South Carolina

1997 8-Hour Ozone
Redesignation Demonstration and Maintenance Plan

For the Portion of York County, South Carolina Within the Rock Hill-Fort Mill Area Transportation Study (RFATS) Metropolitan Planning Organization (MPO)

Part of the
Charlotte-Gastonia-Rock Hill, NC-SC
8-Hour Ozone Nonattainment Area

Prepared by the
South Carolina Department of Health and Environmental Control

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Bureau of Air Quality

May 31, 2011

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EXECUTIVE SUMMARY

1997 8-HOUR OZONE REDESIGNATION DEMONSTRATION AND MAINTENANCE PLAN RFATS MPO

I. Introduction

The 1997 8-hour ozone national ambient air quality standard (NAAQS) is 0.08 parts per million (ppm). A violation of this NAAQS occurs when the average of the annual 4th highest daily maximum 8-hour ozone values over three consecutive years is greater than or equal to 0.085 ppm. This three-year average is termed the "design value" for the monitor. The design value for a nonattainment area is the highest monitor design value in the area. Based on 2001-2003 ambient air monitoring data from several monitors in the North Carolina portion of the Charlotte-Gastonia-Rock Hill, NC-SC (Metrolina) area, on April 30, 2004, the United States Environmental Protection Agency (EPA) designated and classified that portion of York County, South Carolina within the Rock Hill Fort Mill Area Transportation Study (RFATS) Metropolitan Planning Organization (MPO) as a moderate nonattainment area for the 1997 8-hour ozone NAAQS.

II. Current Air Quality

There is currently one ozone monitor located in York County, South Carolina. The latest design value (2008-2010) for this monitor is 0.067 ppm. In addition, the latest design value for all of the monitors within the Metrolina nonattainment area have attained the 1997 8-hour ozone NAAQS. Therefore, the area is eligible to be considered for redesignation to attainment as per Section 107(d)(3)(E) of the Clean Air Act (CAA).

III. Maintenance Plan Requirements

The State of South Carolina has implemented several state rules that have resulted in permanent and enforceable reductions in ozone precursor emissions statewide. These actions include a regulation to control oxides of nitrogen (NO_x) (Regulation 61.62.5, Standard 5.2) and an open burning ban during the ozone season (Regulation 61-62.2). In addition, there are several federal actions that have resulted in lower emissions throughout the eastern portion of the country. These federal actions include the Tier 2 vehicle standards, heavy-duty gasoline and diesel highway vehicles standards, and the large non-road diesel engines rule.

This combination of state and federal actions have resulted in cleaner air in the Metrolina area, and the anticipated future benefits from these programs are expected to result in continued maintenance of the 1997 8-hour ozone NAAQS in this area. Since the design value for the 2008-2010 period for all monitors in the Metrolina nonattainment area showed attainment of the 1997 8-hour ozone NAAQS, a baseline year emissions inventory for NO_x and volatile organic compounds (VOCs) was developed for 2010 for South Carolina. Future year emissions inventories were also developed for the interim years 2013, 2016 and 2019, and a final year emission inventory was developed for 2022. The future year emissions were lower than the 2010 emissions in all cases. This demonstrates that the York County portion of the Metrolina nonattainment area is expected to maintain the 1997 8-hour ozone NAAQS through 2022. The area is also in compliance with Section 110 and Part D requirements of the Clean Air Act (CAA).

IV. Conclusion and Request for Redesignation

Based on the information above and criteria established in Section 107(d)(3)(E) of the CAA, South

Carolina is requesting that the EPA redesignate that portion of York County, South Carolina within the Metrolina nonattainment area to attainment. The monitoring data shows that the Metrolina nonattainment area has attained the 1997 8-hour ozone NAAQS and the maintenance demonstration shows that the future emissions inventories are expected to be lower than the attainment year inventory through the implementation of the various control measures listed above.

SECTION I. Introduction

A. Ground-Level (Tropospheric) Ozone

Ozone is a colorless gas that occurs naturally in the atmosphere and can be found in the air we breathe. Ozone is composed of three atoms of oxygen (O_3), one more than the common oxygen molecule (O_2) we need to breathe to sustain life. The additional oxygen atom makes ozone extremely reactive. Ozone in the Earth's upper atmosphere, known as stratospheric ozone, shields the Earth from the harmful effects of the sun's ultraviolet rays. Ozone found in the atmosphere closer to the Earth's surface (tropospheric ozone) is considered a harmful air pollutant due to its adverse impacts on human health and welfare.

Tropospheric ozone is commonly referred to as ground-level ozone and sometimes called smog. Ozone is not emitted directly by the combustion of fuels. Ozone is formed in the atmosphere by the reaction of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) in the presence of sunlight. These air pollutants, often referred to as ozone precursors, are emitted by many types of pollution sources, including on-road and off-road motor vehicles and engines, power plants and industrial facilities, and smaller sources, collectively referred to as area sources. Ozone is predominately a summertime air pollutant. Changing weather patterns contribute to yearly differences in ozone concentrations from region to region. Ozone and the pollutants that form ozone also can be transported into an area from pollution sources found hundreds of miles upwind.

B. National Ambient Air Quality Standards (NAAQS)

The Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to set NAAQS for pollutants considered harmful to public health and the environment. National primary and secondary ambient air quality standards under Section 109 of the CAA are set forth in Title 40 of the Code of Federal Regulations, part 50. NAAQS are subject to revision, and additional primary and secondary standards may be promulgated as the EPA deems necessary to protect the public health and welfare. The EPA has promulgated primary and secondary NAAQS for carbon monoxide (no secondary standard for carbon monoxide), lead, nitrogen dioxide, particulate matter, sulfur oxides, and ground-level ozone. The EPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. For each pollutant, a health-based or "primary" standard has been set to protect public health in general, and a welfare-based or "secondary" standard may be set to protect quality of life and the environment. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

C. 1997 8-Hour Ozone NAAQS

In 1997, the EPA revised the NAAQS for ground-level ozone, setting the standard at 0.08 parts per million (ppm) averaged over an 8-hour period. At each ozone monitoring site, hourly average concentrations are recorded in ppm. Running 8-hour averages are computed from the hourly ozone concentration data for each hour of the year. The daily maximum 8-hour concentration for a given calendar day is the highest of the 24 possible 8-hour average concentrations computed for that day. The design value is the statistic to compare the 1997 8-hour ozone NAAQS and is a three-year average using the three most recent, consecutive calendar years of monitoring data. A violation of the 1997 8-hour ozone NAAQS occurs when the computed design value is greater than or equal to 0.085 ppm.

D. 1997 8-Hour Ozone Designations

Upon promulgation of a new or revised NAAQS, the CAA requires the EPA to designate areas as attaining or not attaining that NAAQS. On April 30, 2004, the EPA promulgated the *Final Rule To Implement the 8-Hour Ozone National Ambient Air Quality Standard - Phase 1* to provide guidance on ozone designations, classifications, and boundaries for areas in the United States with respect to the 1997 8-hour ozone NAAQS (69 FR 23857).

Based on this rule, 1997 8-hour ozone NAAQS design values were then calculated for ozone monitors in the United States. The EPA area designations were generally based on air quality monitoring data collected during the 2001, 2002, and 2003 ozone seasons. The highest monitor design value in an area was used to determine its designation. The CAA then specifies requirements for areas based on whether such areas are or are not attaining the NAAQS.

Almost all of South Carolina was designated attainment for the 1997 8-hour ozone NAAQS; however, three areas of South Carolina were designated nonattainment. Two of those areas, the Greenville-Spartanburg-Anderson Area and the Columbia Area both opted to enter into Early Action Compacts. The EPA promulgated deferrals of the effective date of the nonattainment designations for these two areas and in April 2008, based on ambient monitoring data for 2005-2007, redesignated them as attainment areas for the 1997 8-hour ozone NAAQS.

