

Georgia's Redesignation Request and Maintenance Plan for the Macon 8-Hour Ozone Nonattainment Area

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*Macon 8-Hour Ozone Nonattainment Area
Redesignation Request and Maintenance Plan*

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Executive Summary

This document contains Georgia's request under the Federal Clean Air Act Amendments of 1990 that the Macon area be redesignated from nonattainment to attainment with respect to the National Ambient Air Quality Standard (NAAQS) for tropospheric or ground-level ozone¹. The Macon nonattainment area consists of Bibb County and a portion of Monroe County, located in middle Georgia. The nonattainment portion of Monroe County is defined starting from the point where Bibb and Monroe Counties meet at US Hwy 23/Georgia Hwy 87 centerline, proceed northward 150' west of and parallel to the US Hwy 23/Georgia Hwy 87 centerline to 33 degrees, 04 minutes, 30 seconds; proceed westward to 83 degrees, 49 minutes, 45 seconds; proceed due south to 150' north of the Georgia Hwy 18 centerline, proceed eastward 150' north of and parallel to the Georgia Hwy 18 centerline to 1150' west of the US Hwy23/Georgia Hwy 87 centerline, proceed southward 1150' west of and parallel to the US Hwy 23/Georgia Hwy 87 centerline to the Monroe/Bibb County Line, then follow the Monroe/Bibb County line to 150' west of the US Hwy 23/Georgia Hwy 87 centerline.

This request is based on three years, 2003-2005, of ambient monitoring data at the Bibb County monitor in Bibb County showing no violation of the 8-hour ozone standard; the implementation of regional permanent and enforceable reductions in ozone precursor emissions; compliance with all applicable requirements; and the Macon Area Maintenance Plan with projections demonstrating that the 2003 emission levels in the region influencing this area will not be exceeded through at least the year 2020.

Georgia is also hereby petitioning EPA to make a determination that the Macon area is eligible for application of EPA's Clean Data Policy, based on the Macon area's attainment of the 8-hour ozone standard.

¹ This redesignation request addresses the NAAQS for the 8-hour ozone standard.

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1.0 Introduction

1.1 Purpose

This document contains the technical support necessary for the Georgia Environmental Protection Division's (EPD) request that the Macon nonattainment area be redesignated under EPA's Clean Data Policy², which herein after will be referred to as the Seitz Memo, as an area attaining the National Ambient Air Quality Standard (NAAQS) for tropospheric ozone pursuant to Sections 107(d)(3)(D) and (E) of the Clean Air Act (CAA), as amended.

This designation request was prepared in accordance with U.S. EPA Guidance issued in 1992, in memorandums on September 4 and October 28 from John Calcagni³, and additional guidance provided by memorandum on September 17, 1993, from Michael H. Shapiro⁴.

1.2 Historic Background

On July 18, 1997, U.S. EPA promulgated a revised ozone standard of 0.08 parts per million (ppm), measured over an 8-hour period. The 8-hour standard is more protective of public health and more stringent than the previous 1-hour standard.

In accordance with Section 107(d)(1) of the CAAA, Bibb County and the partial area of Monroe County was designated in a Federal Register notice on April 30, 2004, as a nonattainment area for the 8-hour National Ambient Air Quality Standards (NAAQS), effective June 15, 2004. The Macon nonattainment area (NAA) was classified as Subpart 1(Nonattainment Areas in General) of Part D of Title I of the CAA

Prior to the 8-hour Ozone designation, in a letter dated July 15, 2003 to EPA (Appendix A), Georgia EPD made its recommendations for 8-hour ozone nonattainment designations in Georgia. It reported that a monitor located in Bibb County within the Macon C/MSA had shown violation of the standard.

In a letter to Georgia EPD dated December 3, 2003 from US EPA, Region 4 (Appendix A), EPA requested modifications to the initial recommendations made by EPD. This letter requested that the state include the surrounding counties of Houston and Monroe along with Bibb County. EPA recommended including Houston County in the Macon nonattainment area because of its alleged similarities to Bibb County, it is part of the Macon C/MSA and because it has a relatively high population and population growth rate. EPA recommended inclusion of Monroe County because of its proximity to Bibb County and because it contains a large source of NOx emissions from Georgia Power Company's Plant Scherer. According to EPA, Georgia EPD did not provide a compelling argument for excluding Houston and Monroe Counties from the Macon nonattainment area.

