to School Program" to develop programs to enhance bicycle and pedestrian safety.
    - SPATS assisted the Department in making necessary revisions to the State Implementation Plan, specifically the Transportation Conformity Memorandum of Agreement (MOA) outlining the interagency consultation procedures for determining conformity of transportation plans, programs and projects. As a signatory to the MOA (July 2008), the necessary interagency consultation procedures outlined in the MOA will be in place should the area be designated nonattainment for any applicable criteria pollutant.

The activities being conducted by the local, county, and regional entities confirm that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the

implementation of local and regional controls. In fact, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, smaller boundaries preserve the flexibility of implementing strategies, enforceable and directionally sound, tailored to the respective area. Participation in the EAC process proved local stakeholders have an impact on reducing the formation of ozone. Our partners continue to work on local efforts that improve air quality.

- Section 48-1-50 (Powers of Department) of the South Carolina Pollution Control Act gives the Department the authority to require emission reductions from a source, regardless of where it is located, if the emissions result in pollution in excess of applicable standards. The Department currently has regulations that are more stringent and protective than federal requirements. These actions, such as addressing NO_x emissions from stationary sources, demonstrate our statutory authority and ability to implement controls to improve air quality statewide. A nonattainment area does not provide any additional authority to address emissions where appropriate and needed.
- The Department operates a comprehensive ozone-forecasting program that covers 34 counties in our State, including Spartanburg County. The forecasting program covers over 3,500,000, or nearly 88.6 percent of South Carolina residents. South Carolina's citizens are informed on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as appropriate to better protect their health. The availability of this forecast for all of Spartanburg County confirms that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of this program. Therefore, the Department concludes ozone forecasting covers a broad area, so everyone inside and outside of the Spartanburg Nonattainment Area within Spartanburg County and the surrounding areas will be given the same precautions.

The Department has evaluated monitoring data, population, urbanization and growth, traffic, and point source emissions data to develop the boundary recommendation for the Spartanburg Nonattainment Area. The following details support the recommendation.

A. Air Quality Data

Figure A-1: Elevation Map and Ozone Monitoring Stations - Upstate South Carolina

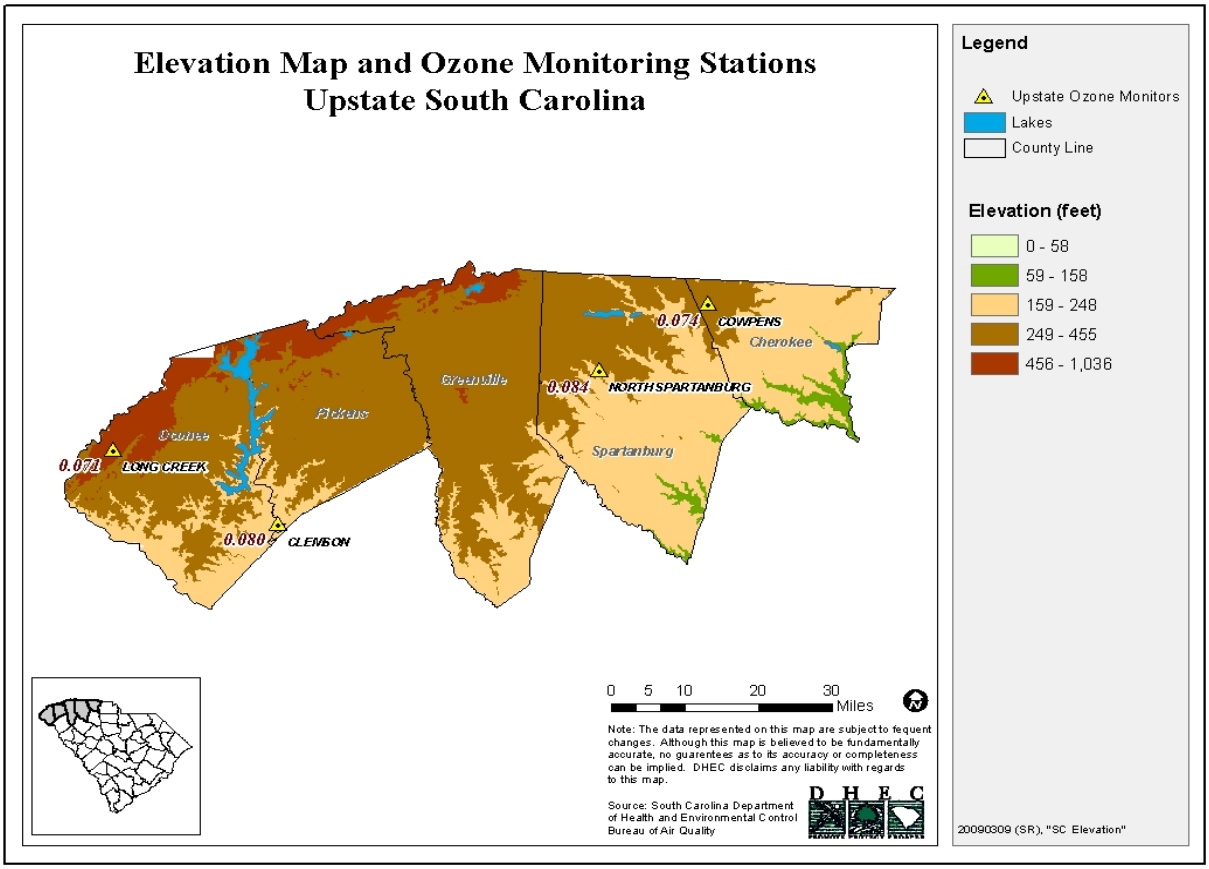


Figure A-1 shows the location of the North Spartanburg Fire Station ozone monitoring station in Spartanburg County, the Cowpens ozone monitoring station in northwestern Cherokee County and the Long Creek ozone monitoring station in the mountains of Oconee County. The North Spartanburg Fire Station ozone monitoring station is located in rural Spartanburg County, northwest of the city of Spartanburg. The surrounding area of the monitoring site is residential. This site was established as a maximum ozone concentration monitor and is sited to represent urban scale (citywide or equivalent rural areas with dimensions ranging from 4 to 50 kilometers) concentrations of ozone on April 10, 1990. The area represented by this monitor is dominated by area sources.

The Cowpens ozone monitoring station is located in northwestern Cherokee County at the Cowpens National Battlefield which is near the northeast border of Spartanburg County. This site was established as an upwind background monitor and is sited to represent urban scale concentrations of ozone on April 21, 1988. The monitor is located in a rural setting and is dominated by area sources.

The Long Creek ozone monitoring station is located on Round Mountain in northwest Oconee County. The site was established as a general-background monitor to study the impacts of transported pollutants on May 4, 1989. The area represented by this monitor is dominated by area sources.

Although the North Spartanburg Fire Station ozone monitoring station in Spartanburg County exceeds the Ozone NAAQS with a design value of 0.084 ppm for the years 2006 - 2008, it is only representative of the relatively flat, central part of the county. The northern part of Spartanburg County has hilly to mountainous terrain. The Cowpens ozone monitoring station in neighboring northwestern Cherokee County has similar terrain and is more representative of the northern part of Spartanburg County. The Cowpens ozone monitoring station meets the Ozone NAAQS with a design value of 0.074 ppm for the years 2006 - 2008. The Long Creek ozone monitoring station located in the mountains of Oconee County also meets the Ozone NAAQS for 2006 - 2008 with a design value of 0.071 ppm.

Figure A-2 presents the 2000 - 2008 quality assured 8-hour ozone monitoring data for Spartanburg, Cherokee, and Oconee Counties. The Design Values Trends 2000 - 2008 graph shows a general decrease in the design values for all three monitors from 2000 to 2005. From 2005 to 2008, the design values for the Cowpens ozone monitoring station continued to decrease while the design values for the North Spartanburg Fire Station monitoring station and the Long Creek ozone monitoring station remained relatively stable. Both the Cowpens monitor and Long Creek monitor indicate attainment with the Ozone NAAQS.

Figure A-2: Design Values Trends 2000 – 2008

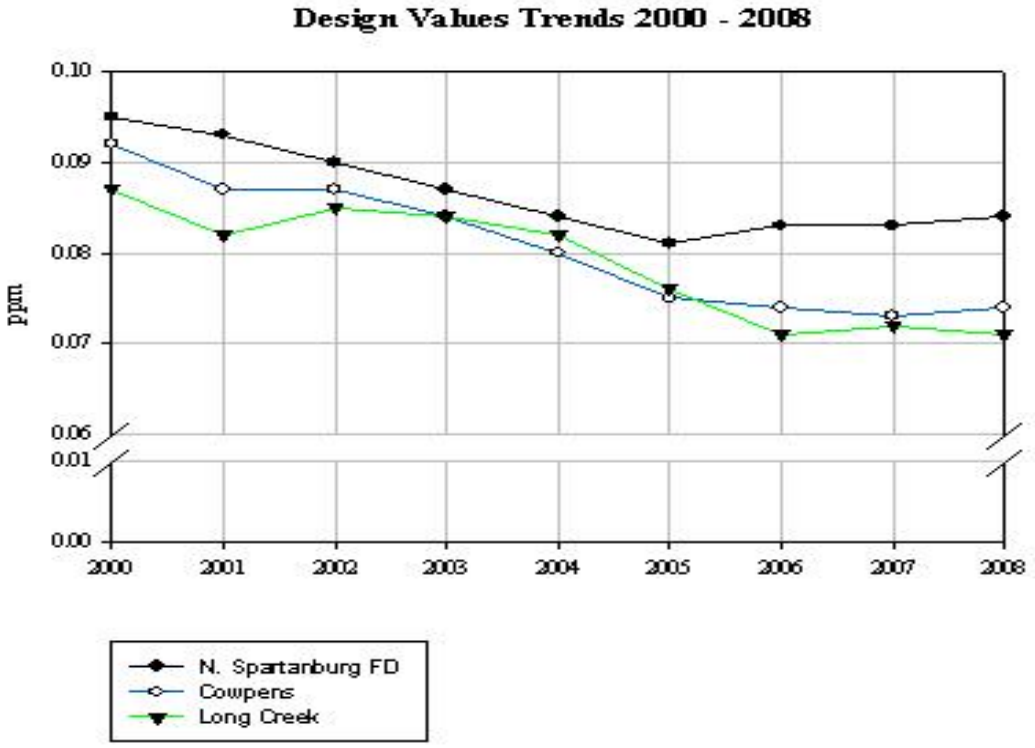
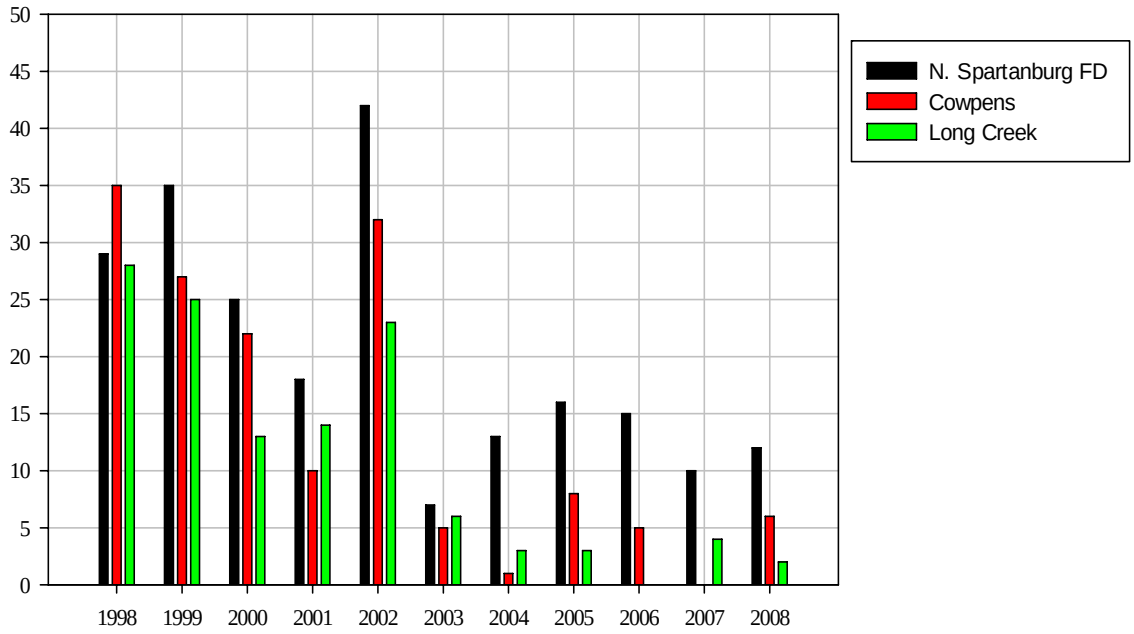


Figure A-3 demonstrates the decline in the total annual number of days when the maximum 8- hour ozone levels were above 0.075 ppm for the North Spartanburg Fire Station ozone monitoring station, the Cowpens ozone monitoring station, and the Long Creek ozone monitoring station. The graph shows that in recent years there are fewer days when the maximum 8-hour ozone concentrations have been above the Ozone NAAQS at these monitor locations.

Figure A-3: Number of Days Ozone Concentrations Above 0.075 ppm

Number of Days Ozone Concentrations Above 0.075 ppm



B. Emissions Data

It should be noted that South Carolina is a NO_x limited state. On average, about 70 percent of the VOC emissions come from biogenic sources. To evaluate the emissions in Spartanburg County, South Carolina determined NO_x and VOC emissions using the best and most recent data available for the various source sectors. The source sectors that were evaluated include point, non-point, and on-road and non-road mobile sources. Point source data is state-generated data representing calendar year 2005. All other sectors are a combination of state-generated and EPA-generated data in EPA's final National Emissions Inventory (NEI) form representing calendar year 2002. The data for 2002 was used rather than 2005 for the other sectors since EPA had de-emphasized the 2005 NEI to focus efforts on the reinvention of the 2008 inventory. Because of the focus on the 2008 NEI, there was no real attempt to generate 2005 data for sectors other than point sources. Other source sector emissions are largely population based. This means they are not likely to greatly change on an annual basis. However, point sources were thoroughly evaluated in 2005 to account for significant changes in emissions. South Carolina believes the 2002 data is still representative of those sectors for 2005.

Figures B-1 and B-2 show the NO_x and VOC emissions from each of the source sectors.