Because of its proximity to the Charlotte area, the third area in South Carolina designated nonattainment for the 1997 8-hour ozone NAAQS is part of a multi-State ozone nonattainment area. This area, the Charlotte-Gastonia-Rock Hill, NC-SC nonattainment area (also referred to as the Metrolina nonattainment area) includes that portion of York County, South Carolina within the Rock Hill Fort Mill Area Transportation Study (RFATS) Metropolitan Planning Organization (MPO). At that time, several monitors in the North Carolina portion of the Metrolina area had design values above the 1997 8-hour ozone NAAQS. However, the monitor located in York County had a design value of 0.084 ppm, which is below the 1997 8-hour ozone NAAQS. The Metrolina area was classified as a Subpart 2 moderate nonattainment area.

On August 31, 2007, the South Carolina Department of Health and Environmental Control (henceforth referred to as SCDHEC or Department) submitted its required attainment plan for the RFATS MPO 1997 8-hour ozone NAAQS nonattainment area. On November 17, 2008, the EPA sent letters to North Carolina and South Carolina, explaining its intention to propose disapproval of the attainment demonstrations for the Metrolina nonattainment area for the 1997 8-hour ozone NAAQS by January 9, 2009. Within these letters, the EPA indicated this decision was based on their belief that the area was unlikely to attain the 1997 ozone NAAQS by June 15, 2010, or meet the requirements for a one-year extension of the attainment date. As a result, the Department withdrew its attainment demonstration on December 22, 2008, and committed to re-submit an amended attainment demonstration by November 30, 2009. Therefore, in a *Federal Register* notice published on May 8, 2009 (74 FR 21550), the EPA made a finding of failure to submit State Implementation Plan (SIP) revisions required for the 1997 8-hour ozone NAAQS to South Carolina and North Carolina for the Metrolina nonattainment area.

Based on recommendation from the EPA, on April 29 2010, the Department re-submitted the previous attainment demonstration, supplemented with additional information (including the 2011 modeling and air quality data from 2009). However, as a result of ozone levels in the 2009 ozone season being below the 1997 8-hour ozone NAAQS, pursuant to Section 181(a)(5)of the CAA, on May 6, 2010, the Department submitted a request for a one-year extension of the 1997 8-hour ozone attainment date (until June 15, 2011).

E. Clean Air Act Redesignation Criteria

Section 107(d)(3)(E) of the CAA, as amended, states an area can be redesignated to attainment if the following conditions are met:

1. The EPA has determined that the NAAQS have been attained. For ozone, the areas must show that the average of the 4th highest 8-hour ozone values from three (3) complete, consecutive calendar years of quality-assured air quality monitoring data must be below 0.085 ppm.

2. The applicable implementation plan has been fully approved by the EPA under section 110(k).

3. The EPA has determined that the improvement in air quality is due to permanent and enforceable reductions in emissions. To demonstrate this, the State should estimate the percent reduction (from the year used to determine the design value for designation and classification) achieved from federal, state, and local measures.

4. The EPA has fully approved a maintenance plan, including a contingency plan, for the areas under section 175A.

5. The State has met all applicable requirements for the area under section 110 and Part D.

In the sections to follow, the Department will provide the technical data necessary to show that the portion of York County, South Carolina within the RFATS MPO designated as a moderate nonattainment area for the 1997 8-hour ozone NAAQS as part of the Metrolina nonattainment area has attained and is expected to maintain the 1997 8-hour ozone NAAQS, and has met the requirements for redesignation set forth above. The North Carolina Department of Environment and Natural Resources, Division of Air Quality (NCDAQ) has developed its own separate maintenance plan for the North Carolina portion of the Metrolina nonattainment area.

SECTION II. AIR QUALITY

A. Charlotte-Gastonia-Rock Hill, NC-SC (Metrolina) Air Quality

1. Monitors in the Metrolina Nonattainment Area

In the South Carolina portion of the Metrolina nonattainment area, there is one monitoring site (York CMS) which is located in south-central York County. This site is important for forecasting ozone concentrations in the Metrolina nonattainment area. Figure II-1: "Monitors in the Charlotte-Gastonia-Rock Hill, NC-SC Area" displays the monitor locations. The York County monitor is included in the SCDHEC 2011 Annual Network Description and Ambient Air Network Monitoring Plan which was completed in 2010. There were no changes proposed for this monitor for 2011.

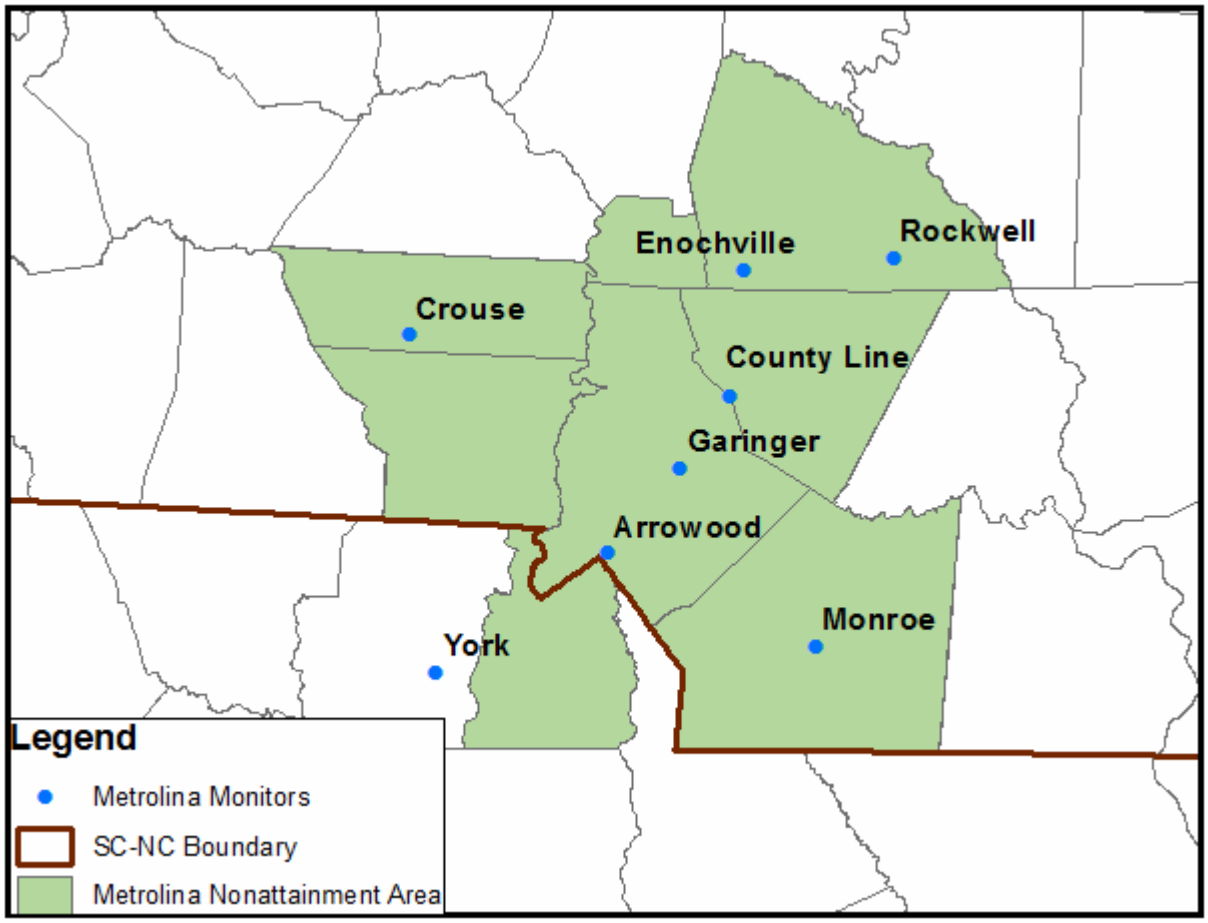

Figure II-1: Monitors in the Charlotte-Gastonia-Rock Hill, NC-SC Area

2. Historic Air Quality (1997- 2009)

The 4th highest daily maximum 8-hour ozone concentrations listed in Table II-1 were used to calculate the design values shown in Table II-2. Design values were calculated from the 1997-1999 design value period through the 2007-2009 design value period for each monitor in the Metrolina nonattainment area. Design values were calculated in accordance with the procedures found in 40 CFR

Appendix I to Part 50. Since 1999, there has been only one year with a 4th high daily maximum 8-hour ozone concentration above the 1997 8-hour ozone NAAQS in York County (Table II-1). As shown in Table II-2, the design value at the York County monitoring site has not violated the 1997 8-hour ozone NAAQS since 1998-2000 when the design value was 0.085 ppm.