In a letter dated February 6, 2004 to EPA (Appendix A), Georgia EPD asked EPA to reconsider the decision to include Houston County and Monroe County in the Macon nonattainment area. EPD requested in this letter that EPA reconsider the similarities they cited in the December 3, 2003 letter for Houston County in comparison to Bibb County. EPD noted several key differences between the Counties, wind direction, modeling analysis, and local control measures as reasons to exclude

² <http://www.epa.gov/ttn/oarpg/t1/memoranda/clean15.pdf>

³ <http://www.epa.gov/ttn/naaqs/ozone/ozonetech/940904.pdf>

⁴ <http://www.epa.gov/ttn/oarpg/t1/memoranda/redesig.pdf>

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Houston County. For Monroe County, Georgia EPD asked EPA to reconsider inclusion in the Macon nonattainment area because of additional modeling analysis, the existing metro-Atlanta control measures, consideration of the Middle Georgia Clean Air Coalition commitment to attributing to attainment, the state's attempt to submit an early attainment plan, and other information.

In a letter dated April 13, 2004 (Appendix A), Georgia EPD included a supplemental submittal to the recommendation for the Macon nonattainment area. EPD recommended that the area include Bibb County and a portion of Monroe County. EPA promulgated the boundaries of the Macon ozone nonattainment area in the Federal Register on April 30, 2004⁵ and corrected the Monroe County portion of the boundary in the Federal Register on October 13, 2006⁶, as follows:

From the point where Bibb and Monroe Counties meet at U.S. Hwy 23/Georgia Hwy 87 follow the Bibb/Monroe County line westward 150' from the U.S. Hwy 23/Georgia Hwy 87 centerline, proceed northward 150' west of and parallel to the U.S. Hwy 23/Georgia Hwy 87 centerline to 33 degrees, 04 minutes, 30 seconds; proceed westward to 83 degrees, 49 minutes, 45 seconds; proceed due south to 150' north of the Georgia Hwy 18 centerline, proceed eastward 150' north of and parallel to the Georgia Hwy 18 centerline to 1150' west of the U.S. Hwy 23/Georgia Hwy 87 centerline, proceed southward 1150' west of and parallel to the U.S. Hwy 23/Georgia Hwy 87 centerline to the Monroe/Bibb County line; then follow the Monroe/Bibb County line to 150' west of the U.S. Hwy 23/Georgia Hwy 87 centerline.

A map showing the Macon nonattainment and metropolitan planning organization (MPO) area boundaries is included in Figure 1.1.

⁵ 69 FR 23858, April 30, 2004

⁶ 71 FR 60429, October 13, 2006

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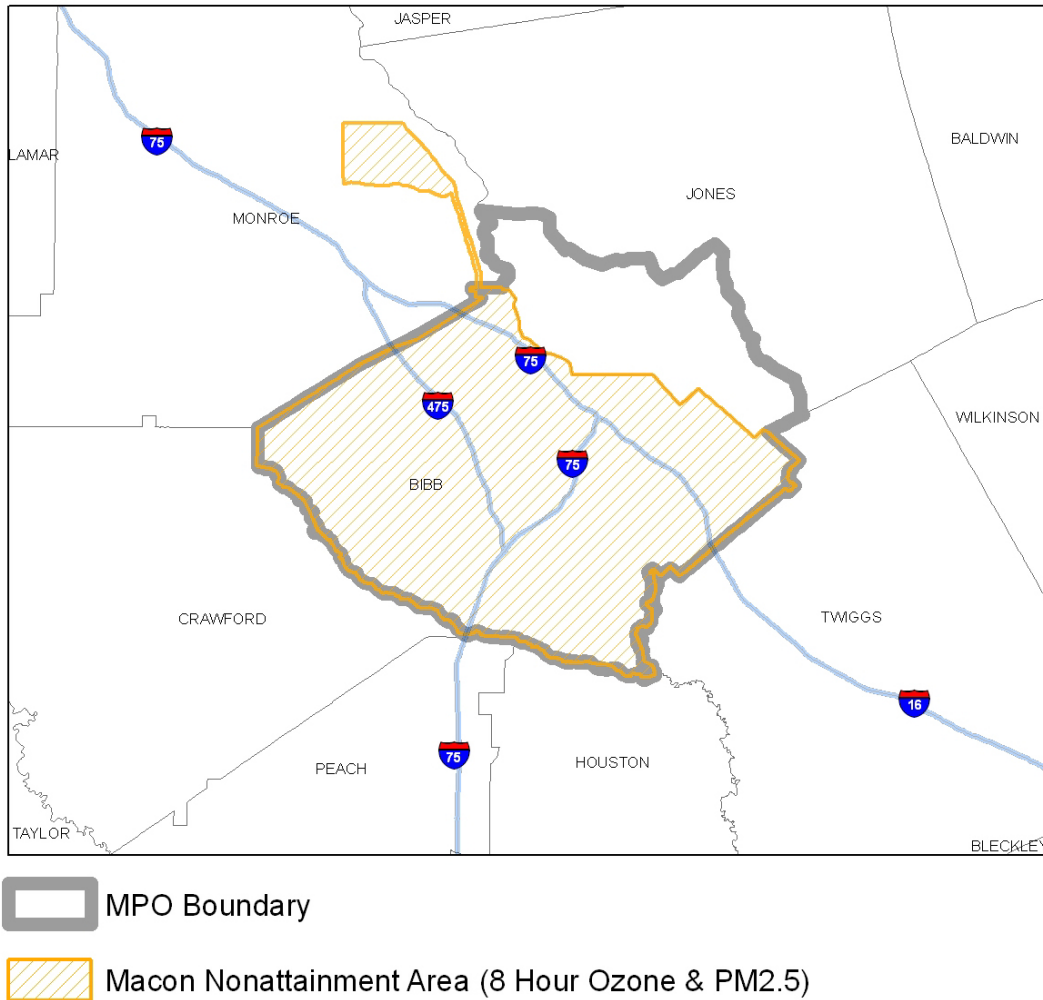