Figure B-1: NOx Source Sector Emissions

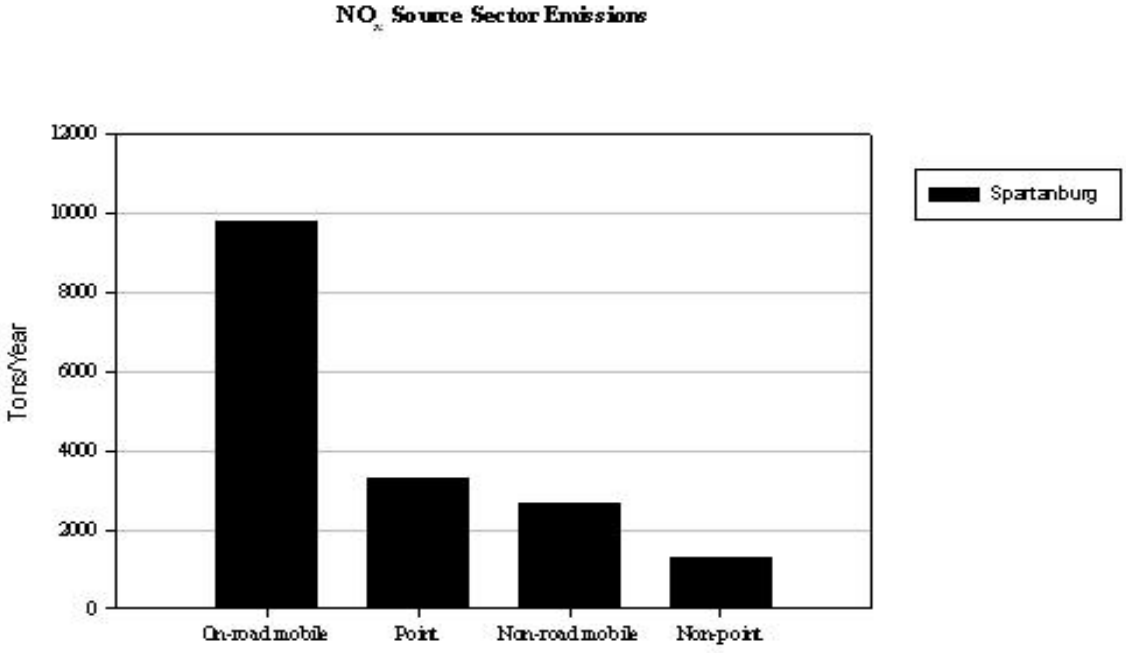
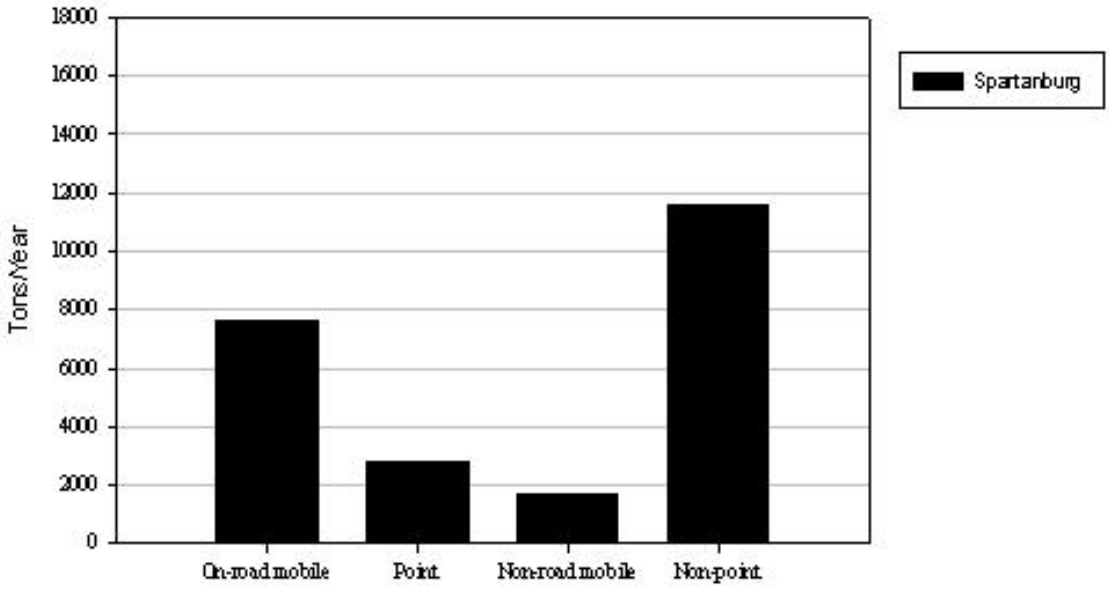


Figure B-2: VOC Source Sector Emissions



Figures B-3 and B-4 identify the eighteen Spartanburg County NO_x and VOC Title V point sources in operation. There are seventeen Title V NO_x point sources in Spartanburg County, with fourteen of these in the Spartanburg Nonattainment Area. These fourteen sources account for 98 percent of the total Title V point source NO_x emissions for Spartanburg County. There are eighteen Title V VOC point sources in Spartanburg County. Fifteen of these sources are in the Spartanburg Nonattainment Area. These fifteen sources account for 82 percent of the total Title V point source VOC emissions for Spartanburg County.

Figure B-3: Title V Source NOx Emissions

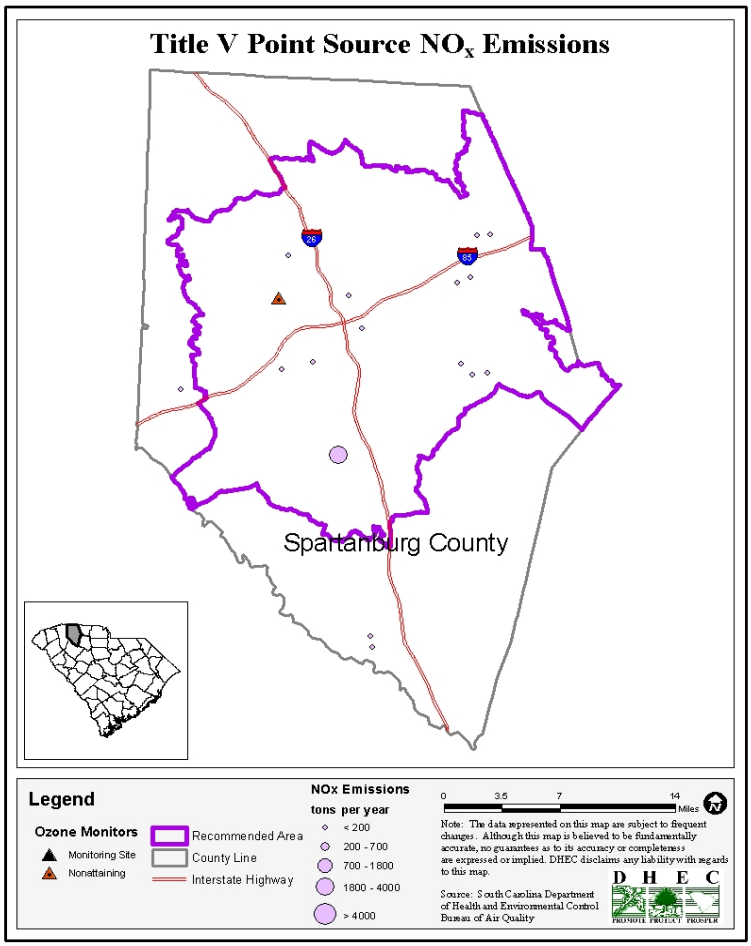
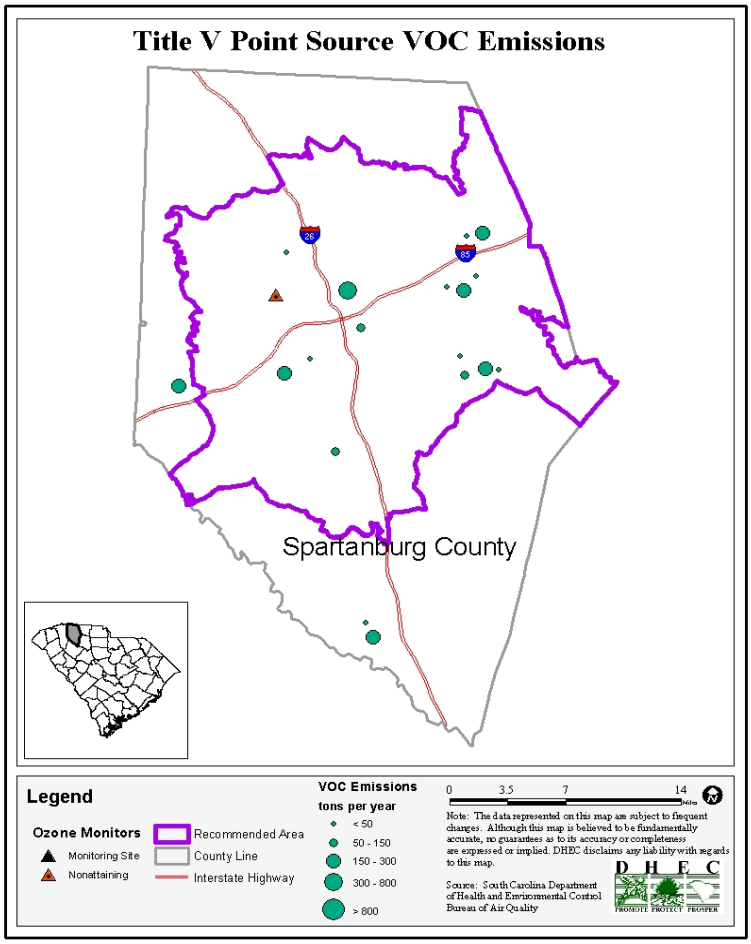


Figure B-4: Title V Source VOC Emissions



Tables B-1 and B-2 list the Spartanburg County Title V facilities that contribute to the NO_x and VOC emissions. An asterisk next to the name indicates that this facility is captured by the Spartanburg Nonattainment Area.

Table B-1: Title V Source NO_x Emissions

Spartanburg County Facility	Permit Number	2005 Est. Emissions Tons/year
Transcontinental Gas Pipeline Station 140*	2060-0179	2,841.78
Invista Sarl Spartanburg*	2060-0345	131.30
Michelin NA U.S. 3 Spartanburg*	2060-0065	58.54
Palmetto Landfill & Recycling Ctr*	2060-0221	20.22
Kohler Co: Vitrous Plant*	2060-0361	18.70
Donnelley, RR & Sons*	2060-0081	15.63
Milliken Chemical Dewey Plant*	2060-0001	15.44
Reeves Brothers Inc PPG USA Fairforest*	2060-0019	6.19
Exopack LLC*	2060-0075	5.87

Spartanburg County Facility	Permit Number	2005 Est. Emissions Tons/year
Goodyear Spartanburg*	2060-0035	1.82
Johns Manville Spartanburg Plant*	2060-0344	1.71
Magellan Terminals: Spartanburg II*	2060-0096	1.20
Kohler Co. Plastics Plant*	2060-0071	0.34
Tegrant Alloyd Brands Inc*	2060-0215	0.18
BMW Manufacturing Corp	2060-0230	48.73
Celanese Emulsions Enoree Plt	2060-0430	11.44
National Starch and Chemical Co	2060-0085	1.13
Total tons of emissions		3,180.22

*Located within Spartanburg Nonattainment Area

Table B-2: Title V Source VOC Emissions

Spartanburg County Facility	Permit Number	2005 Est. Emissions Tons/year
Michelin NA U.S. 3 Spartanburg*	2060-0065	493.33
Palmetto Landfill & Recycling Ctr*	2060-0221	277.69
Donnelley, RR & Sons*	2060-0081	271.09
Invista Sarl Spartanburg*	2060-0345	211.82
Kohler Co. Plastics Plant*	2060-0071	204.30
Exopack LLC*	2060-0075	135.72
Goodyear Spartanburg*	2060-0035	117.11
Transcontinental Gas Pipeline Station 140 *	2060-0179	106.28
Reeves Brothers Inc PPG USA Fairforest*	2060-0019	40.66
Magellan Terminals: Spartanburg II*	2060-0096	26.00
Milliken Chemical Dewey Plant*	2060-0001	24.27
Johns Manville Spartanburg Plant*	2060-0344	18.92
Tegrant Alloyd Brands Inc*.	2060-0215	11.78
Kohler Co: Vitrous Plant*	2060-0361	1.71
Flint Ink: Jones Road*	2060-0115	1.61
Celanese Emulsions Enoree Plt	2060-0430	243.96
BMW Manufacturing Corp	2060-0230	175.12
National Starch and Chemical Co	2060-0085	1.48
Total tons of emissions		2,362.85

*Located within Spartanburg Nonattainment Area

C. Population Density and Degree of Urbanization

According to the U.S. Census Bureau, urban is defined as all territory, population, and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a

census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas and urban clusters. Rural is defined as all territory, population, and housing units located outside of urbanized areas and urban clusters.

The Spartanburg Nonattainment Area contains 85 percent of the urbanized area in Spartanburg County, including Spartanburg and all communities within its contiguous urbanized area, as well as the cities and towns of Boiling Springs, Chesnee, Mayo, Cowpens, Pacolet, Central Pacolet, Duncan, Inman, Lyman, Roebuck, Startex, Wellford and Reidville. Based on the United States 2000 Census, the population within the Spartanburg Nonattainment Area is estimated to be 195,501, which is 77 percent of the county population, a majority of the population within the county. Figure C-1 indicates the extent of the urbanized area in the Spartanburg MSA.

Figure C-1: Urban Areas

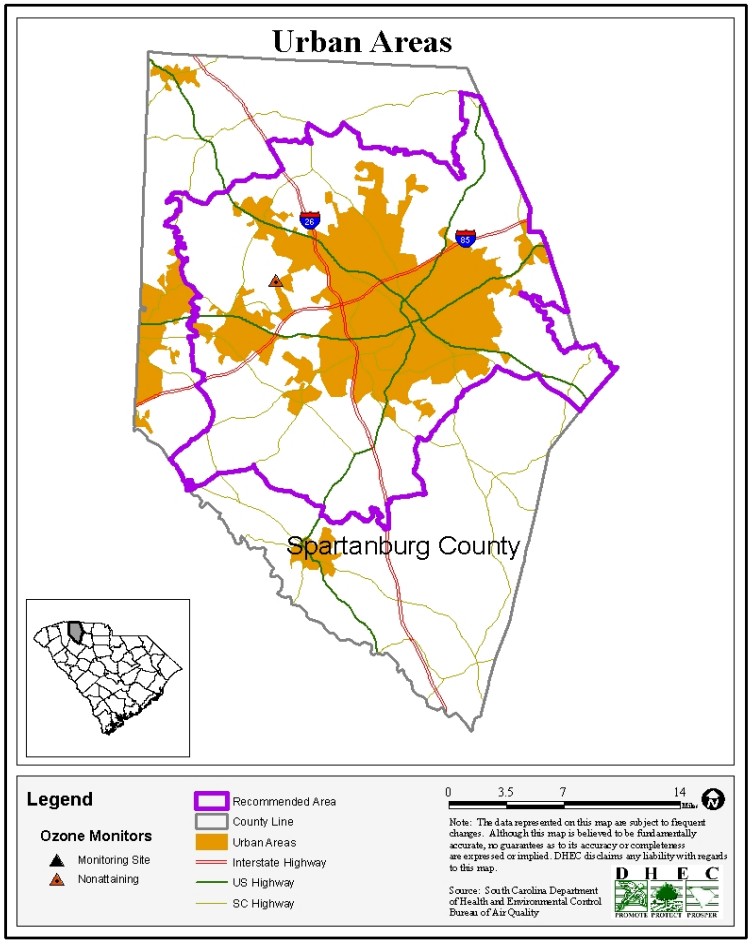


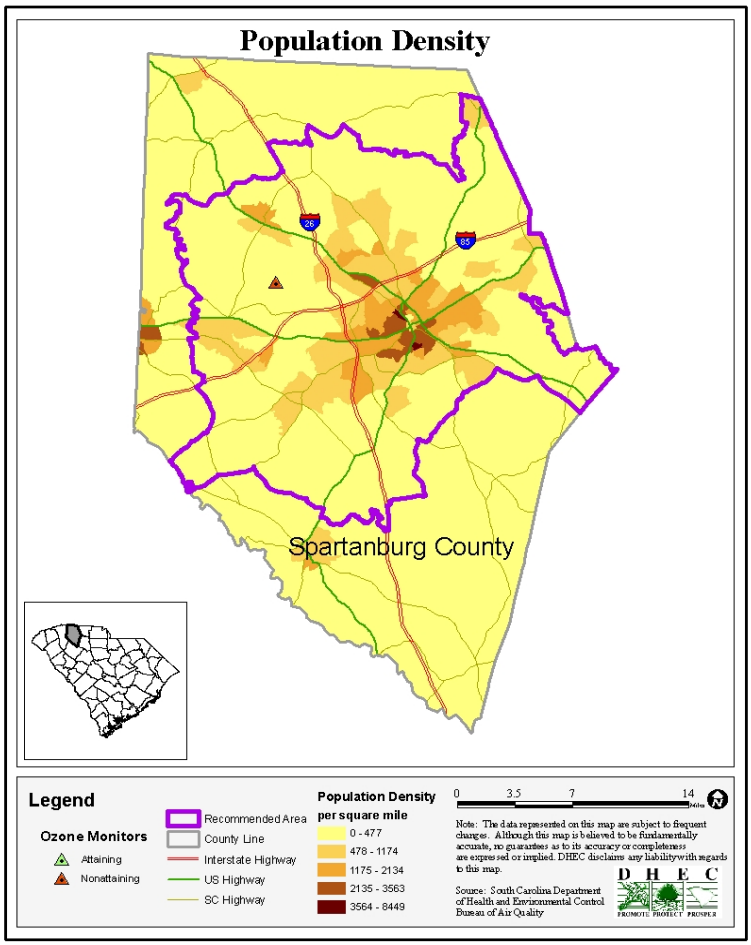
Table C-1 contains population data for both Spartanburg County and the Spartanburg Nonattainment Area.