Table II-1: Historic 4th Highest 8-Hour Ozone Values (ppm) for Charlotte-Gastonia-Rock Hill, NC-SC Nonattainment Area

Monitoring Site	County	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Crouse	Lincoln	**0.085**	**0.090**	**0.087**	**0.094**	**0.094**	**0.095**	**0.089**	0.074	0.082	0.082	**0.085**	0.079	0.065
Arrowood	Mecklenburg	**0.094**	**0.104**	**0.104**	**0.087**	**0.086**	**0.094**	0.073	0.077	**0.085**	0.078	**0.087**	0.073	0.068
County Line	Mecklenburg	**0.101**	**0.110**	**0.103**	**0.101**	**0.099**	**0.107**	**0.088**	0.083	**0.090**	**0.093**	**0.096**	**0.093**	0.071
Garinger (Plaza)	Mecklenburg	**0.105**	**0.103**	**0.099**	**0.096**	**0.099**	**0.103**	**0.086**	**0.085**	**0.088**	**0.091**	**0.093**	**0.085**	0.069
Enochville	Rowan	**0.092**	**0.099**	**0.102**	**0.094**	**0.103**	**0.108**	**0.087**	0.080	**0.088**	**0.089**	**0.095**	0.082	0.073
Rockwell	Rowan	**0.089**	**0.101**	**0.107**	**0.092**	**0.097**	**0.106**	**0.098**	0.080	**0.086**	**0.085**	**0.096**	0.084	0.071
Monroe	Union			**0.096**	**0.085**	0.081	**0.100**	0.083	0.074	0.082	0.080	0.082	0.080	0.067
York	York County, SC	0.080	**0.087**	**0.092**	0.076	0.080	**0.096**	0.076	0.071	0.079	0.078	0.080	0.075	0.062

NOTES: Values displayed in bold are above the 1997 8-hour ozone National Ambient Air Quality Standards.
Underlined values represent 4th highest values from Plaza monitoring site.
The Plaza monitor was moved to the Garinger site location in 2000.
Shaded areas reflect no monitoring data available.

Table II-2: Historic 8-Hour Ozone Design Values (ppm) for Charlotte-Gastonia-Rock Hill, NC-SC Nonattainment Area

Monitoring Sites	County	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009
Crouse	Lincoln	**0.087**	**0.090**	**0.091**	**0.094**	**0.092**	**0.086**	0.081	0.079	0.083	0.082	0.076
Arrowood	Mecklenburg	**0.100**	**0.098**	**0.092**	**0.089**	0.084	0.081	0.078	0.080	0.083	**0.079**	0.076
County Line	Mecklenburg	**0.104**	**0.104**	**0.101**	**0.102**	**0.098**	**0.092**	**0.087**	**0.088**	**0.093**	**0.094**	**0.086**
Garinger (Plaza)	Mecklenburg	**0.101**	**0.098**	**0.098**	**0.099**	**0.096**	**0.091**	**0.086**	**0.088**	**0.090**	**0.089**	0.082
Enochville	Rowan	**0.097**	**0.098**	**0.099**	**0.101**	**0.099**	**0.091**	**0.085**	**0.085**	**0.090**	**0.088**	0.083
Rockwell	Rowan	**0.099**	**0.100**	**0.098**	**0.098**	**0.100**	**0.094**	**0.088**	0.083	**0.089**	**0.088**	0.083
Monroe	Union			**0.087**	**0.088**	**0.088**	**0.085**	0.079	0.078	0.081	0.080	0.076
York	York County, SC	**0.086**	**0.085**	0.082	0.084	0.084	0.081	0.075	0.076	0.079	0.077	0.072

NOTES: Values displayed in bold represent violations of the 1997 8-hour ozone National Ambient Air Quality Standards.
Underline values represent design values that use 4th highest values from Plaza monitoring site.
Shaded areas reflect data not available to calculate design value.

3. Current Design Values (2008-2010)

The most recent three years of ozone monitoring data (2008-2010) for the Metrolina nonattainment area demonstrates compliance with the 1997 8-hour ozone NAAQS. Table II-3: 2010 Design Values lists the annual 4th highest daily maximum 8-hour average ozone concentration and calculated design values for all of the monitors within the Metrolina nonattainment area. Consistent with the requirements of 40 CFR 58.15, the 2010 8-hour ozone monitoring data for South Carolina has been fully quality assured and was officially submitted to the EPA Region 4 on February 11, 2011.

Table II-3: 2010 Design Values

Monitor	County	4th Highest 8-hour Ozone Value			2010 Design Value
		2008	2009	2010	
Crouse	Lincoln	0.079	0.065	0.072	0.072
Arrowood	Mecklenburg	0.073	0.068	0.078	0.073
County Line	Mecklenburg	0.093	0.071	0.082	0.082
Garinger (Plaza)	Mecklenburg	0.085	0.069	0.082	0.078
Enochville	Rowan	0.082	0.073	0.078	0.077
Rockwell	Rowan	0.084	0.071	0.077	0.077
Monroe	Union	0.080	0.067	0.071	0.072
York	York, SC	0.075	0.062	0.066	0.067

4. Permanent and Enforceable Emissions Reductions

There are federal and state measures that have been enacted in recent years that are resulting in permanent and enforceable emissions reductions. A list of those measures that contributed to the permanent and enforceable emissions reductions are listed below and more fully described in Section III. B.

The federal measures that have been implemented include:

- Tier 2 vehicle standards: Implementation began in 2004 and will require all passenger vehicles in any manufacturer's fleet to meet an average standard of 0.07 grams of NO_x per mile. The Tier 2 rule also reduced the sulfur content of gasoline to 30 ppm starting in January of 2006.

- Heavy-duty gasoline and diesel highway vehicle standards: New EPA standards designed to reduce NO_x and VOC emissions from heavy-duty gasoline and diesel highway vehicles commenced implementation in 2004. A second phase of standards and testing procedures, which began in 2007, is reducing particulate matter from heavy-duty highway engines and has reduced highway diesel fuel sulfur content to 15 ppm.

- Nonroad spark-ignition engines: Effective in 2003 and will reduce NO_x and HC emissions.

- NO_x SIP Call: The NO_x SIP Call created the NO_x Budget Trading Program designed to reduce the amount of ozone that crosses state lines. By the end of 2008, ozone season emissions dropped by

62 percent from 2000 at all sources subject to the NO_x SIP Call (EPA, *NO_x Budget Trading Program: 2008 Highlights*, October 2009).

The state measures that have been implemented include:

- The Celanese Acetate Celriver Plant closed in 2006. This plant, which included six coal-fired boilers, the largest of which was rated at 320 MMBtu/hr, was the largest stationary source of NO_x in the York County portion of the Metrolina nonattainment area. As a result, we retired 2,493 tons of NO_x and 1,686 tons of VOCs.

- Prohibition of Open Burning: Effective in 2004, the revision of Regulation 61-62.2, *Prohibition of Open Burning*, includes a ban of certain open burning during the ozone season for additional control of NO_x emissions.