Table C-1: Total Population, Land Area, and Urban/Rural Population, 2000

Spartanburg County		
	Whole County	**Spartanburg Nonattainment Area**
Population	253,791	195,501
Land Area (Square Miles)	818.65	421.84
Population/Land Area (Square Miles)	310.0	463.4
Urban Population	164,801	
Percent Urban Population	64.9%	
Rural Population	88,990	
Percent Rural Population	35.1%	

Figure C-2 shows the population density and land area for Spartanburg County relative to the Spartanburg Nonattainment Area. The land area within the Spartanburg Nonattainment Area is estimated to be 421.84 square miles. Using the estimated population and land area of the Spartanburg Nonattainment Area, the population density of this nonattainment area is calculated to be 463.4 persons per square mile, which is nearly a 50 percent increase over the county's population density. Based on this high population density within the Spartanburg Nonattainment Area, designation of a partial county for the Spartanburg Nonattainment Area is appropriate.

Figure C-2: Population Density



Spartanburg County has 818.65 square miles of land area. Only 23 percent of the Spartanburg County population resides outside of the Spartanburg Nonattainment Area. Since the area outside of the Spartanburg Nonattainment Area represents such a low percent of the population and has low population density, it can be concluded that this area does not appreciably impact air quality.

According to the U.S. Census Bureau, manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction. Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included. The retail trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Manufacturing is the largest employment sector in Spartanburg County. The second and third largest sectors are retail trade and health care/social assistance. Tables C-2 and C-3 contain a comparison of manufacturing data for Spartanburg County and the Spartanburg Nonattainment Area, and employment

data for Spartanburg County's three largest business sectors. It should be noted that the data in Table C-2 differs from the data in Table C-3 due to the source of the data. The employment data in Table C-2 is taken from the U.S. Census. The manufacturing data in Table C-3 is taken from the 2003-2004 South Carolina Industrial Directory.

The center of economic development and retail trade, the majority (353 out of 413) of manufacturing establishments, the majority of manufacturing employees (31,026 out of 38,202) and most of the county's urbanized area are located within the Spartanburg Nonattainment Area. According to the 2006 American Community Survey, 85 percent of the workers sixteen years old or older in Spartanburg County drove alone to work, and only 0.3 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the Spartanburg Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.

Tables C-2 and C-3 contain the manufacturing and retail trade data for Spartanburg County and the Spartanburg Nonattainment Area.

Table C-2: Employment in the Three Largest Business Sectors, 2006

Spartanburg County		
	Number of Employees	**Number of Establishments**
Manufacturing	27,856	479
Retail Trade	14,370	1,128
Health Care/Social Assistance	12,976	529

Table C-3: Manufacturing Patterns in 2003

Spartanburg County	Nonattainment Area	County	Percent in Nonattainment Area
Employees	31,026	38,202	81.22
Establishments	353	413	85.47

D. Traffic and Commuting Patterns

Figure D-1 shows the two interstates that are located within the Spartanburg Nonattainment Area, I-85 which runs east to west and I-26 that runs north to south. Additionally, there are three other major routes of travel through Spartanburg County. These include U.S. Highways 221, 176 and 29.

The Spartanburg Nonattainment Area includes the SPATS MPO which is responsible for transportation planning in the area. The designation of the Spartanburg Nonattainment Area as recommended provides greater opportunity to link transportation planning to air quality improvement goals.

Figure D-1: Spartanburg County Highway System

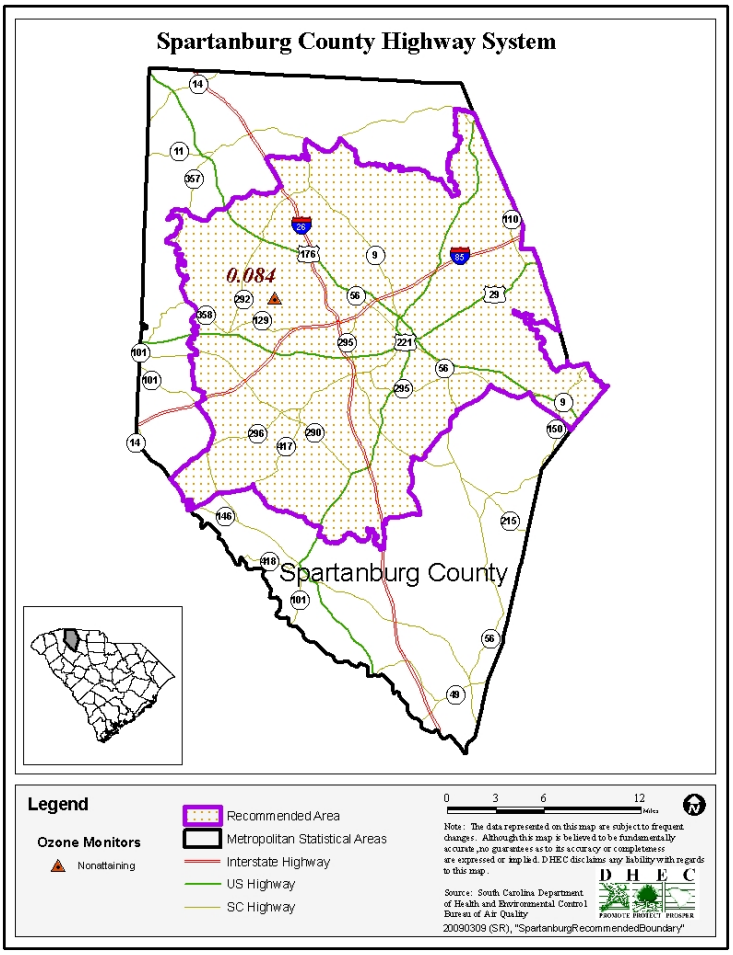


Table D-1 shows where Spartanburg County residents commute to work. The table shows that out of the 117,096 workers that live in Spartanburg County, approximately 82 percent commute and work within the county. Approximately 22 percent of the people who work in Spartanburg County reside outside of the county. Because the Spartanburg Nonattainment Area encompasses the major urbanized areas, and the majority of commuters who live in this county work within the urbanized areas, it is reasonable to conclude that the majority of the commuter flow is contained within the Spartanburg Nonattainment Area.

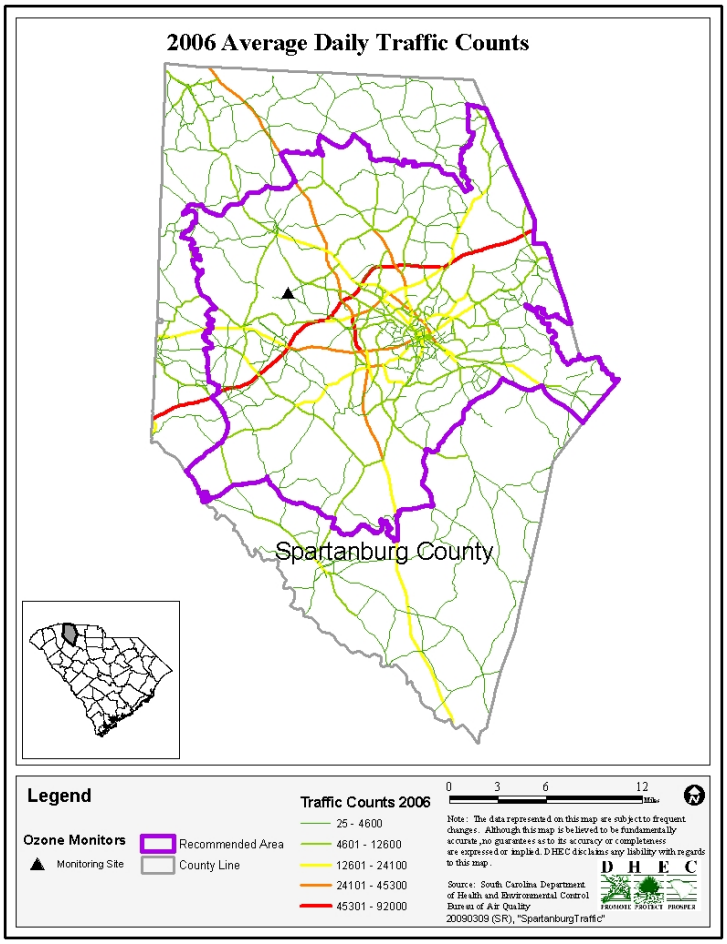
Table D-1: Spartanburg County Work Commute Patterns

	Workers Living in Spartanburg County by Work Location	Workers Employed in Spartanburg County by Residence Location
Abbeville	0	45
Aiken	20	13
Anderson	480	1,264
Bamberg	0	14
Barnwell	0	13
Beaufort	16	0

	Workers Living in Spartanburg County by Work Location	Workers Employed in Spartanburg County by Residence Location
Berkeley	15	7
Charleston	70	49
Cherokee	2,029	3,937
Chester	27	18
Chesterfield	0	4
Colleton	25	11
Darlington	8	49
Dorchester	0	11
Fairfield	33	13
Georgetown	8	0
Greenville	14,586	11,205
Hampton	0	2
Greenwood	226	146
Horry	31	20
Lancaster	20	30
Laurens	703	1,381
Lee	0	7
Lexington	23	27
Marion	0	7
McCormick	0	3
Newberry	22	156
Oconee	112	305
Orangeburg	6	26
Other States	2,182	4,205
Other	30	0
Pickens	198	784
Richland	71	118
Saluda	0	15
Spartanburg	95,496	95,496
Sumter	7	15
Union	522	2,854
York	130	120
Grand Total	117,096	122,370

Traffic counts are collected at stations representing different road segments (Figure D-2). Each daily traffic count is multiplied by the length of the corresponding segment to calculate the DVMT. A 2006 GIS traffic count file compiled by the South Carolina Department of Transportation estimates that the traffic counts west of state route 129 on I-85 range from 76,100 to 92,000. These counts are the highest in the county. The file also indicates that approximately 78 percent of the DVMT on roads included in annual traffic counts is located within the Spartanburg Nonattainment Area. It can be inferred that the majority of Spartanburg County's motor vehicle emissions are contained within the Spartanburg Nonattainment Area.

Figure D-2: Spartanburg County 2006 Average Daily Traffic Counts



E. Growth Rates and Patterns

The following conclusions were drawn based on data from 2000 and population projections for 2020 and 2030 as contained in Table E-1. Based on the projected data for 2020 and 2030, the population of Spartanburg County will continue to grow. Since the Spartanburg Nonattainment Area includes most of the urbanized portion of Spartanburg County, it is concluded that the Spartanburg Nonattainment Area will encompass the majority of expected population growth.

Table E-1: Historical and Projected Population

Population Data	Spartanburg County
Population, 2000	253,791
Projected Population, 2020	310,220
Projected Population, 2030	336,810
Projected County Growth Rate, 2000 - 2020	22.23%
Projected County Growth Rate, 2020 - 2030	8.57%
Land Area (Sq. Miles)	818.65

Population Data	Spartanburg County
Population/Land Area (Sq. Miles) 2000	310
Projected Population/Land Area (Sq. Miles) 2020	378.98
Urban Population	164,801
Percent Urban Population	64.9%.
Rural Population	88,990
Percent Rural Population	35.1%

Figure E-1 shows population growth by historical and projected population data for Spartanburg County. Figure E-2 shows trends in population density. The Spartanburg Nonattainment Area captures most of the area's urban population. Therefore, the Department concludes that the Spartanburg Nonattainment Area contains most of the expected population and economic growth for the area in the coming years.

Figure E-1: Spartanburg County Historical and Projected Population, 2000 - 2030

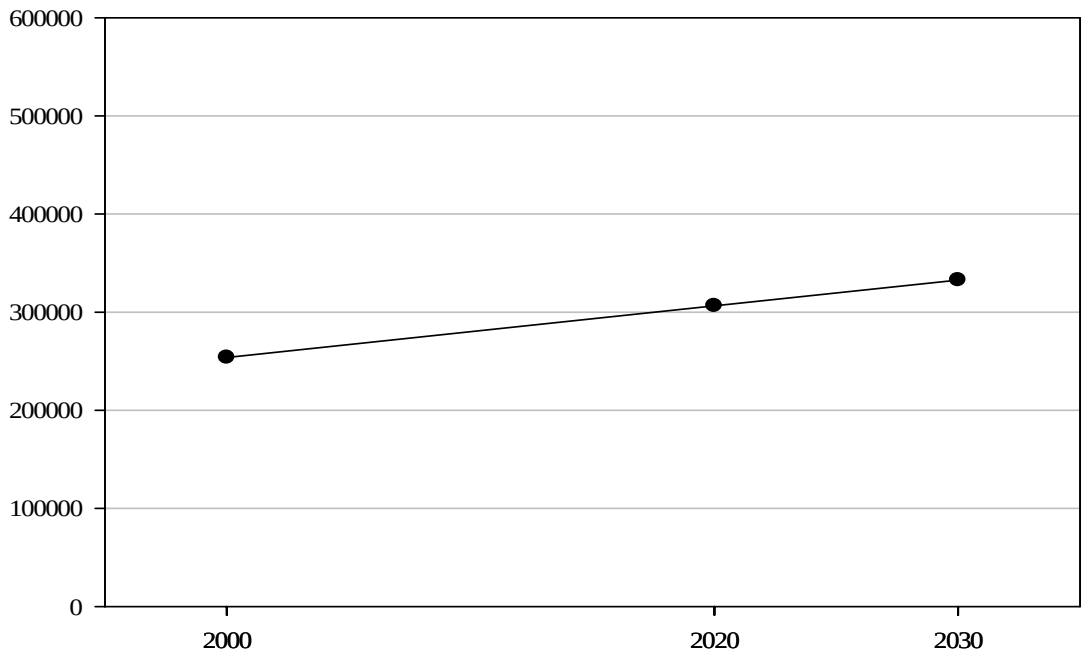
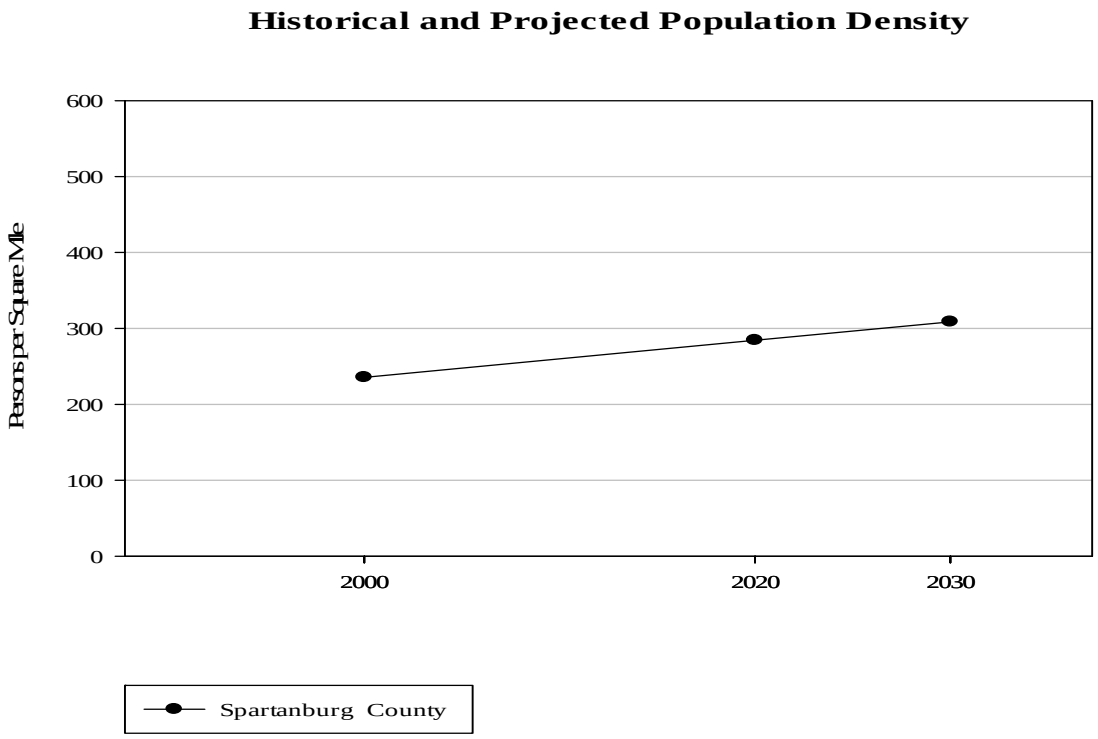


Figure E-2: Spartanburg County Historical and Projected Population Density



F. Meteorology

The wind rose in Figure F-1 was created using ozone season, April 1st through October 31st, wind data from the 2000 - 2004 meteorological data sets at the Greenville-Spartanburg Airport. The wind rose shows that a southwesterly and northeasterly wind direction dominates the Upstate during the ozone season. Figure F-2 shows the location of Greenville-Spartanburg Airport, where the wind rose data was collected, relative to the North Spartanburg Fire Station ozone monitoring station.

Figure F-1: Wind Rose for Spartanburg County

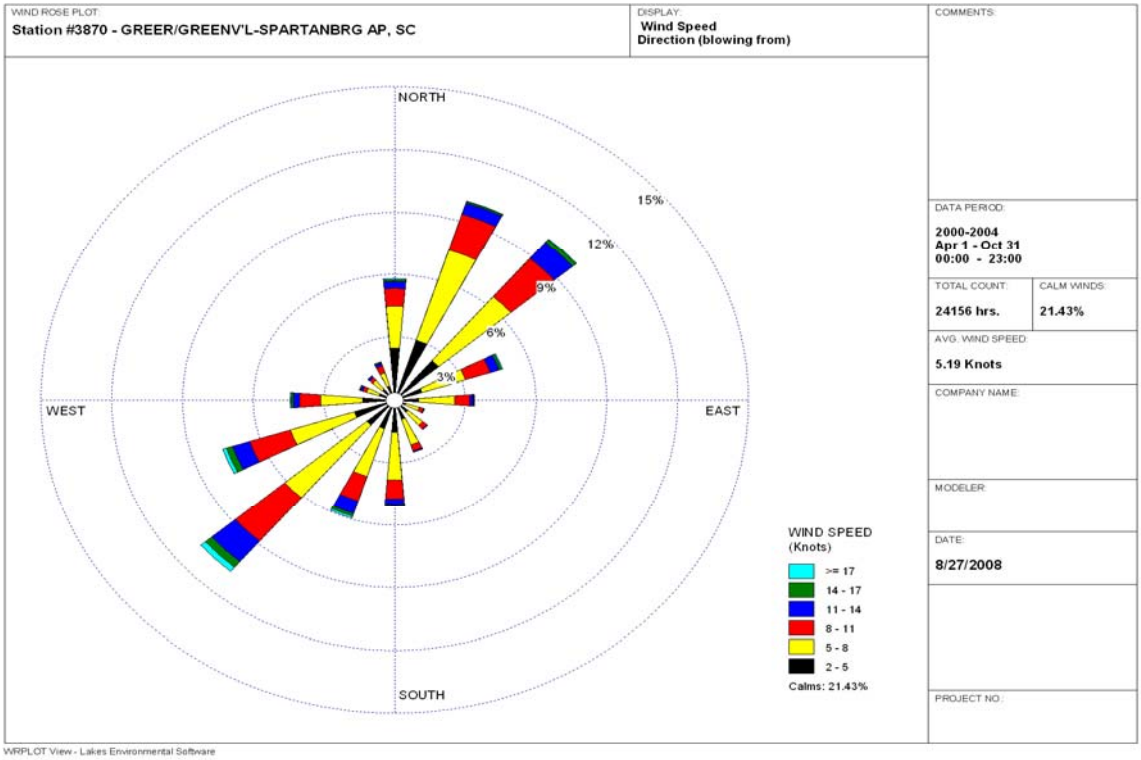
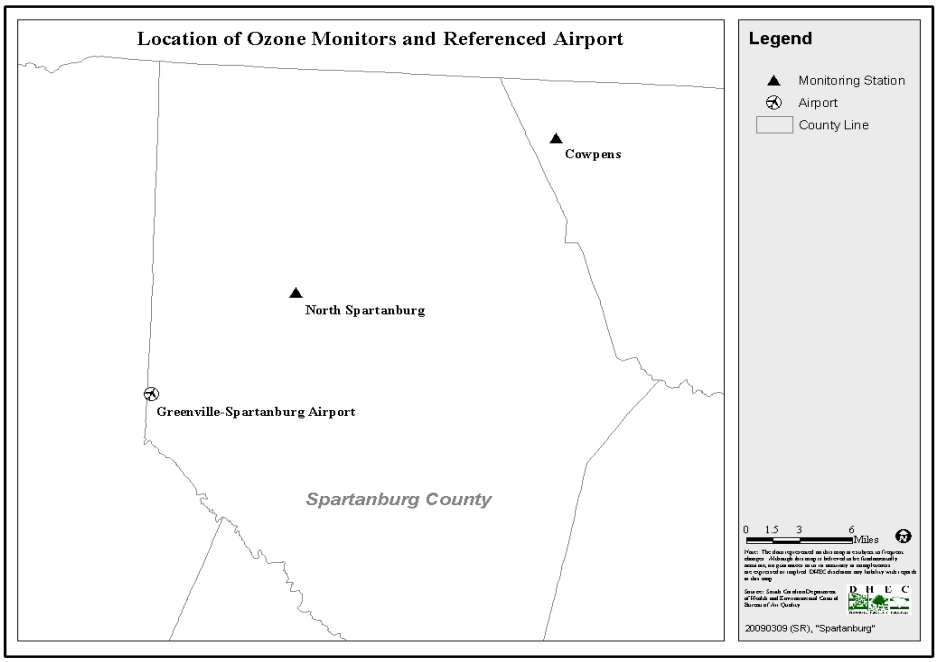


Figure F-2: Location of the Greenville-Spartanburg Airport Relative to the North Spartanburg Fire Station Ozone Monitoring Station

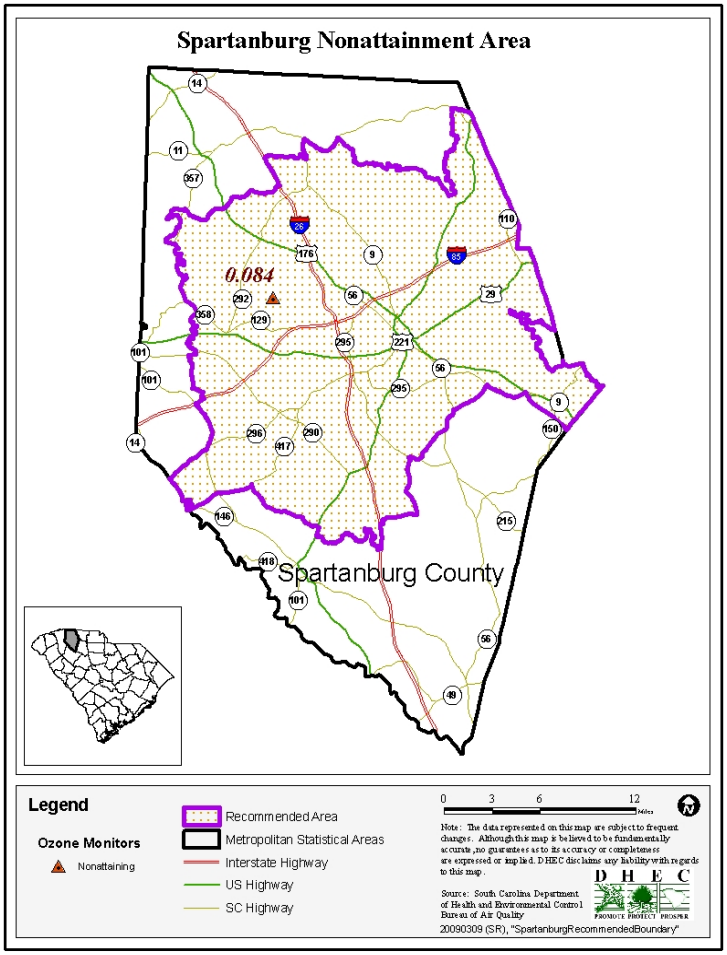


G. Reserved

H. Jurisdictional Boundaries

Figure H-1 shows the recommended Spartanburg Nonattainment Area which is the portion of Spartanburg County located within the area distinctly defined and known as the SPATS MPO. The SPATS MPO is designated as the lead transportation planning agency within the Spartanburg Nonattainment Area and has the primary responsibility for developing the Transportation Plan and the Transportation Improvement Program. For the purposes of transportation planning in a nonattainment area, the SPATS MPO will work in consultation with the parties identified in the South Carolina Transportation Conformity State Implementation Plan. If the area is designated as nonattainment, the transportation conformity interagency consultation partners, including the SPATS MPO, SC DOT, and the Department have a transportation conformity memorandum of agreement in place so there will be no delay in beginning the transportation conformity process. Transportation models for the area are specific to the SPATS MPO. Modeling for a nonattainment area larger than the MPO would require the development of more refined modeling outside the MPO area and thus, additional resources**.**

Figure H-1: Spartanburg Nonattainment Area



York Nonattainment Area

Overview

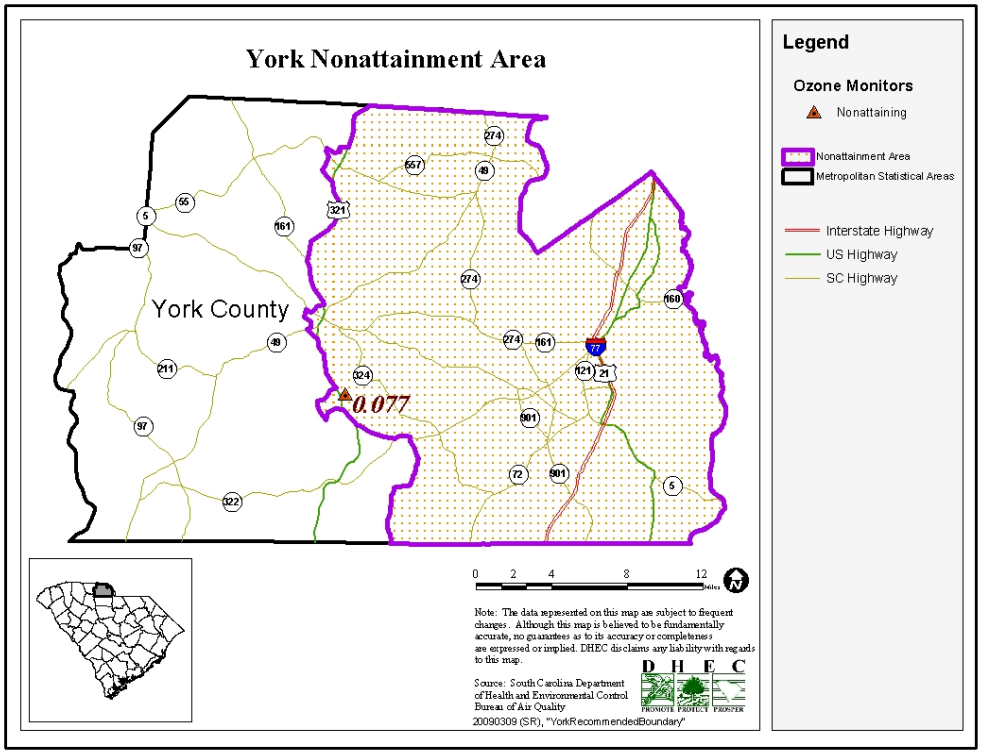
In accordance with the United States Environmental Protection Agency (EPA) suggested guidance for establishing nonattainment boundaries for the 2008 8-hour ground-level ozone National Ambient Air Quality Standards (Ozone NAAQS), the South Carolina Department of Health and Environmental Control (Department) is submitting its recommendation for York County.

The Department recommends that the portion of York County encompassed by the boundaries of the Rock Hill-Fort Mill Area Transportation Study (RFATS) Metropolitan Planning Organization (MPO) and the contiguous area encompassing the York ozone monitoring station (45-091-0006) be designated a nonattainment area for exceeding the Ozone NAAQS based on 2006 – 2008 monitoring data. The requirements of the State Implementation Plan (SIP) developed for each nonattainment area should be flexible enough to address each area's unique situation. For the 1997 Ozone NAAQS, part of York County was included in a multi-state nonattainment area. The complexity of this designation, which includes multiple MPOs, has made it challenging to manage and complete nonattainment area requirements for the 1997 Ozone NAAQS in a timely manner. (See "H: Jurisdictional Boundaries" for more information.)

The classification and nonattainment requirements that would apply are currently unknown as the EPA has not yet promulgated the Implementation Rule for the Ozone NAAQS. It would cause unnecessary burdens for the EPA to impose additional requirements on the RFATS MPO if the North Carolina design values put the area into a higher nonattainment classification than if York County was classified based on its design value. The designation of a nonattainment area for partial York County separate from the Charlotte-Gastonia-Concord MSA would also lead to greater efficiency in the development and implementation of local control measures and supports the Department's value of "local solutions to local problems." As the RFATS MPO is the lead transportation planning agency for the area, transportation planning and transportation conformity have been and will be conducted much more effectively and efficiently if the South Carolina portion is designated as a nonattainment area separate from the North Carolina portion of the Charlotte-Gastonia-Concord MSA. Transportation models have been developed for the area within this boundary. For areas outside the MPO, the South Carolina Department of Transportation (SC DOT) will have to develop more refined modeling capabilities which will be resource intensive. This area will be referred to as the York Nonattainment Area throughout the rest of this document.

The location and boundary of the area that is being recommended for nonattainment are shown in Figure 1.