- Control of Oxides of Nitrogen: Effective in 2004, R. 61.62.5 Standard 5.2 *Control of Oxides of Nitrogen*, applies to new and existing stationary sources that emit or have the potential to emit NO_x generated from fuel combustion. This regulation sets standards for new construction based on Best Available Control Technology (BACT) standards from the national RACT/BACT/LAER Clearinghouse. For new sources, the regulation is primarily directed at smaller sources that fall below the Prevention of Significant Deterioration (PSD) thresholds and therefore would otherwise be exempt for NO_x controls altogether.

In addition, North Carolina has implemented measures in the North Carolina portion of the Metrolina nonattainment area to include the state Clean Smokestacks Act which required coal-fired power plants to reduce annual NO_x emissions by 77 percent by 2009 and to reduce annual sulfur dioxide emissions by 49 percent by 2009 and 73 percent by 2013. The legislation sets a cap on NO_x and sulfur dioxide emissions, which the public utilities cannot meet by purchasing emission credits.

South Carolina believes that the improvement in air quality experienced in the Metrolina nonattainment area is due to the real, permanent and enforceable reduction in NO_x emissions resulting from these state and federal measures.

SECTION III. MAINTENANCE PLAN

A. Concept of South Carolina's Maintenance Plan

South Carolina's plan for maintaining compliance with 1997 8-hour ozone NAAQS in the South Carolina portion of the Metrolina nonattainment area includes three major parts: established control measures, a maintenance demonstration, and a contingency plan. The established control measures consists of the current federal and state control measures already in effect, as well as the future benefits of the cleaner engine programs, and Transport Rule.

The Department has implemented programs that will remain enforceable and are hereby submitted as the plan to ensure that maintenance of the 1997 8-hour ozone NAAQS will continue. Sources are prohibited from reducing emission controls (anti-backsliding) following the redesignation of the area unless such a change is first approved by the EPA as a revision to the South Carolina SIP that is consistent with Section 110(l) of the CAA.

For the maintenance demonstration the base year of 2010 was chosen since it is one of the most recent 3 years (2008, 2009 and 2010) for which the Metrolina area has clean air quality data for the 1997 8-hour ozone NAAQS. The interim years chosen are 2013, 2016, and 2019 since the EPA recommends three-year increments for interim years. The final year of the maintenance demonstration is 2022, since the CAA requires maintenance for at least ten years after redesignation. The maintenance demonstration consists of a comparison between the 2010 baseline emissions inventory and the projected emissions inventories (for 2013, 2016, 2019, and 2022), which consider economic and population growth. The comparison shows that the total emissions in each of the interim years and the final year will be lower than in the base year, demonstrating maintenance of the 1997 8-hour ozone NAAQS. The reductions in emissions are due to the established control measures outlined below.

The South Carolina contingency plan involves tracking and triggering mechanisms to determine when contingency measures are needed and a process of implementing appropriate control measures. A quality assured/quality controlled (QA/QC) design value that exceeds the 1997 8-hour ozone NAAQS at any monitor within the Metrolina nonattainment area will trigger evaluation of the contingency plan. In conjunction with the South Carolina maintenance plan, the NCDAQ has developed its own separate maintenance plan for the North Carolina portion of the Metrolina nonattainment area.

B. Established Control Measures

1. Federal Control Measures

a. Tier 2 Vehicle Standards

Federal Tier 2 vehicle standards will require all passenger vehicles in a manufacturer's fleet, including light-duty trucks and sport utility vehicles (SUVs), to meet an average standard of 0.07 grams of NO_x per mile. Implementation began in 2004, with full compliance required by 2007. The Tier 2 standards also cover passenger vehicles over 8,500 pounds gross vehicle weight rating (the larger pickup trucks and SUVs), which are not covered by the current Tier 1 regulations. For these vehicles, the standards were phased in beginning in 2008, with full compliance in 2009. The new standards require vehicles to be 77 percent to 95 percent cleaner than those made prior to these dates. The Tier 2 rule also reduced the sulfur content of gasoline to 30 ppm starting in January of 2006. Most gasoline sold in South Carolina prior to January 2006 had a sulfur content of about 300 ppm. Sulfur occurs naturally in gasoline but interferes with the operation of catalytic converters on vehicles, resulting in higher NO_x emissions. Lower-sulfur gasoline is necessary to achieve the Tier 2 vehicle emission standards.

b. Heavy-Duty Gasoline and Diesel Highway Vehicles Standards

New EPA standards designed to reduce NO_x and VOC emissions from heavy-duty gasoline and diesel highway vehicles commenced implementation in 2004. A second phase of standards and testing procedures, which began in 2007, reduces particulate matter from heavy-duty highway engines and has reduced highway diesel fuel sulfur content to 15 ppm. The total program for these new engines using low sulfur diesel is expected to achieve a 90 percent reduction in particulate matter (PM) emissions and a 95 percent reduction in NO_x emissions (as compared to existing engines using higher-content sulfur diesel).

c. Large Non-road Diesel Engines Rule

In May 2004, the EPA promulgated new rules for large non-road diesel engines (such as those used in construction, agricultural, and industrial equipment) to be phased in between 2008 and 2014. The non-road diesel rules also reduce the allowable sulfur in non-road diesel fuel by over 99 percent. Non-road diesel fuel currently averages about 3,400 ppm sulfur. The rule limited non-road diesel sulfur content to 500 ppm in 2006 and 15 ppm in 2010. The combined engine and fuel rules have reduced NO_x and PM emissions from large non-road diesel engines by over 90 percent (as compared to current non-road engines using higher-content sulfur diesel).

d. Non-road Spark-Ignition Engines and Recreational Engines Standard

This standard, effective in July 2003, regulates NO_x, hydrocarbons (HC), and carbon monoxide (CO) for groups of previously unregulated non-road engines. The standard applies to all new engines imported into or sold within the United States after these standards begin. It applies to large spark-ignition engines (e.g. forklifts and airport ground service equipment), recreational vehicles (e.g. off-highway motorcycles and all-terrain-vehicles), and recreational marine diesel engines. The regulation varies based upon the type of engine or vehicle.

The large spark-ignition engines contribute to ozone formation and ambient CO and PM levels in urban areas. Tier 1 of this standard was implemented in 2004, and Tier 2 in 2007. Like the large spark-ignition, recreational vehicles contribute to ozone formation and ambient CO and PM levels. For all model-year 2006 off-highway motorcycles and all-terrain-vehicles, the new exhaust emissions standard was phased-in at 50 percent; for model years 2007 and later, the standard was phased-in at 100 percent. Recreational marine diesel engines over 37 kilowatts (used in yachts, cruisers, and other types of pleasure craft) contribute to ozone formation and PM levels, especially in marinas. For certain recreational marine diesel engine sizes, the standard began to be phased-in in 2006.

When all of the non-road spark-ignition engines and recreational engines standards are fully implemented, overall reductions of 72 percent in HC, 80 percent in NO_x, and 56 percent in CO emissions are expected by 2020. These controls will help reduce ambient concentrations of ozone, CO, and fine PM.

e. NO_x SIP Call

In October 1998, the EPA issued the "Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone" (63 FR 57356; October 27, 1998), commonly called the "NO_x SIP Call." The NO_x SIP Call created the NO_x Budget Trading Program, an emissions allowance trading program designed to reduce the amount of ozone that crosses state lines by limiting NO_x emissions from utilities and large industrial sources in the eastern United States.