Figure 1: York Nonattainment Area



<u>The factors utilized to recommend the boundary for this nonattainment area designation are as follows:</u>

- The York ozone monitoring station in York County is currently exceeding the Ozone NAAQS and is included in the recommended York Nonattainment Area. The Department believes that the central and eastern portions of York County are represented by the 8-hour ozone concentrations that are recorded at the York ozone monitoring station.
- The western portion of northern York County is similar to Cherokee County in population and terrain. Both areas are represented by the Cherokee ozone monitoring station (45-021-0002) which is meeting the Ozone NAAQS. Similar to Cherokee County, the western portion of northern York County is rural in nature with rugged terrain and higher elevations. There is limited population density, low traffic count and little industry outside of the York Nonattainment Area. Therefore, there are few NO_x and VOC emission sources located in this portion of the county. The Department concludes that these rural areas are not causing or contributing to an exceedance of the Ozone NAAQS and therefore should not be included in the York Nonattainment Area.
- The population of York County in 2000 was 164,614 and the York Nonattainment Area captures a population of 145,230. The York Nonattainment Area includes 88.2 percent of the population. NO_x emissions from human activities, such as mobile source emissions and other area sources,

are major contributors to ozone formation. Therefore, based on the high percentage of population captured by the York Nonattainment Area, this recommendation is appropriate.

- Motor vehicle emissions are a significant contributor to ozone formation. The York Nonattainment Area contains 94 percent of York County's Daily Vehicle Miles Traveled (DVMT), and thus the majority of York County's motor vehicle emissions.
- According to the 2000 U.S. Census, almost 60 percent of workers who live in York County work within the county. The York Nonattainment Area encompasses the major urban areas, and the majority of the commuters live and work within the urban areas. Automobiles are a major contributor of NO_x emissions and to ozone formation. Therefore, the majority of the commuter flow, and subsequently a majority of the NO_x emissions from vehicles, is contained within the York Nonattainment Area.
- The center of economic development and retail trade, the majority (188 out of 204) manufacturing establishments, and all of the county's urban areas are located within the York Nonattainment Area. According to the 2006 American Community Survey, 82 percent of the workers 16 years old or older in York County drove alone to work, and only 0.19 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The majority of the population works and conducts personal activities within the York Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.
- Facilities holding Title V permits are major sources of emissions that contribute to ozone formation. The Department has concluded that the York Nonattainment Area captures 99.9 percent of the Title V point source NO_x emissions and 92.7 percent of the Title V point source VOC emissions in York County.
- South Carolina has provided EPA with documentation demonstrating that local stakeholders, when given the flexibility to implement programs geared toward reducing emissions, do have an impact on reducing the formation of ozone. In April 2008, based on ambient air monitoring data for 2005, 2006, and 2007, the areas in South Carolina designated as nonattainment for the 1997 8-hour ozone standard with the effective date deferred were redesignated to attainment. Each of the diverse stakeholders joined forces to provide cleaner air sooner to the citizens of South Carolina to achieve this worthwhile, common goal.
- York County was one of 45 counties across South Carolina that participated in the Early Action Compact (EAC) process. Upon a partial county nonattainment designation in 2004, the county was no longer allowed to participate in the process. However, realizing the importance and benefits of promoting cleaner air sooner for the protection of public health and to improve environmental quality, local stakeholders continued implementing emission reduction strategies. A few examples of the area's commitment to air quality include:
    - The City of York, outside of the current nonattainment area, prohibits all open burning during high ozone days.
    - Based on traffic studies, York County staff updated zoning and subdivision regulations to require sidewalks and lower thresholds for requiring deceleration and left-hand turn lanes into developments.

- The number of riders on the Rock Hill Express bus service to Charlotte from four park-and-ride facilities in York County continues to increase. Ridership for fiscal year 2008 – 2009 was 7.2 percent higher than the previous fiscal year.
- The Town of Clover, outside of the current nonattainment area, implemented smart growth initiatives.
- As part of the National Clean Diesel Campaign, York Technical College was awarded funds in November of 2005 to install diesel oxidation catalysts on 47 vehicles such as backhoes, bulldozers, and motor graders that are used throughout York County.
- Duke Energy sponsored a pilot program to subsidize public transportation costs for Charlotte-area employees, providing subsidies and incentives around bus transit, carpools and vanpools for full-time and part-time employees, including the Catawba Nuclear Station located in York, South Carolina. Company executives recognize that environmental stewardship is a shared responsibility and that along with the company investment in emission controls at power plants, transit subsidy is also an important piece of the effort to reduce emissions.
- Funding from the Southeast Biofuels Infrastructure Grant provided seven new alternate fuel stations; two located in York County.
- A second lawn mower exchange for the area is being planned in conjunction with the Earth Day Birth Day Celebration in April 2009 in York County.
- The 2007 Clean School Bus USA grant provided a plug-in hybrid electric bus with a 2007 emission compliant diesel engine fueled with ultra-low sulfur diesel in Rock Hill School District 3.
- Several schools in the area participate in the State's B^2 (Breathe Better) anti-idling program.
- RFATS assisted the Department in making necessary revisions to the State Implementation Plan, specifically the Transportation Conformity Memorandum of Agreement (MOA) outlining the interagency consultation procedures for determining conformity of transportation plans, programs and projects. As a signatory to the MOA (June 2008), the necessary interagency consultation procedures outlined in the MOA will be in place should the area be designated nonattainment for any applicable criteria pollutant.

The activities being conducted by the local, county, and regional entities confirm that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of local and regional controls. In fact, the Department concludes, when given the flexibility to implement programs geared toward reducing emissions, smaller boundaries preserve the flexibility of implementing strategies, enforceable and directionally sound, tailored to the respective area. Participation in the EAC process, although unofficially, proved local stakeholders have an impact on reducing the formation of ozone. Our partners continue to work on local efforts to improve air quality.

- Section 48-1-50 (Powers of Department) of the South Carolina Pollution Control Act gives the Department the 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. These actions, such as addressing NO_x

emissions from stationary sources, demonstrate our statutory authority and ability to implement controls to improve air quality statewide. A nonattainment boundary does not provide any additional authority to address emissions where appropriate and needed.

- The Department operates a comprehensive ozone-forecasting program that covers 34 counties in our state, including York County. South Carolina's citizens are informed on a daily basis during ozone forecasting season as to the predicted quality of the air so that they may take actions as appropriate to better protect their health. The availability of this forecast for all of York County confirms that attainment/nonattainment boundary lines, whole county or partial county, do not restrict the implementation of this program. Therefore, the Department concludes ozone forecasting covers a broad area, so everyone inside and outside of the York Nonattainment Area within York County and the surrounding areas will be given the same precautions.

The Department has evaluated monitoring data, population, urbanization and growth, traffic, and point source emissions data to develop the boundary recommendation for the York Nonattainment Area. The following details support the recommendation.

A. Air Quality Data

The York Nonattainment Area Map (Figure 1) shows the location of the York ozone monitoring station. Established on March 31, 1993, this site is located on U.S. 321 in south-central York County. The site is designed to represent urban scale (an area of approximately 4-50 kilometers) concentrations of ozone. This site is important to forecasting ozone concentrations in the Charlotte Metropolitan area. The 2008 ozone design value for the York ozone monitoring station is currently exceeding the Ozone NAAQS.

The Cowpens monitoring station is located in northwestern Cherokee County at the Cowpens National Battlefield. The site was established on April 21, 1988, in a rural setting as an upwind background monitor. It is sited to represent urban scale concentrations of ozone between the Greenville-Spartanburg-Anderson and the Charlotte-Gastonia-Salisbury CBSAs. The design value for the Cowpens ozone monitoring station is currently below the Ozone NAAQS.

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.

Figure A-1 presents the 2000 - 2008 8-hour ozone monitoring data for York and Cherokee Counties. The design value data from the last eight years indicates that, in general, ozone levels in York and Cherokee Counties have been declining.

Figure A-1: Design Values Trends 2000 - 2008

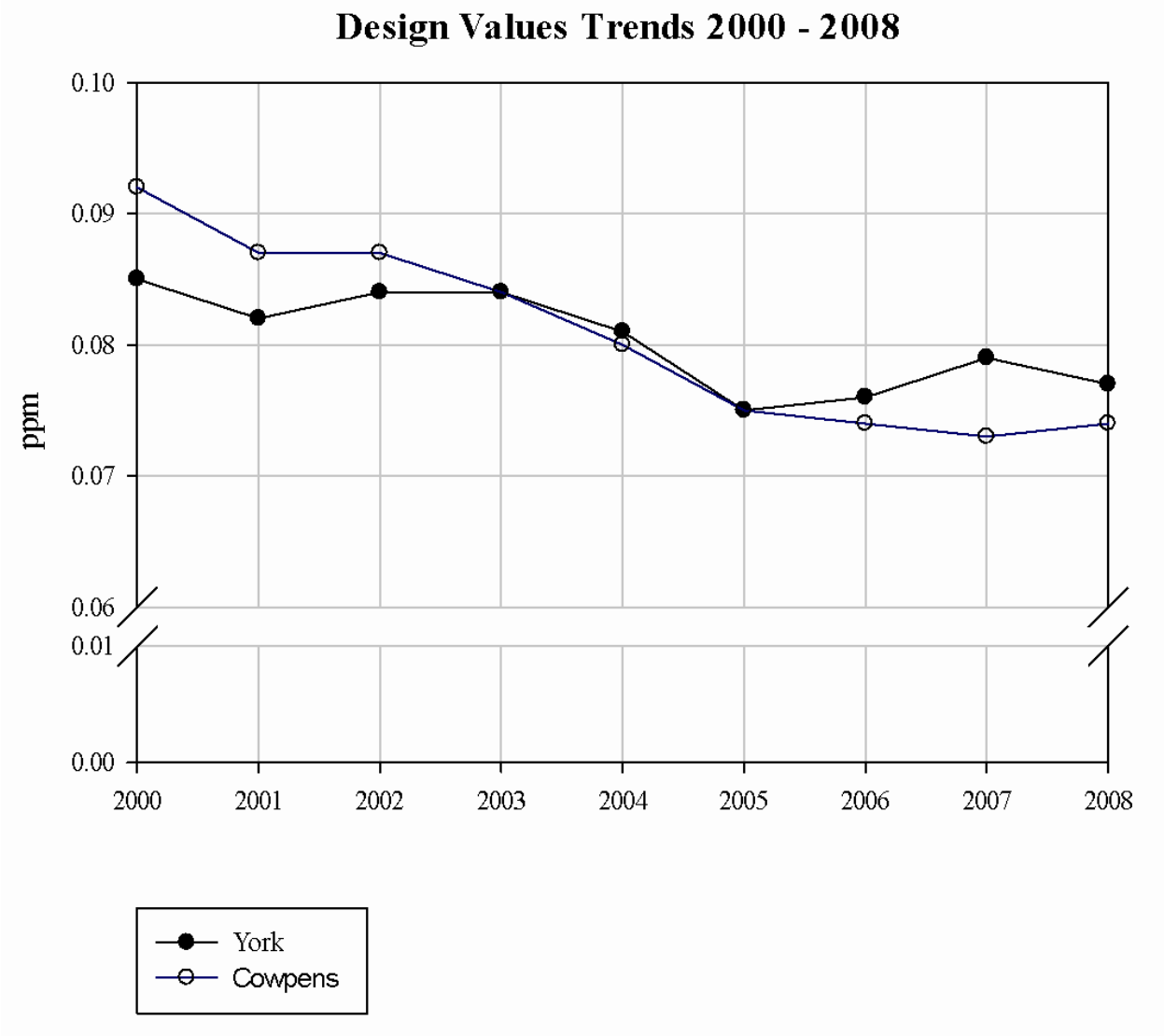
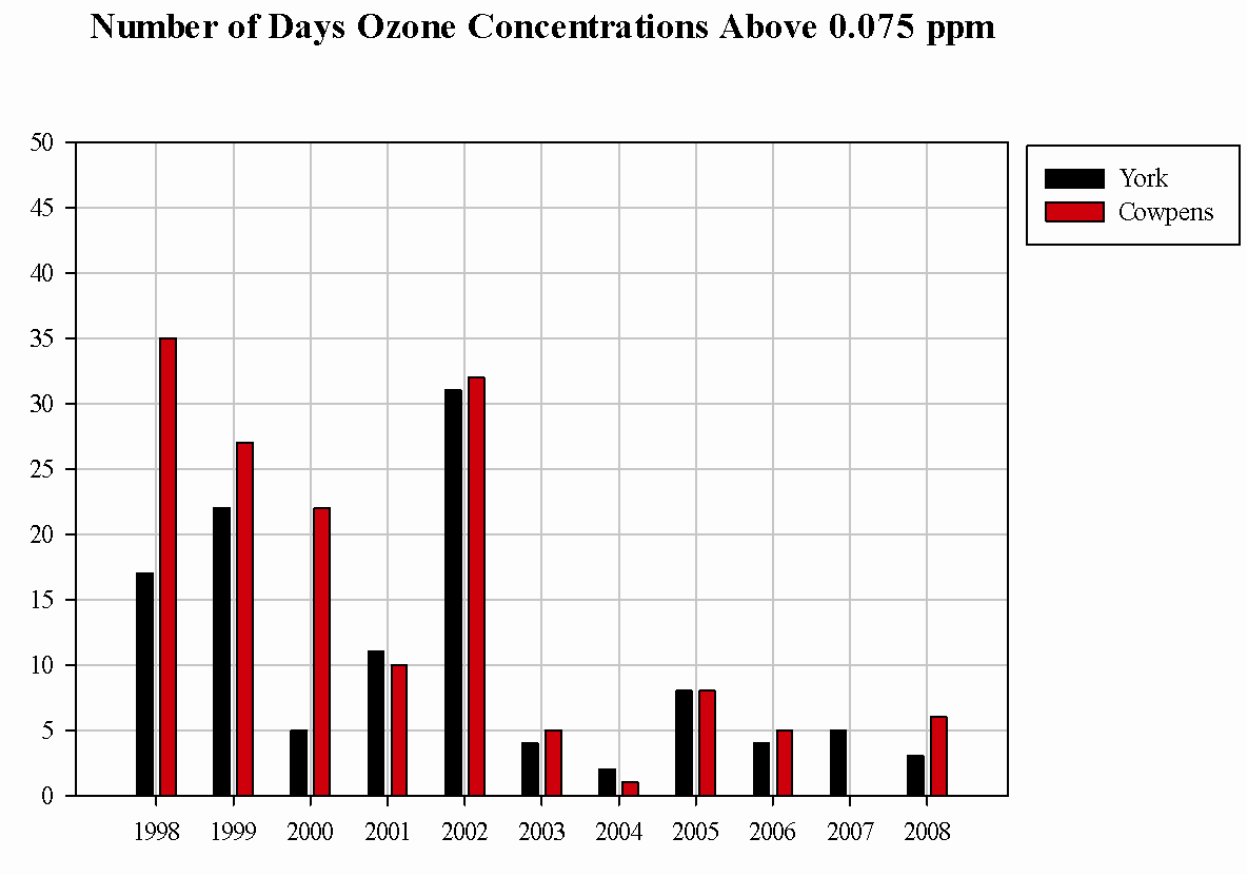


Figure A-2 contains the number of days when the daily 8-hour maximum ozone concentration was above 0.075 ppm for the York ozone monitoring station and the Cowpens ozone monitoring station. The graph indicates that, in general, there has been a decline in the total annual number of days that ozone levels have been above 0.075 ppm at the York and Cherokee monitors over the past ten years.

Figure A-2: Number of Days Ozone Concentrations Above 0.075 ppm



B. Emissions Data

It should be noted that South Carolina is a NO_x limited state. On average, about 70 percent of the VOC emissions come from biogenic sources. To evaluate the emissions in York County, NO_x and VOC emissions were determined using the best and most recent data available for the various source sectors. The source sectors that were evaluated include point, non-point, and on-road and non-road mobile sources. Point source data is state-generated data representing calendar year 2005. All other sectors are a combination of state-generated and EPA-generated data in EPA's final National Emissions Inventory (NEI) form representing calendar year 2002. The data for 2002 was used rather than 2005 for the other sectors since EPA had de-emphasized the 2005 NEI to focus efforts on the reinvention of the 2008 inventory. Because of the focus on the 2008 NEI, there was no real attempt to generate 2005 data for sectors other than point sources. Other source sector emissions are largely population based. This means they are not likely to greatly change on an annual basis. However, point sources were thoroughly evaluated in 2005 to account for significant changes in emissions. South Carolina believes the 2002 data

is still representative of those sectors for 2005. Figures B-1 and B-2 show the NO_x and VOC emissions from each of the source sectors.

Figure B-1: NOx Source Sector Emissions

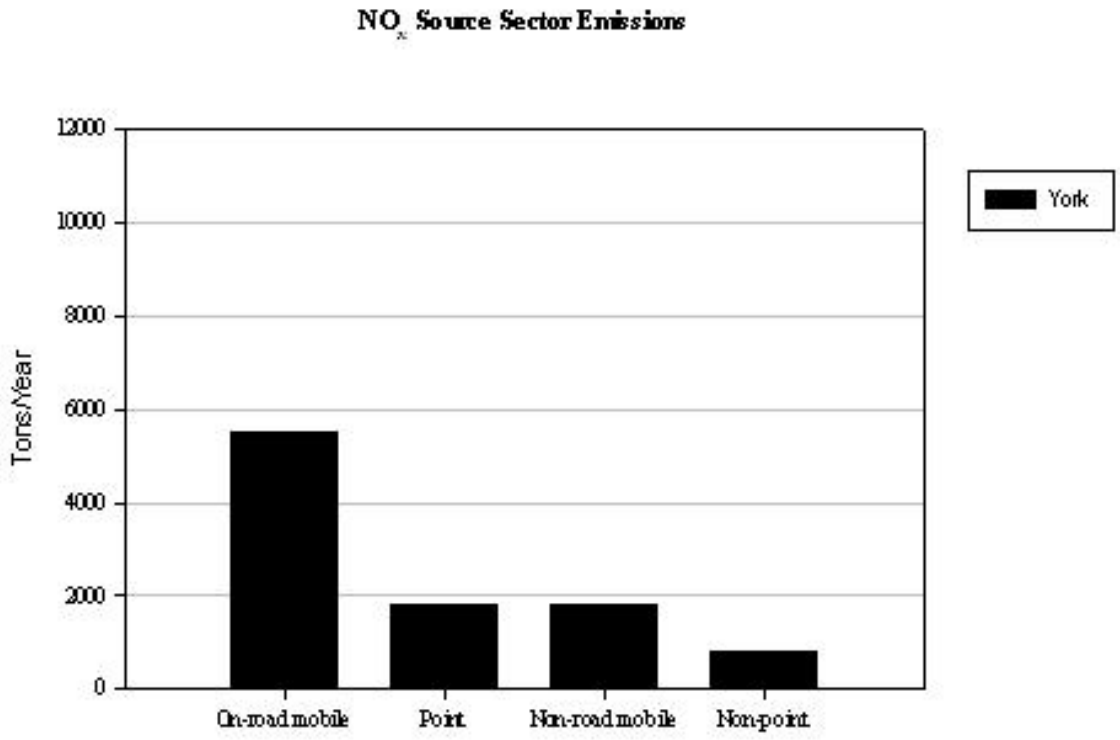
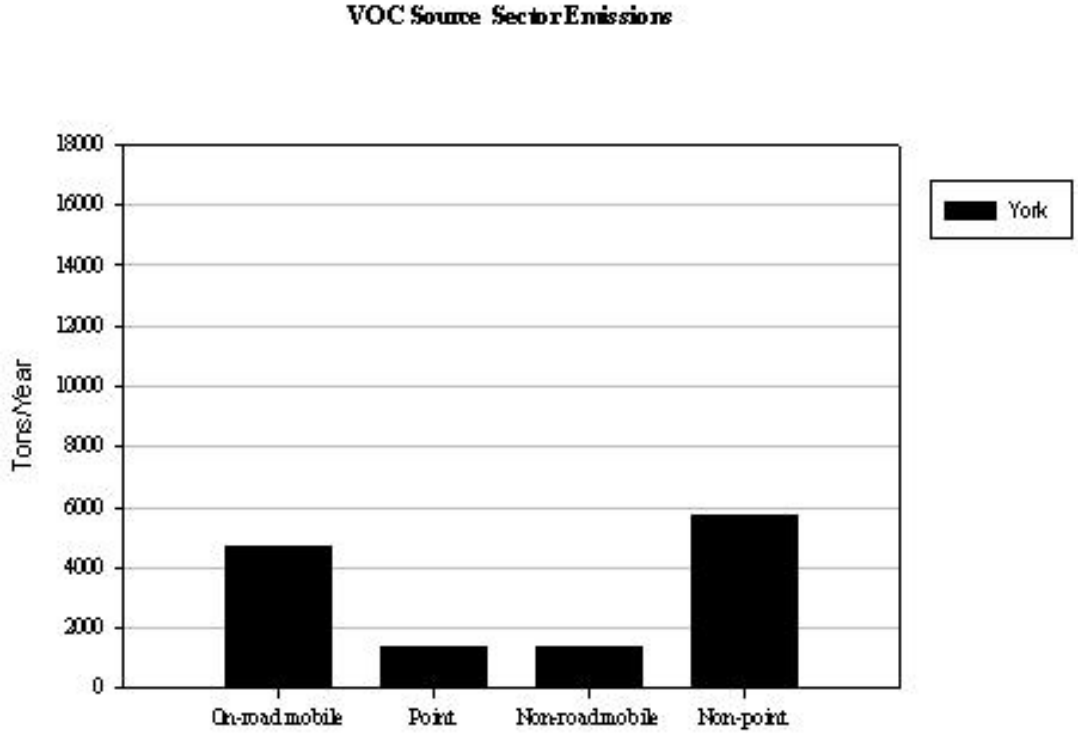


Figure B-2: VOC Source Sector Emissions



Figures B-3 and B-4 show the location of the York County NO_x and VOC Title V point sources in operation. There are a total of six Title V facilities in York County that have NO_x and VOC emissions, both producing NO_x and VOC emissions. Five of the six facilities are located in the nonattainment area and account for 99.93 percent of the total Title V point source NO_x emissions and 92.65 percent of the total Title V point source VOC emissions for York County.

Figure B-3: Title V Source NOx Emissions

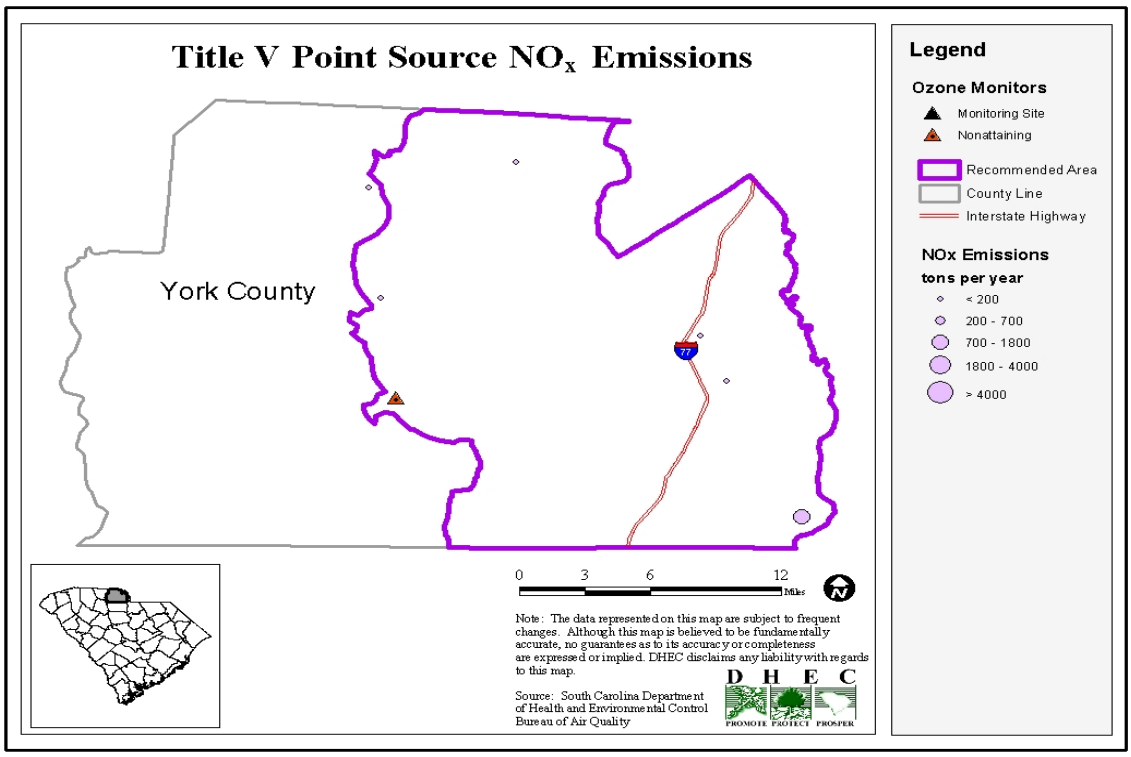


Figure B-4: Title V Source VOC Emissions

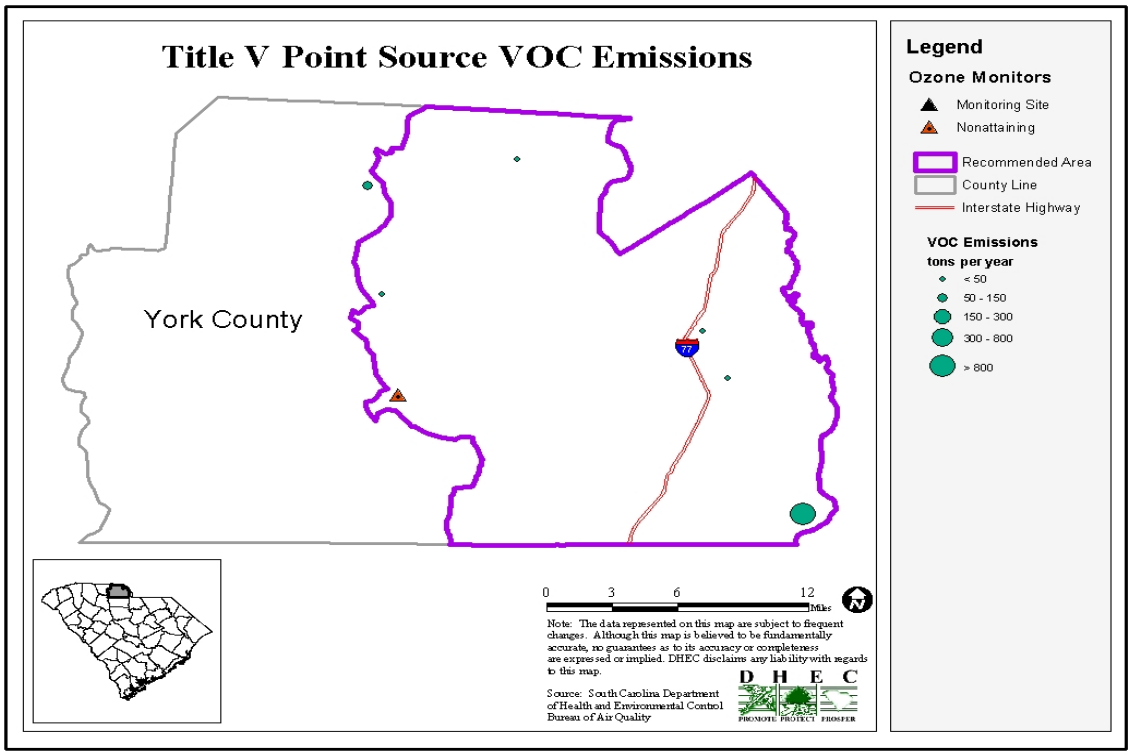


Table B-1 lists the Title V NO_x point sources that are in operation in York County based on the 2005 NO_x point sources emissions inventory, which is routinely submitted to the National Emissions Inventory database. The York Nonattainment Area captures 99.93 percent of the Title V point source NO_x emissions in York County.

Table B-1: Title V NO_x Point Sources

York County Facility	Permit Number	2005 Est. Emissions Tons/Yr
Bowater Inc Coated Paper Div*	2440-0005	1718.98
Pharr Yarns Clover*	2440-0002	7.7
Cytec Carbon Fibers Rock Hill*	2440-0097	5.34
Champion Laboratories*	2440-0096	2.25
Avery Dennison*	2440-0103	1.11
North Safety Products	2440-0027	2.96
Total tons of emissions		1738.34

*Located within York Nonattainment Area

Table B-2 lists the Title V VOC point sources that are in operation in York County based on the 2005 Title V VOC point sources emissions inventory, which is routinely submitted to the National Emissions Inventory database. The York Nonattainment Area captures 92.65 percent of the Title V point source VOC emissions in York County.

Table B-2: Title VOC Point Sources

York County Facility	Permit Number	2005 Est. Emissions Tons/Yr
Bowater Inc Coated Paper Div*	2440-0005	1,122.56
Cytec Carbon Fibers Rock Hill*	2440-0097	28.63
Champion Laboratories*	2440-0096	18.62
Avery Dennison*	2440-0103	1.131
Pharr Yarns Clover*	2440-0002	1.12
North Safety Products	2440-0027	92.98
Total tons of emissions		1,265.04

*Located within York Nonattainment Area

C. Population Density and Degree of Urbanization

According to the U.S. Census Bureau, urban is defined as all territory, population, and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas and urban clusters. Rural is defined as all territory, population, and housing units located outside of urbanized areas and urban clusters.

The York Nonattainment Area contains the cities and towns of Rock Hill, Clover, Fort Mill, York and Tega Cay and the community of Lake Wylie. Based on the U.S. 2000 census population of the urban portion of York County, the populations of Clover, Fort Mill, Lake Wylie, York and Tega Cay and an assumed population outside of town boundaries, the population of the York Nonattainment Area is estimated to be 145,230, which is 88.2 percent of the county population. The York Nonattainment Area captures the majority of the population within the county.

Figure C-1 indicates the extent of the urban areas in York County.