The NO_x Budget Trading Program was effective in reducing NO_x emissions: By the end of 2008, ozone season emissions dropped by 62 percent from 2000 at all sources subject to the NO_X SIP Call (EPA, *NO_x Budget Trading Program: 2008 Highlights*, October 2009, page 3, Available at http://www.epa.gov/airmarkets/progress/NBP_4/NBP_2008_Highlights.pdf, last accessed May 13, 2011). It follows that the York County portion of the Metrolina nonattainment area benefited from these overall reductions, since it is part of the larger NO_x SIP Call area. The NO_x Budget Trading Program also reduced local emissions. The one source subject to the NO_x SIP Call in the portion of York County in the Metrolina nonattainment area, AbitibiBowater Inc. - Catawba Operations, reduced ozone season NO_x emissions from 36 tons in 2003, the first year of the NO_x Budget Trading Program, to 14 tons in 2008, the final year of the NO_x Budget Trading Program.

In 2005, the EPA issued the Clean Air Interstate Rule ("CAIR") (70 FR 25162; May 12, 2005), which was intended to supplant the NO_x SIP Call. The DC Court of Appeals subsequently remanded CAIR to the EPA, which is developing the proposed Transport Rule (75 FR 45210, August 2, 2010) as a replacement.

f. Control Technique Guidelines (CTGs)

In the York County portion of the Metrolina nonattainment area, there are currently no VOC sources subject to CTGs. The Department provided certifications to this effect to the EPA within the original attainment demonstration (August 31, 2007) and on February 23, 2009 (Group III, 72 FR 57215), and July 9, 2009 (Group IV, 73 FR 40230), respectively. The Department will continue to evaluate the applicability of CTGs as new groups are promulgated.

2. State Control Measures

a. New Source Review Regulations

On December 31, 2002, the EPA finalized revisions to the New Source Review (NSR) program. The major NSR program is a preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants. In areas not meeting health-based NAAQS, the program is referred to as the Prevention of Significant Deterioration (PSD) program. Collectively, these programs are commonly referred to as the major NSR program.

In accordance with the EPA's final rule revisions, state agency programs must adopt and submit revisions to their SIPs to include the minimum program elements outlined in the final rules. States may choose to adopt provisions that differ from the final rules; however, to be approvable under the SIP, the state must show that the regulations are at least as stringent as the EPA's amendments.

After a lengthy stakeholder process, SCDHEC submitted revisions to the Legislature in January 2005 to comply with the EPA requirements. The revisions adopted by SCDHEC differ from the federal revisions in several key respects and have the effect of being more stringent than the federal rules. These

revisions were approved by the General Assembly and became state-effective upon publication in the *State Register* on June 24, 2005. The final regulations promulgated amendments to Regulations 61-62.1, *Definitions and General Requirements*, and R. 61-62.5, Standard No. 7, *Prevention of Significant Deterioration*, and also promulgated a new regulation, R. 61-62.5, Standard No. 7.1, *Nonattainment New Source Review*.

- **South Carolina Air Pollution Control Regulation 61-62, *Definitions and General Requirements,* Section II - Permit Requirements**

This regulation implements a program for the minor new source review permitting program, which enhances the state's prevention of significant deterioration of air quality initiatives.

- **South Carolina Air Pollution Control Regulation 61-62.5, Standard No. 7, *Prevention of Significant Deterioration***

This regulation implements a program for the prevention of significant deterioration of air quality for sources located in or whose construction is proposed in an unclassifiable/attainment area of the state.

- **South Carolina Air Pollution Control Regulation 61-62.5, No. 7.1 - *Nonattainment New Source Review***

This regulation implements a program whereby sources located in or whose construction is proposed in nonattainment areas are subject to the requirements of R. 61-62.5, Standard No. 7.1.

b. NO_x Regulations

These regulations specify the requirements for controlling NO_x and for demonstrating compliance with NO_x limitations.

- **South Carolina Air Pollution Control Regulation 61-62.5, Standard No. 2 - *Ambient Air Quality Standards***

This regulation contains the state of South Carolina ambient air quality standards, which include the 8-hour ozone standards.

- **South Carolina Air Pollution Control Regulation 61-62.5, Standard No. 5.2 - *Control of Oxides of Nitrogen (NO_x)***

This regulation contains the NO_x control standards applicable to affected stationary sources that emit or have the potential to emit NO_x generated from fuel combustion.

- **South Carolina Air Pollution Control Regulation 61-62.96 - *Nitrogen Oxides (NO_x) and Sulfur Dioxide (SO_2) Budget Trading Program***

This regulation contains South Carolina's adoption of federal CAIR regulations.

- **South Carolina Air Pollution Control Regulation 61-62.99 - *Nitrogen Oxides Budget Program Requirements for Stationary Sources Not in the Trading Program***

This regulation details requirements for controlling NO_x emissions from cement manufacturing.

- **South Carolina Air Pollution Control Regulation 61-62.2 - *Prohibition of Open Burning***

The revision (June 25, 2004) of R. 61-62.2, *Prohibition of Open Burning*, includes a ban of certain open burning during the ozone season for additional control of NO_x emissions.

c. VOC Regulations: South Carolina Air Pollution Control Regulation 61-62.5, Standard No. 5 - *Volatile Organic Compounds*

This regulation contains requirements for controlling VOCs.

d. Emissions Inventory: South Carolina Regulation 61-62.1, *Definitions and General Requirements*, Section III - Emissions Inventory

This regulation requires the submittal of emissions inventory information by affected sources.

e. Reasonably Available Control Measures (RACM)

Reasonably Available Control Measures is a broadly defined term referring to technologies and other measures that can be used to control pollution; includes Reasonably Available Control Technology and other measures.

The EPA's final 1997 8-hour ozone NAAQS implementation rule in 40 CFR 51.912(d), pursuant to section 172(c)(1) of the CAA, requires the attainment demonstration SIP submittal to include "a SIP revision demonstrating that it has adopted all RACM necessary to demonstrate attainment as expeditiously as practicable and to meet any RFP requirements." In addition, the EPA's RACM policy indicates that areas should consider all candidate measures that are potentially available, including any that have been suggested for the particular nonattainment area. Although areas should consider all available measures, areas need only adopt measures if they are both economically and technologically feasible and will contribute to timely attainment or are necessary for RFP. Measures that might be available but would not advance attainment or contribute to RFP need not be considered RACM. A number of emissions controls programs were implemented in South Carolina following the CAA Amendments of 1990, and substantial further emissions reductions have since occurred in the state as well as the Metrolina nonattainment area. SCDHEC intends to continue to investigate and, where appropriate, adopt additional measures that would reduce emissions of ozone precursors even further. Such measures may help the state in the future as it maintains the 1997 8-hour ozone NAAQS. The source categories emitting the vast preponderance of ozone precursor emissions in the state are already subject to control requirements.

C. Emissions Inventory

There are two basic approaches used to demonstrate continued maintenance. The first is the comparison of a projected emissions inventory with a baseline emissions inventory. The second approach involves complex analysis using gridded dispersion modeling. The approach used by the SCDHEC is the comparison of emissions inventories for the years 2010 and 2022.

For the maintenance demonstration, the base year of 2010 was chosen since it is a year that falls within the attaining design value period of 2008-2010 and some emissions inventory data was already developed for this year. The maintenance demonstration is made by comparing the 2010 baseline emissions inventory to the 2022 projected emissions inventory. The baseline emissions inventory represents an emission level for a period when the ambient air quality standard was not violated, 2008-

2010. If the projected emissions remain at or below the baseline emissions, continued maintenance is demonstrated and the ambient air quality standard should not be violated in the future. In addition to comparing the final year of the plan, all of the interim years are compared to the 2010 baseline to demonstrate that these years are also expected to show continued maintenance of the 1997 8-hour ozone NAAQS.

The emissions inventories are comprised of four major types of sources: point, area, on-road mobile, and non-road mobile. The projected emissions inventories have been estimated using projected rates of growth in population, traffic, economic activity, and other parameters. Naturally occurring, or biogenic, emissions are not included in the emissions inventory comparison, as these emissions are outside the State's span of control.

The NCDAQ has developed a maintenance plan for the North Carolina portion of the Metrolina nonattainment area. For emissions summaries for the North Carolina portion of the Metrolina nonattainment area, refer to the Redesignation Demonstration and Maintenance Plan submitted by the NCDAQ.