Figure C-1: York County Urban Areas

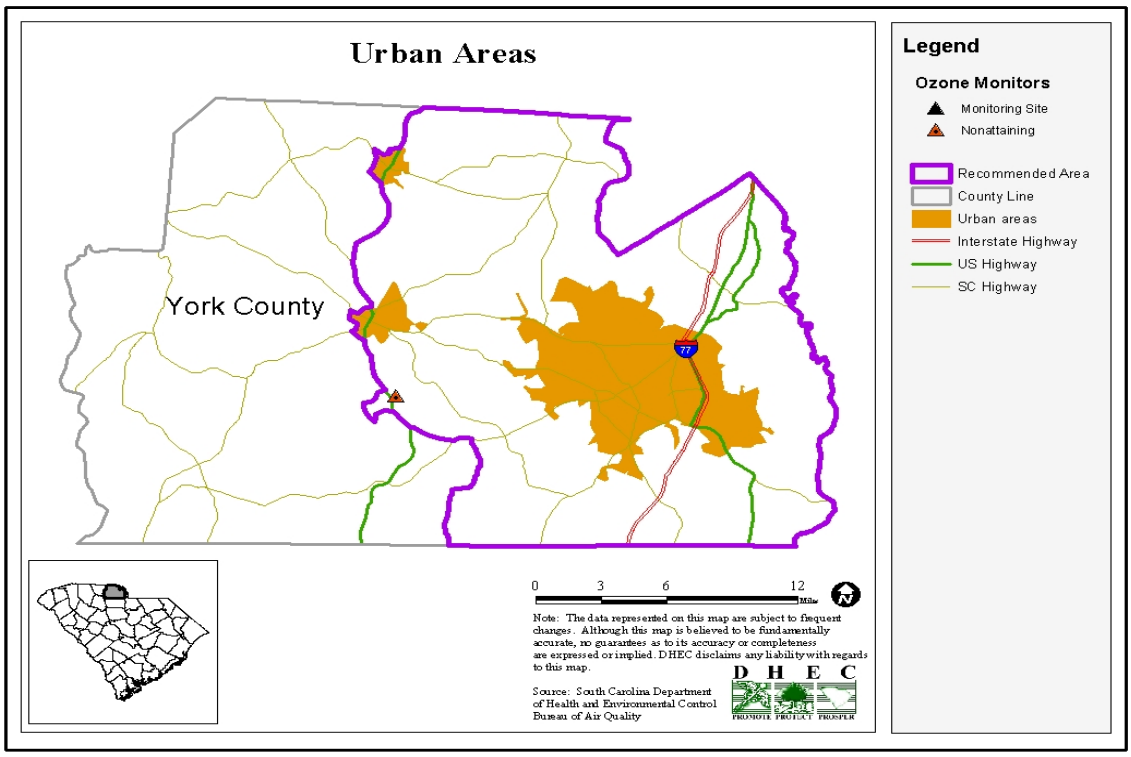


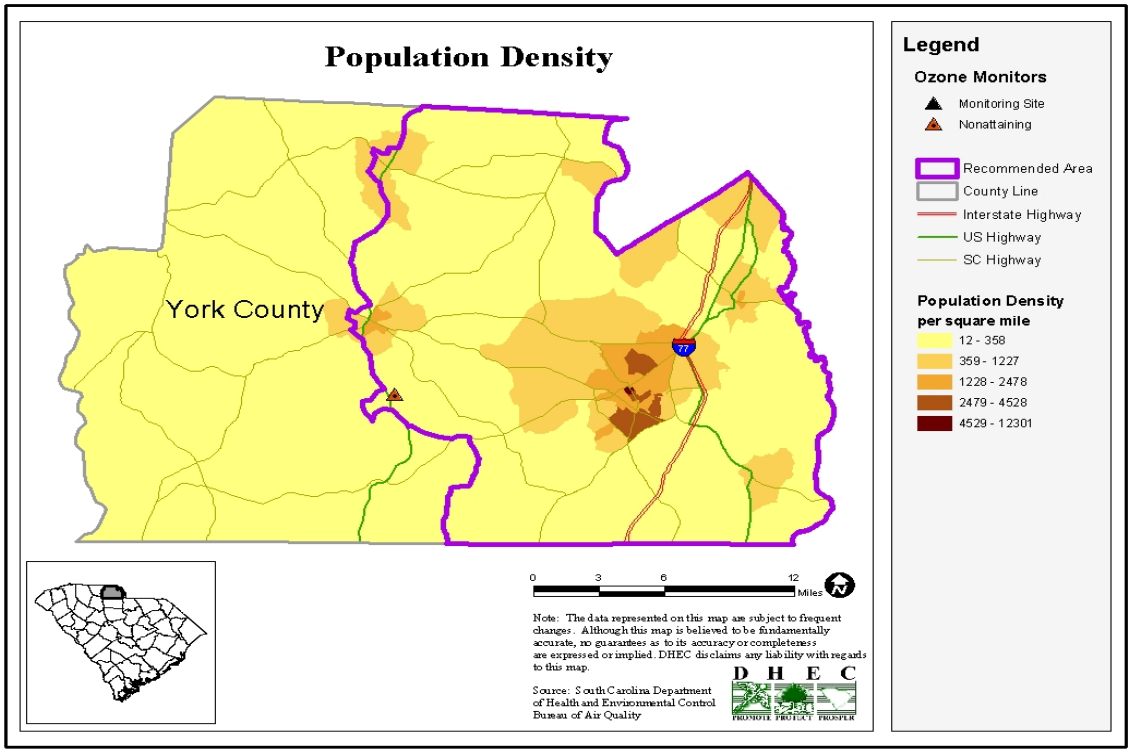
Table C-1 contains population data for both York County and the York Nonattainment Area.

Table C-1: Total Population, Land Area, and Urban/Rural Population, 2000

York County		
	Whole County	**York Nonattainment Area**
Population	164,614	145,230
Land Area (Square Miles)	695.18	387.24
Population/Land Area (People/Sq. Mile)	237	374.87
Urban Population	105,297	
Percent Urban Population	64%	
Rural Population	59,317	
Percent Rural Population	36%	

Figure C-2 shows the population density for York County relative to the York Nonattainment Area. The land area of the York Nonattainment Area is estimated to be 387.24 square miles, which is 55.7 percent of York County's land area. Using the estimated population and land area of the York Nonattainment Area, the population density of the nonattainment area is calculated to be 374.87 persons per square mile, which is 58.17 percent higher population density than in the area outside of the York Nonattainment Area. Based on this high population density within the York Nonattainment Area, designation of a partial county for the York Nonattainment Area is appropriate.

Figure C-2: York County Population Density



According to the U.S. Census Bureau, manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction. Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included. The retail trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Manufacturing is the largest employment sector in York County. The second and third largest sectors are retail trade and health care/social assistance. Tables C-2 and C-3 contain a comparison of manufacturing data for York County and the York Nonattainment Area, and employment data for York County's three largest business sectors. It should be noted that the data in Table C-2 differs from the data in Table C-3

due to the source of the data. The employment data in Table C-2 is taken from the U.S. Census. The manufacturing data in Table C-3 is taken from the 2003 - 2004 South Carolina Industrial Directory.

The York Nonattainment Area contains a majority of the economic development in York County. More than 91 percent of the manufacturing employees in York County work inside the area and 188 of the 204 manufacturing establishments in York County (92 percent) are located inside the area. A total of 1,128 retail trade establishments are located in the county and employ 14,370 persons.

Table C-2: York County Employment in the Largest Business Sectors, 2006

	Number of Employees	Number of Establishments
Manufacturing	10,828	248
Retail Trade	8,067	663
Health Care And Social Assistance	7,341	336

Table C-3: Manufacturing Patterns in 2003

York County	Nonattainment Area	County	Percent in Nonattainment Area
Employees	13,060	14, 277	91.48%
Establishments	188	204	92.16%

The center of economic development and retail trade, the majority (118 out of 204) manufacturing establishments and all of the county's urban areas are located within the York Nonattainment Area. According to the 2006 American Community Survey, 82 percent of the workers 16 years old or older in York County drove alone to work, and only 0.19 percent used public transportation. It is reasonable to assume these driving patterns also apply to personal transportation choices. NO_x emissions from mobile sources are major contributors to ozone formation. The Department concludes the majority of the population works and conducts personal activities within the York Nonattainment Area, and single-occupant vehicles are the primary mode of transportation.

D. Traffic and Commuting Patterns

Figure D-1 shows the interstate highway, I-77, located within the York Nonattainment Area. This interstate highway is the major north-south corridor of travel. There are also numerous state and secondary roads in the area that connect the larger towns.

Because ozone is a transportation-related pollutant, the York Nonattainment Area includes the RFATS MPO which is responsible for transportation planning in the area. The designation of the York Nonattainment Area as recommended provides greater opportunity to link transportation planning to air quality improvement goals.

Figure D-1: York County Highway System

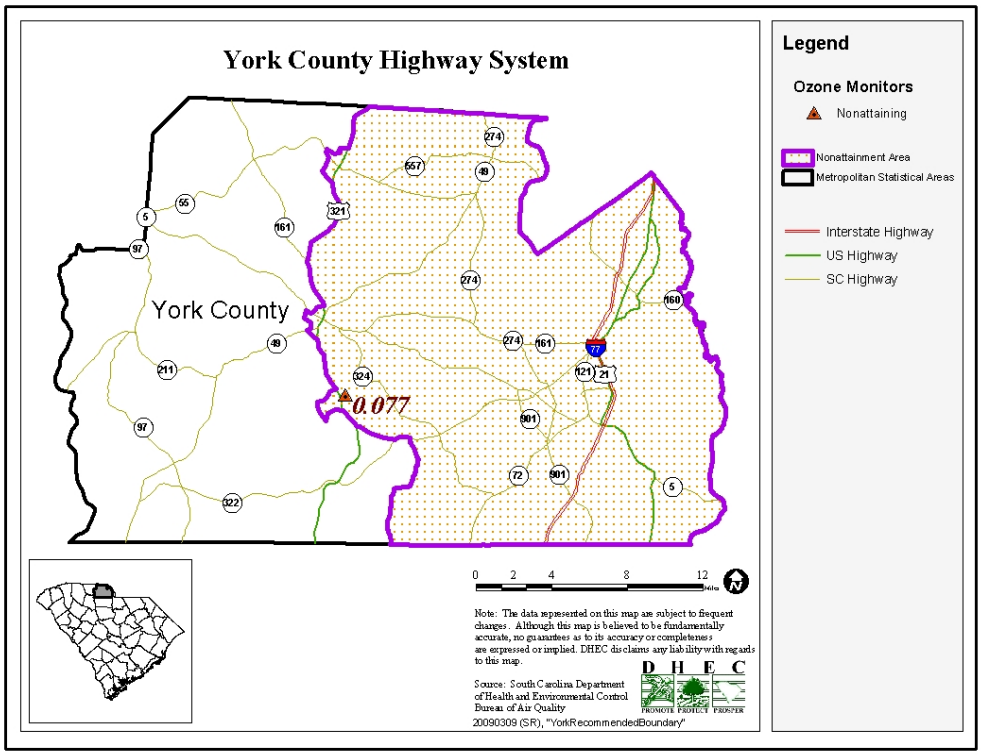


Table D-1 shows where York County residents commute to work. The table shows that approximately 59.9 percent of workers that live in York County work inside the county. Because the York Nonattainment Area encompasses the major urban areas, and the majorities of commuter's live and work within the urban areas, it is reasonable to conclude that the majority of the commuter flow is contained within the York Nonattainment Area.

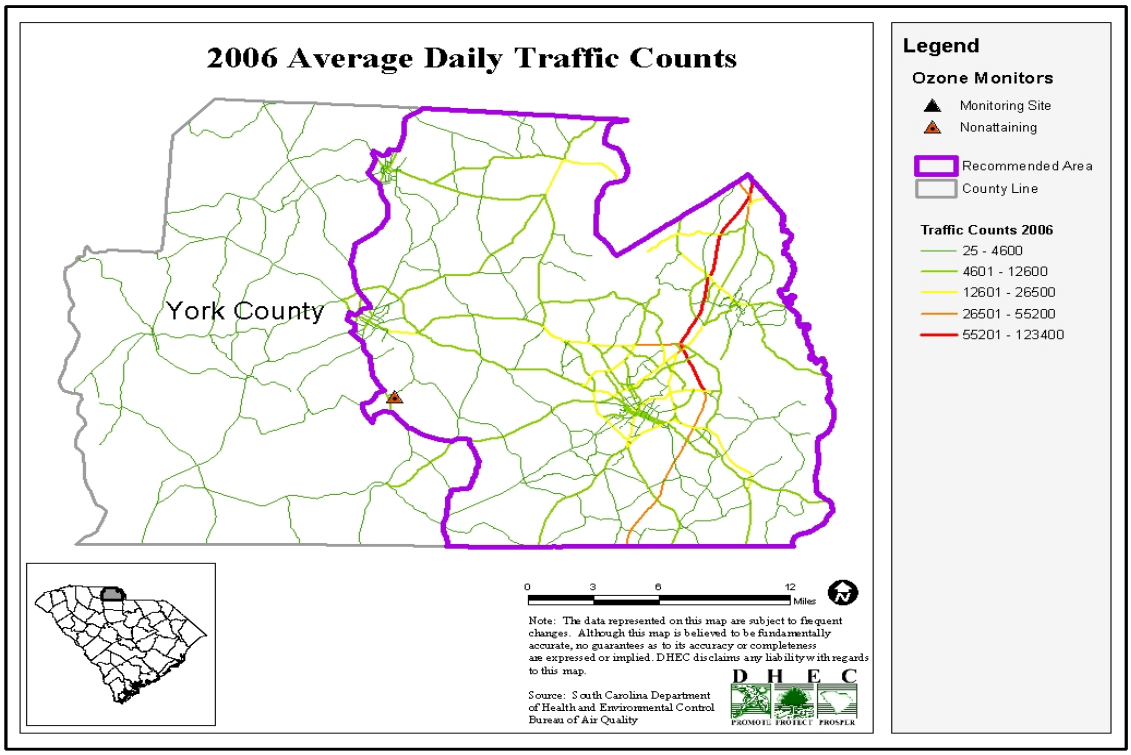
Table D-1: York County Work Commute Patterns

County	Workers Living in York County by Work Location	Workers Employed in York County by Residence Location
Abbeville	19	0
Aiken	11	38
Anderson	0	38
Berkeley	90	32
Calhoun	0	11
Charleston	57	17
Cherokee	213	274
Chester	951	3,063
Chesterfield	0	73
Clarendon	7	10
Darlington	9	0
Dillon	3	45
Dorchester	6	0

County	Workers Living in York County by Work Location	Workers Employed in York County by Residence Location
Fairfield	46	158
Florence	22	25
Georgetown	19	0
Greenville	85	73
Hampton	9	0
Greenwood	0	14
Horry	25	20
Kershaw	20	125
Lancaster	963	2775
Laurens	0	7
Lee	0	5
Lexington	111	146
Mecklenburg Co NC	23,907	4,217
NC, other	4,496	3,697
Newberry	34	25
Oconee	9	9
Orangeburg	0	37
Other States	538	370
Pickens	2	33
Richland	188	119
Saluda	7	6
Spartanburg	120	130
Sumter	7	0
Union	74	54
Williamsburg	0	10
York	47,898	47,898
Grand Total	79,946	63,554

Traffic counts are collected at stations representing different road segments (Figure D-2). Each daily traffic count is multiplied by the length of the corresponding segment to calculate the DVMT. There are three major routes of travel through York County. They include one interstate (I-77), and three U.S. Highways (U.S. 521, U.S. 21 and U.S. 321). The highest count in York County, 123,400, is found on I-77, which is entirely contained in the York Nonattainment area portion of the county. No counts over 15,200 are seen outside of the York Nonattainment Area. The York Nonattainment Area captures 93.78 percent of York County's DVMT thus the majority of York County's motor vehicle emissions.

Figure D-2: York County 2006 Average Daily Traffic Counts



E. Growth Rates and Patterns

The following conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 and 2030 as contained in Table E-1. Based on the projected data for 2020 and 2030, the population of York County will continue to grow. Since the York Nonattainment Area includes the area along I-77 and the urban portion of York County, it is concluded that the York Nonattainment Area will encompass the majority of expected population growth.

Table E-1: York County Historical and Projected Population

Population Data	York County
Population, 2000	164,614
Projected Population, 2020	252,860
Projected Population, 2030	287,970
County growth Rate, 2000 –2020	53.61%

Figure E-1 shows population growth by historical and projected population data for York County. Figure E-2 shows trends in population density. The York Nonattainment Area captures the area's urban population. Therefore, the York Nonattainment Area contains the expected population and economic growth for the area in the coming years.