1. Emission Inventories

There are four different man-made emission inventory source classifications: (1) point, (2) area, (3) on-road mobile, and (4) nonroad mobile sources.

Point sources are those larger industrial or commercial stationary facilities that must have Title V permits issued by the SCDHEC Bureau of Air Quality (BAQ). These sources have the potential to emit more than 100 tons of NO_x or VOC. The source emissions are tabulated from data collected by direct on-site measurements of emissions or mass balance calculations utilizing emission factors from the EPA's AP-42. There are usually several emission sources for each facility. Emission data is collected for each point source at a facility and the data is entered into an in-house database system. For the projected year's inventory, point sources are adjusted by growth factors based on Standard Industrial Classification codes. The growth factors are generated using the EPA's Economic Growth Analysis System version 5.0 (E-GAS 5.0) program. A complete description of how these inventories were developed is discussed in detail in Appendix A.

Area sources are those stationary sources whose emissions are relatively small but due to the large number of these sources, the collective emissions could be significant (i.e., smaller industrial facilities, dry cleaners, service stations, etc.). For area sources, emissions are estimated by multiplying an emission factor by some known indicator of collective activity such as production, number of employees, or population. These types of emissions are estimated on the county level. For the projected year's inventory, area source emissions are changed by population growth, projected production growth, or when applicable, by E-GAS 5.0 growth factors. A complete description of how these inventories were developed is discussed in detail in Appendix B.

For on-road mobile sources, the EPA mobile model MOVES2010a is used to generate emissions. MOVES can be used to estimate exhaust and evaporative emissions as well as brake and tire wear emissions from all types of on-road vehicles. The estimation of emissions involves multiplying an activity level by an emission factor, and is all done within the model. The activity level used by MOVES2010a is vehicle miles traveled (VMT). For the future years' inventories, the MOVES 2010a mobile model takes into consideration expected federal tailpipe standards, fleet turnover, and new fuels. A complete description of how these inventories were developed is discussed in detail in Appendix C.

Nonroad mobile sources are equipment that can move but do not use the roadways, i.e., lawn mowers, construction equipment, railroad locomotives, aircraft, etc. The emissions from this category are calculated using the EPA's NONROAD2008a non-road mobile model, with the exception of the railroad locomotives and aircraft engine. The railroad locomotive and aircraft engine emissions are estimated by multiplying an activity level by an emission factor. These emissions are also estimated at the county level. For the projected years' inventories, the emissions are estimated using the EPA's NONROAD2008a non-road mobile model, E-GAS 5.0 growth factors, or projected landing and take off data for aircraft. A complete description of how these inventories were developed is discussed in detail in Appendix D.

2. Summary of Emissions

The tables below contain the estimated emissions from all of the emission source sectors, i.e., point, area, on-road mobile, and nonroad mobile for the York County portion of the Metrolina nonattainment area. Additionally, the sum total of these man-made emissions for the York County portion of the Metrolina nonattainment area is tabulated in Table III-1. For emissions summaries for the North Carolina portion of the Metrolina nonattainment area, refer to the Redesignation Demonstration and Maintenance Plan submitted by the NCDAQ.

Table III-1 Point Source Emissions

County	2010	2013	2016	2019	2022
VOC Emissions (tons/day)					
York*	2.07	2.06	2.2	2.34	2.49
NO_x Emissions (tons/day)					
York*	4.54	4.64	4.91	5.19	5.48

* Portion of York County within the Metrolina nonattainment area

Table III-2 Area Source Emissions

County	2010	2013	2016	2019	2022
VOC Emissions (tons/day)					
York*	7.1645	7.3870	7.5672	7.7027	7.8311
NO_x Emissions (tons/day)					
York*	1.1733	1.2219	1.2665	1.3183	1.3641

* Portion of York County within the Metrolina nonattainment area

Table III-3 On-Road Mobile Source Emissions

County	2010	2013	2016	2019	2022
VOC Emissions (tons/day)					
York*	3.92	3.14	2.61	2.29	2.14
NO_x Emissions (tons/day)					
York*	12.05	8.73	6.52	5.16	4.42

* Portion of York County within the Metrolina nonattainment area

Table III-4 Nonroad Mobile Source Emissions

County	2010	2013	2016	2019	2022
VOC Emissions (tons/day)					
York*	2.149	1.776	1.541	1.438	1.407
NO_x Emissions (tons/day)					
York*	3.209	2.686	2.174	1.817	1.595

* Portion of York County within the Metrolina nonattainment area

Table III-5 Total Man-Made Emissions

County	2010	2013	2016	2019	2022
VOC Emissions (tons/day)					
York*	15.30	14.36	13.92	13.77	13.87
NO_x Emissions (tons/day)					
York*	20.97	17.28	14.87	13.49	12.86

* Portion of York County within the Metrolina nonattainment area

3. Maintenance Demonstration

As discussed above, maintenance is demonstrated when the future years total man-made emissions are less than the 2010 baseline emissions. The following table summarizes the VOC and NO_x emissions for the York County portion of the Metrolina nonattainment area. The difference between the base year (2010) and the final year (2022) illustrates that the continued maintenance of the 1997 8-hour ozone NAAQS is expected.

Although there is a slight increase in VOC emissions between 2019 and 2022, the SCDHEC does not believe this is inconsistent with the maintenance demonstration. First, the 2022 emissions are still below the baseline emissions for 2010. There are significantly more VOC emissions in the atmosphere than NO_x emissions and a vast majority of the total VOC emissions come from biogenic, or natural, sources, which cannot be controlled. Therefore a slight increase in man-made VOC emissions in 2022 will not result in an increase in ozone formation. As noted earlier, this area is NO_x limited for ozone.

Table III-6 Maintenance Demonstration

Year	VOC TPD	NO_x TPD
2010	15.30	20.97
2013	14.36	17.28
2016	13.92	14.87
2019	13.77	13.49
2022	13.87	12.86
Difference from 2010 to 2022	-1.43	-8.11

The difference between the attainment level of emissions (2010) from all man-made sources and the projected level of emissions from all man-made sources in the York County portion of the Metrolina nonattainment area is considered the "safety margin." The safety margin for each projected year is listed below in Table III-7.

Table III-7 Safety Margin

Year	VOC TPD	NOx TPD
2010	N/A	N/A
2013	-0.94	-3.69
2016	-1.38	-6.10
2019	-1.53	-7.48
2022	-1.43	-8.11

D. CONTINGENCY PLAN

1. Overview

The two main elements of the South Carolina contingency plan are tracking and triggering mechanisms to determine when contingency measures are needed and a process of developing and adopting appropriate control measures.

2. Contingency Plan Trigger

The primary trigger for evaluation of the contingency plan will be a quality assured/quality controlled (QA/QC) design value that exceeds the 1997 8-hour ozone NAAQS at any monitor within the Metrolina nonattainment area. In addition, SCDHEC will monitor periodic emissions inventory updates and compare to projected emissions. If projected emissions in this maintenance plan are significantly less than actual emissions, SCDHEC will investigate the differences and develop an appropriate strategy for addressing these differences.

3. Contingency Measures

The measures that will be considered for adoption upon a trigger of the contingency plan include:

- RACT for NO_x on existing stationary sources not subject to existing requirements;
- Implementation of diesel retrofit programs, including incentives for performing retrofits for fleet vehicle operations;
- Alternative fuel programs for fleet vehicle operations;
- Gas can and lawnmower replacement programs;
- Voluntary engine idling reduction programs;
- SCDHEC's *Take a Break from the Exhaust* program; and
- Other measures deemed appropriate at the time as a result of advances in control technologies.

Programs such as diesel retrofitting may be dependent on the availability of federal funding.

4. Action Resulting from Trigger Activation

In the event that the trigger is activated, the SCDHEC will begin analyses to include emissions inventory assessment to determine those emission control measures that will be necessary for attaining or maintaining the 1997 8-hour ozone NAAQS. SCDHEC is obligated to, at a minimum, consult with the NCDAQ to determine which state, South Carolina and/or North Carolina, will implement a contingency measure(s) within a timeframe, specified in the respective maintenance plan, to bring the area back into attainment.

The following schedule for adoption, implementation, and compliance applies to the contingency measures concerning the option of implementing regulatory requirements in South Carolina:

- Verification through quality assurance and certification of the monitored ozone data, via the ambient air quality monitor(s) in the Metrolina nonattainment area;

- Analysis of available data regarding the air quality, meteorology, transport, and related activities in the area to determine the possible cause of the violation;

- If deemed necessary, selection of a measure within three months after verification of an exceedance of the 1997 8-hour ozone NAAQS at any monitor within the Metrolina nonattainment area;

- Development and implementation of necessary regulations will be as soon as practicable and within the guidelines established in the South Carolina Administrative Procedures Act or no more than two years after selection of the appropriate measure.

5. **Tracking for Ongoing Maintenance**

As part of a statewide monitoring network, there is one monitoring site (York CMS - AQS ID 45-091-0006) which is located in south-central York County. This site was established as an upwind background monitor in 1993. This site is important for forecasting ozone concentrations in the Metrolina nonattainment area. In addition to measuring ozone, this site also measures wind speed and wind direction. South Carolina will continue operation of an appropriate air quality monitoring network in accordance with 40 CFR Part 58, Ambient Air Quality Surveillance and associated appendices.

South Carolina will continue to update its emissions inventory, including York County, at least once every three years. In addition to the emissions inventory for 2010, the emissions inventory base year, and the last year of the maintenance plan, 2022, interim years of 2013, 2016 and 2019 were selected to show a trend analysis for maintenance of the 1997 8-hour ozone NAAQS. Tracking the progress of the maintenance plan also includes performing reviews of the updated emissions inventories for the area using the latest emissions factors, models, and methodologies. For these periodic inventories, SCDHEC will review the assumptions made for the purpose of the maintenance demonstration concerning projected growth of activity levels.

In addition, SCDHEC will continue our commitment to work with local stakeholders to maintain the NAAQS as required. These stakeholders continue to pursue actions that improve air quality in general, focusing on multi-pollutant efforts that reduce emissions contributing to ozone and particulate matter, and that also reduce air toxics and greenhouse gas emissions. Local stakeholders continue to be more engaged than ever in air quality issues and understanding how the decisions made locally impact air quality. As proven in South Carolina, by taking early action, states may be able to prevent any actual violations of the NAAQS and, therefore, eliminate the need on the part of the EPA to redesignate an area to nonattainment.

SECTION IV. MOTOR VEHICLE EMISSIONS BUDGET

A. Transportation Conformity

The purpose of transportation conformity is to ensure that federal transportation actions occurring in nonattainment and maintenance areas do not hinder the area from attaining and maintaining the 8-hour ozone NAAQS. The level of emissions estimated by RFATS for the Transportation Implementation Plan (TIP) and Long Range Transportation Plan (LRTP) must not exceed the motor vehicle emission budget (MVEB) as defined in this redesignation demonstration and maintenance plan.

B. On-road Mobile Source VOC Insignificance

Section 93.109(k), in the Transportation Conformity Rule Amendments for the new 8-hour ozone and fine particulate matter NAAQS (July 2004), addresses areas with insignificant motor vehicle emissions. The rule suggests that such a finding would be based on a number of factors, including the percentage of motor vehicle emissions in the context of the total SIP inventory, the current state of air quality as determined by monitoring data for that NAAQS, the absence of SIP motor vehicle control measures, and historical trends and future projections of the growth of motor vehicle emissions. Also, in the EPA's approval of VOC insignificance for the Triangle area of North Carolina (*http://www.epa.gov/fedrgstr/EPA-AIR/2007/October/Day-03/a19513.htm*), it states that the policy provides flexibility for areas where motor vehicle emissions have little or no impact on an area's air quality problem. Further, the EPA states that the policy provides for state and local resources to be directed towards reducing emissions from those sources that contribute the most to an area's air quality problem.

The SCDHEC has examined the North Carolina Department of Air Quality's (NCDAQ's) study to determine sources of VOC emissions and their contribution to ozone formation in the Metrolina nonattainment area. Due to the generally warm and moist climate of the Carolinas, vegetation abounds in many forms, and forested lands naturally cover much of each state. The NCDAQ has found that, as a result, the biogenic sector is the most abundant source of VOC emissions in the Carolinas, accounting for approximately 90 percent of the total VOC emissions. The overwhelming abundance of biogenic VOC emissions makes the majority of North and South Carolina, including the Metrolina nonattainment area, a NO_x-limited environment for the formation of ozone.

Additionally, the SCDHEC has reviewed a number of modeling sensitivity runs performed by the NCDAQ that were designed to determine the impact of on-road mobile source VOCs on ozone formation in the Metrolina nonattainment area. The results of these sensitivities indicate no change in future ozone concentrations in the Metrolina nonattainment area when on-road mobile VOC emissions are significantly changed (e.g., 50 percent decrease). These sensitivities are discussed in more detail in Appendix C.

The SCDHEC agrees with the NCDAQ findings that on-road mobile VOCs are insignificant contributors to ozone formation in the Metrolina nonattainment area. Emission estimates indicate on-road mobile VOC is a small percentage of the total VOC emissions inventory. On-road mobile VOC emissions are projected to decrease in the future. Emission sensitivity modeling indicates no change in future ozone concentrations when VOC emissions are significantly reduced. For these reasons, the SCDHEC did not set a motor vehicle emissions budget (MVEB) for VOC in the original attainment demonstration (August 30, 2007). The SCDHEC consulted with its interagency transportation partners prior to reaching this conclusion. NCDAQ did not submit a MVEB for VOC with their attainment demonstration either. Both agencies planned to revisit the setting of MVEB for VOC if there was any future indication that the Metrolina nonattainment area has become VOC-sensitive for ozone formation.

However, the EPA indicated by email on October 6, 2009, by phone on October 21, 2009, and again on December 9, 2009, that it does not agree that on-road mobile VOCs are insignificant contributors to ozone formation. Although SCDHEC disagrees with the EPA's assessment, SCDHEC submitted a VOC MVEB for the York County portion of the Metrolina nonattainment area for the 1997 8-hour ozone NAAQS attainment demonstration on April 29, 2010, and is also submitting a VOC MVEB as a part of this redesignation demonstration and maintenance plan. Further discussion of the VOC insignificance issue can be found in Appendix C and SCDHEC welcomes the opportunity to address this issue further with the EPA.

C. Safety Margin

The difference between the attainment level of emissions (2010) from all man-made sources and the projected level of emissions from all man-made sources in the York County portion of the Metrolina nonattainment area is considered the "safety margin." The safety margin for each projected year is listed below in Table IV-1.

Table IV-1 Safety Margin in Tons Per Day and Kilograms Per Day

Year	VOC TPD	VOC kg/day	NO_x TPD	NO_x kg/day
2010	n/a	n/a	n/a	n/a
2013	0.94	853	3.69	3,348
2016	1.38	1,252	6.10	5,534
2019	1.53	1,388	7.48	6,786
2022	1.43	1,297	8.11	7,357

D. Motor Vehicle Emission Budgets

According to Section 93.118 of the aforementioned Transportation Conformity Rule Amendments, a maintenance plan must establish MVEBs for the last year of the maintenance plan, in this case, 2022. Through the interagency consultation process, it was decided MVEBs would also be set for the year 2013 in the RFATS area.

The MVEBs will be set in terms of kilograms (kg) per day. During the preparation of the York nonattainment area attainment demonstration in 2007 it was determined through interagency consultation that kg per day would be the most appropriate unit to use for MVEBs and transportation conformity.