Figure E-1: York County Historical and Projected Population, 2000 – 2030

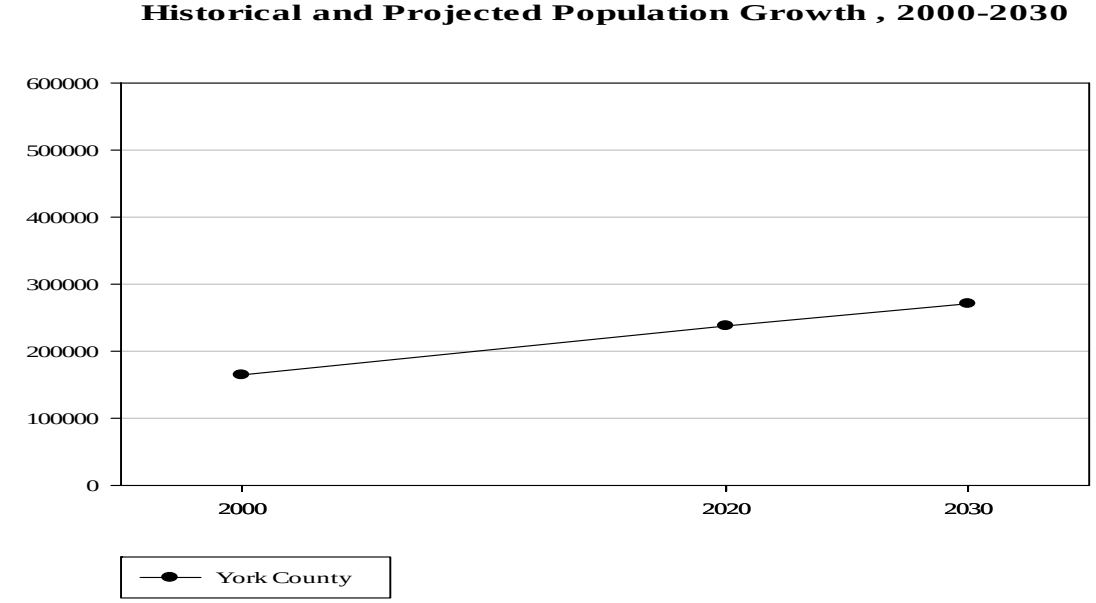
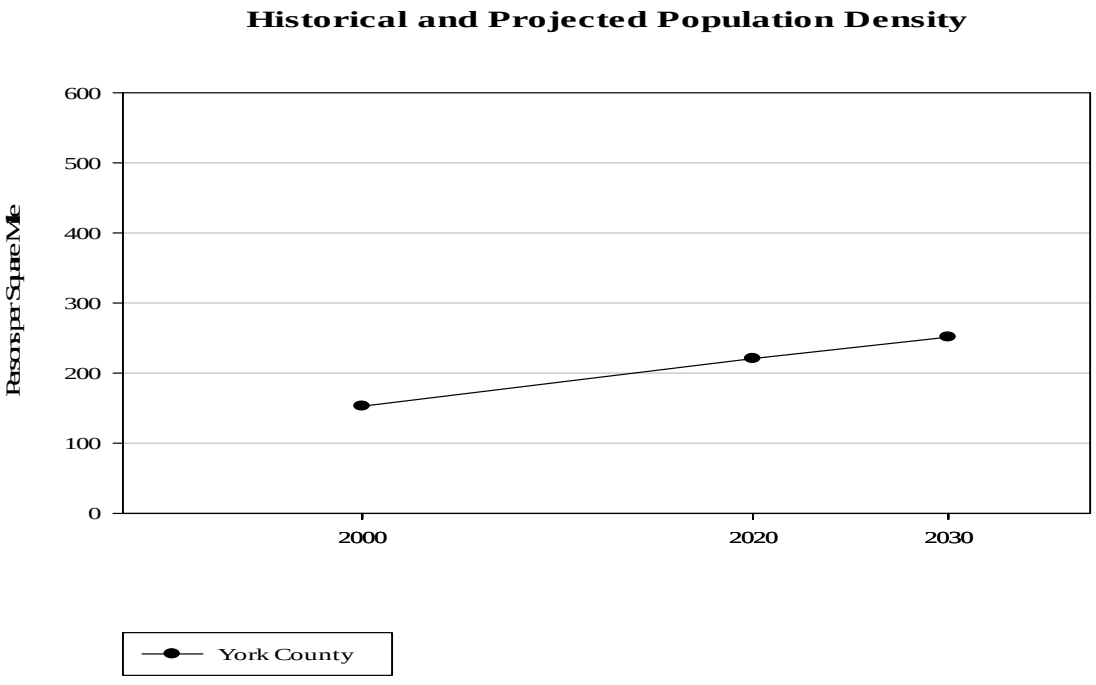


Figure E-2: York County Historical and Projected Population Density



F. Meteorology

The wind rose in Figure F-1 was created using ozone season (April through October) wind data from the 2000 through 2004 Charlotte, North Carolina meteorological data sets. The wind data from the Charlotte station represents the north-central portion of South Carolina, which includes York County. This wind rose shows that a southerly and northerly wind direction dominates the York County area. This is most likely due to the proximity of the Appalachian Mountains situated to the north and west of the Charlotte area. Figure F-2 shows the location of Charlotte-Douglas Airport, where the wind rose data was collected, relative to the York ozone monitoring station.

Figure F-1: Wind Rose for York County

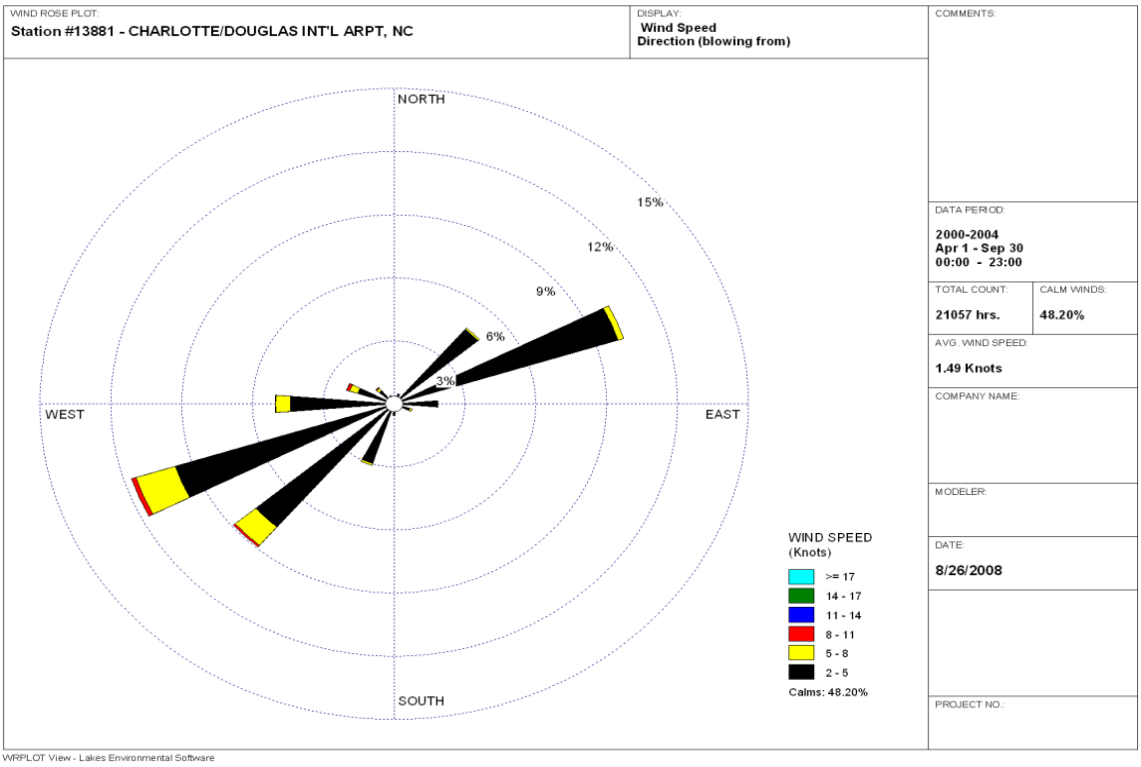
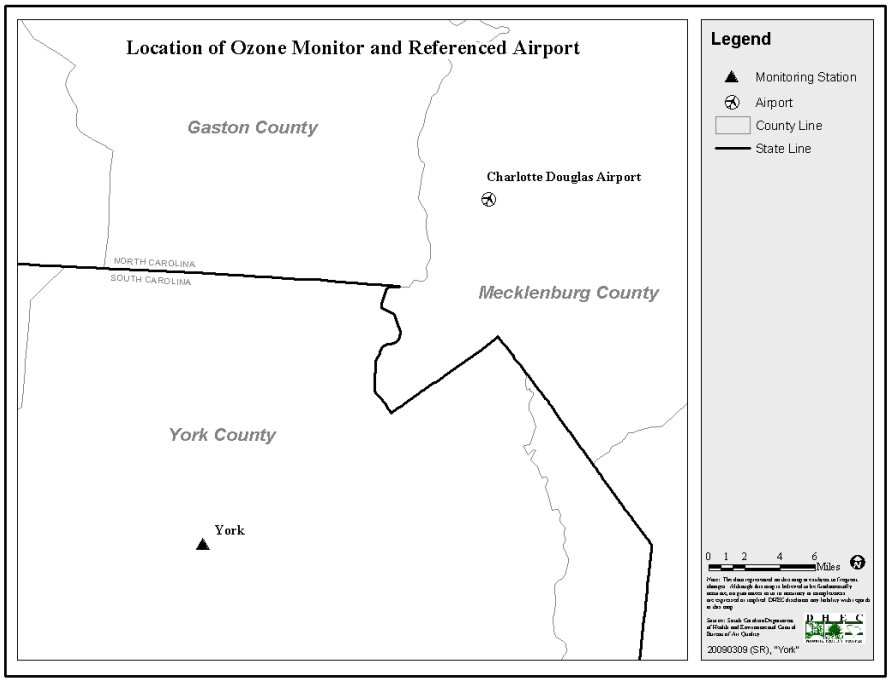


Figure F-2: Location of the Charlotte-Douglas Airport Relative to the York Ozone Monitoring Station



G. Reserved

H. Jurisdictional Boundaries

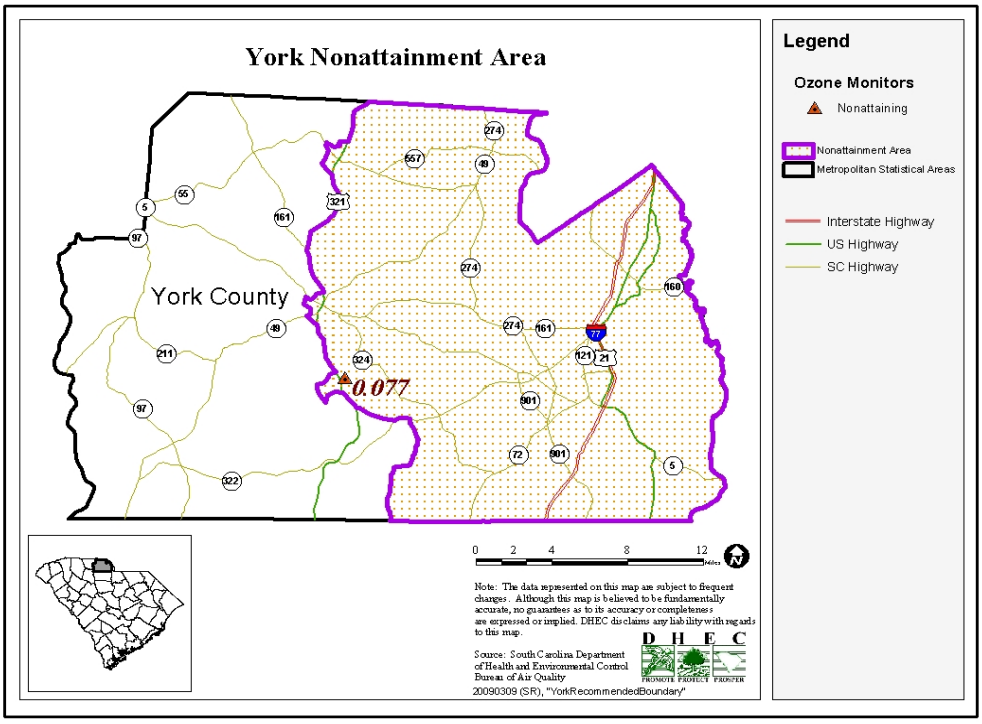
Figure H-1 shows the recommended York Nonattainment Area that is the portion of York County located within the area distinctly defined and known as the Rock Hill-Fort Mill Area Transportation Study (RFATS) Metropolitan Planning Organization (MPO) which includes the York ozone monitoring station. The RFATS MPO is designated as the lead transportation planning agency within the York County portion of the York Nonattainment Area and has the primary responsibility for developing the Transportation Plan and the Transportation Improvement Program. The South Carolina Department of Transportation (SC DOT) is designated as the lead transportation planning agency for the York Nonattainment Area outside of the RFATS MPO. The membership of RFATS includes the Town of Fort Mill, the cities of Rock Hill and Tega Cay, the unincorporated urban areas of York County and the Catawba Indian Nation. The RFATS Policy Committee is comprised of eleven (11) voting members representing each of the RFATS communities, SC DOT Commission as well as legislative representatives from the South Carolina House and Senate. In accordance with Federal and State regulations, RFATS' goal is to plan the most efficient, responsive and cost-effective transportation system for the movement of people and goods in the urbanized area. For the purposes of transportation planning in the York Nonattainment Area, the RFATS MPO and the SC DOT work in consultation with the parties identified in the South Carolina Transportation Conformity State Implementation Plan. In 2004, the RFATS MPO was included in a nonattainment designation with the Charlotte-Gastonia-Concord, NC-SC Metropolitan Statistical Area. Choosing to work independently from the North Carolina portion of the nonattainment area, the South Carolina partners were successful in completing a conformity determination including a conformity finding for the RFATS MPO by June 2005, as required. Doing so allowed the area to continue with all transportation plans, programs and projects included in the Transportation Plan and

Transportation Improvement Program. Had the area been required to work collectively with the North Carolina portion of the nonattainment area, the likelihood of South Carolina not meeting this deadline was very high. The complexity of this multi-state nonattainment area which includes multiple MPOs has made it challenging to maintain and complete nonattainment area requirements in a timely manner. South Carolina, York County and the RFATS MPO will have more control over meeting the Ozone NAAQS and any federal, state and/or local requirements associated with a nonattainment designation if the area is a separate nonattainment area for partial York County that is separate from the MPOs of the Charlotte-Gastonia-Concord area of North Carolina. A separate and distinct designation for the York Nonattainment Area would allow South Carolina to more quickly and efficiently use resources to improve air quality and protect public health and the environment.

The Department has received letters of support from local stakeholders for the York Nonattainment Area recommendation. On December 23, 2008, RFATS submitted a letter of support for the Department's recommended the York Nonattainment Area. In addition, the RFATS Policy Committee stated their support of efforts allowing York County and the state of South Carolina to work together, independent and separate, from North Carolina to achieve air quality attainment goals.

On January 6, 2009, the Catawba Regional Council of Governments (CRCOG), serving Chester, Lancaster, Union and York Counties, submitted comments strongly supporting the Department's efforts to present data supporting reduction of EPA's default statistical areas, including keeping the boundary contained within eastern York County. As stated by the CRCOG, Chester, Lancaster and Union Counties are predominately rural, there are no air quality monitors and no concentrations of industrial emission sources exist in these counties. The CRCOG furthered stated that counties in the Catawba Region have experienced significant loss of jobs resulting in a reduction of industrial and vehicular emissions.

Figure H-1: York Nonattainment Area



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