In South Carolina refueling emissions are included in the area source inventory and as such are not included in the MVEBs. Refueling emissions calculated with the EPA's on-road mobile source emissions model are shown in Appendix C for informational purposes.

Table IV-2 shows the York County portion of the Metrolina nonattainment area on-road mobile NO_x and VOC emissions expressed in tons per day and the corresponding kilograms per day values for 2013 and 2022.

Table IV-2: On-road Mobile Source NO_x and VOC Emissions York County portion of the Metrolina Nonattainment Area				
	2013		**2022**	
Pollutant	Tons/day	Kg/day	Tons/day	Kg/day
NO_x	8.73	7,924	4.42	4,011
VOC	3.14	2,846	2.14	1,939

SCDHEC has decided to allocate the safety margin to the MVEBs to allow for unanticipated growth in VMT, changes to vehicle mix assumptions, etc., that will influence the emission estimates. Upon the EPA's affirmative adequacy finding for the partial county MVEBs, as shown in Table IV-3, they will become the applicable MVEBs for the York County portion of the Metrolina nonattainment area.

Table IV-3: NO_x and VOC MVEBs for 2013 and 2022 York County portion of the Metrolina Nonattainment Area		
	2013	**2022**
NO_x Emissions (kg/day)		
Base Emissions	7,924	4,011
Safety Margin Allocated to MVEB	3,348	7,357
NO_x Conformity MVEB	**11,272**	**11,368**
VOC Emissions (kg/day)		
Base Emissions	2,846	1,939
Safety Margin Allocated to MVEB	853	1,297
VOC Conformity MVEB	**3,699**	**3,236**

SECTION V. STATE IMPLEMENTATION PLAN APPROVAL

A. INTRODUCTION

For an area to be redesignated and have an approved maintenance plan, the SIP must include evidence of compliance with the rules relied on to show maintenance of the standard. This section provides the evidence of compliance with such rules for the York County portion of the Metrolina nonattainment area.

B. EVIDENCE OF COMPLIANCE

The following rules regulating the emissions of VOCs and NO_x have been approved, or have been submitted for approval, by the EPA into the state SIP:

R. 61-62.1 – Definitions and General Requirements
R. 62.2 – Prohibition of Open Burning
R. 62.3 – Air Pollution Episodes
R. 62.4 – Hazardous Air Pollution Conditions
R. 62.5 – Air Pollution Standards
Standard 1 – Emissions from Fuel Burning Operations
Standard 2 – Ambient Air Quality Standards
Standard 4 – Emissions from Process Industries
Standard 5 – Volatile Organic Compounds
Standard 5.2 – Control of Oxides of Nitrogen
Standard 6 – Alternative Emission Limitation Options
Standard 7 – Prevention of Significant Deterioration
Standard 7.1 – Nonattainment New Source Review
R. 62.6 – Control of Fugitive Particulate Matter
R. 62.7 – Good Engineering Practice Stack Height
R. 62.96 – Nitrogen Oxides Budget Trading Program
R. 62.99 – NO_X Budget Program Requirements for Stationary Sources Not in the Trading Program

Regulation 61-62.5 Standard No. 2, *Ambient Air Quality Standards* serves to establish emission limits for ozone, while Regulation 61-62.1 *Definitions and General Requirements* addresses some required control measures, means and techniques for a source to certify compliance. Regulations 61-62.5 Standards 1; 4; 5; 5.2; and, 62.96, and 62.99 all provide for direct or indirect control of VOCs and NO_x emissions for particular source categories and processes.

Regulations 61-62.1, *Regulations and General Requirements*; 62.5, Standard No. 7, *Prevention of Significant Deterioration*; and 62.5, Standard No. 7.1, *Nonattainment New Source Review* provide for the enforcement of all SIP measures and the regulation of construction of new or modified stationary sources, and apply to the construction of any new major and some minor stationary sources or any project at existing major or some minor stationary sources in areas designated as attainment, unclassifiable, or nonattainment. These regulations meet federal prevention of significant deterioration (PSD) and nonattainment new source review (NSR) requirements.

Regulations 61-62.3, *Air Pollution Episodes* and 62.4, *Hazardous Air Pollution Conditions* include provisions for the curtailment of processes which contribute to air pollution levels which are a substantial and imminent threat to public health. Regulation 61-62.2, *Prohibition of Open Burning*, prohibits open burning in certain instances which may be detrimental to air quality and includes a ban of certain open burning during the ozone season for additional control of NO_x emissions.

40 CFR Section 52.2133 General Conformity, was adopted into the South Carolina State Implementation Plan on June 16, 1997 (62 FR 32537), and incorporates by reference 40 CFR Part 51, subpart W, *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*, which will continue to apply to the portion of York County within the Metrolina nonattainment area. On July, 28, 2009 (74 FR 37168), the EPA approved the South Carolina Transportation Conformity SIP submittal which consists of transportation conformity criteria and procedures related to interagency consultation and enforceability of certain transportation-related control measures and mitigation measures. This updated the transportation conformity criteria and procedures in the South Carolina SIP.

Standards incorporated in Regulations 61-62.60, *SC Designated Facility Plan and New Source Performance Standards*; 62.61, *National Emission Standards for Hazardous Air Pollutants (NESHAP);* and 62.63, *NESHAPs for Source Categories* also control the emissions of VOCs and NO_x, but have not been submitted to the EPA for SIP approval. The state does, however, have authority to enforce these standards either automatically once promulgated by the federal government (NESHAP regulations) or once incorporated into state regulations (NSPS regulations).

Also, Section 48-1-50(23) of the 1976 South Carolina Code of Laws, as amended, provides the Department with the statutory authority to "*Adopt emission and effluent control regulations, standards and limitations that are applicable to the entire State, that are applicable only within specified areas or zones of the State, or that are applicable only when a specified class of pollutant is present*."

SECTION VI. STATE COMPLIANCE WITH CLEAN AIR ACT REQUIREMENTS

Section 107(d)(3)(E)(v) of the CAA requires that the provisions of Section 110 and part D of the Act be met within the area to be redesignated. This means that South Carolina must meet all requirements, if any, that had come due as of the date of the redesignation request.

The EPA in its latest guidance on meeting redesignation requirements as contained in a memorandum from John Calcagni, Director, Air Quality Management Division, Office of Air Quality Planning and Standards to the EPA Regional Offices dated September 4, 1992, states that "For the purposes of redesignation, a state must meet all requirements of Section 110 and Part D that were applicable prior to submittal of the complete redesignation request. When evaluating a redesignation request, Regions should not consider whether the state has met requirements that come due under the Act after submittal of a complete redesignation request."

Monitoring is one of the requirements of Section 110. The SCDHEC will continue operation of the York CMS ozone monitor in compliance with 40 CFR Part 58, Ambient Air Quality Surveillance, providing sufficient funding is available for continued operation and access to the site is continued. No plans are currently underway to discontinue operation, relocation, or otherwise affect the integrity of the ambient monitoring network in place. Changes will only be made if they are consistent with 40 CFR Part 58 and associated appendices and included in the SCDHEC Annual Network Description and Ambient Air Network Monitoring Plan.

SECTION VII. CONCLUSION

The most recent three years of ozone monitoring data for the Metrolina nonattainment area demonstrate compliance with the 1997 8-hour ozone NAAQS. Since the 1990's, there have been many major programs enacted in South Carolina that have led to significant actual, enforceable emissions reductions, which have led to improvements in the air quality in the Metrolina nonattainment area. Additionally, the maintenance plan demonstrates that the projected emissions inventories for 2022, the final year of the maintenance plan, as well as the interim years, are all less than the base year (2010) emissions inventory. This SIP revision, which constitutes a redesignation demonstration and maintenance plan as required by the CAA, demonstrates that maintenance of the 1997 8-hour ozone NAAQS has been achieved for the Metrolina nonattainment area.