Figure 1.1 Macon Nonattainment and MPO Area Boundaries

1.3 Criteria for Redesignation

Section 107(d) of the CAAA, states that an area can be redesignated to attainment if the following conditions are met:

1. The EPA has determined that the NAAQS has been attained.
2. The applicable implementation plan has been fully approved by 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.
4. The state has met all applicable requirements for the area under Section 110 and Part D.
5. The EPA has fully approved a maintenance plan, including a contingency plan, for the area under Section 175A.

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The first and third of these requirements relate directly to air quality and the reasons for its improvement. These requirements are discussed together in Section 2 of this document.

The second and fourth requirement will be satisfied pending the approval of this SIP revision. The area is currently only subject to the SIP provisions of Georgia's Rules for Air Quality Control. Since clean data has been demonstrated and the Maintenance Plan and Redesignation Request of this SIP revision is being submitted prior to the June, 2007 deadline for an Attainment Demonstration SIP Revision for the 8-hour Ozone NAAQS, the area is not currently subject to an approved 8-hour Attainment Demonstration SIP. An approved attainment demonstration SIP is not required according to the Guidance detailed in the Seitz Memo.

The maintenance plan has two required components. First, the State must submit a revision to the SIP, which provides for maintenance of the NAAQS in the area for at least ten years after the redesignation. Thus, the State must demonstrate that Bibb County and the portion of Monroe County will maintain the standard through at least 2020 (pending a maximum of 2 years for EPA approval). Second, the plan revision must incorporate a contingency plan outlining commitments by the State to promptly correct any future violations. The maintenance demonstration and contingency plan are discussed in Section 3.3.

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2.0 Monitoring Data

2.1 Review and Assessment of Monitored Ozone Concentrations

2.1.1 Overview

The NAAQS for ground-level ozone is 0.08 parts per million (ppm) based on a 8-hour average sample. Based on the EPA-established rounding convention, an 8-hour monitor reading of 0.085 ppm is considered an exceedance of the 8-hour ozone standard, whereas a reading of 0.084 ppm is not. Compliance with the 8-hour NAAQS for ground-level ozone is based on an average of the annual 4th highest 8-hour daily maximum concentrations from each of the last three years of air quality monitoring data. A violation of the ozone NAAQS occurs when the three-year annual average of the annual 4th highest 8-hour daily maximum concentrations exceeds 0.084 ppm.

The most recent three years of ozone monitoring data (2003-2005) for the Macon area demonstrate compliance with the 8-hour NAAQS for ground-level ozone.

2.1.2 Ozone Monitoring Network

There are currently two ambient ozone monitoring stations, Macon West and Macon SE, in the Macon ozone nonattainment area installed in accordance with 40 CFR 58, which provide adequate coverage of the entire nonattainment area and have been representative of the area of highest concentrations. Only one of the monitors, Macon SE was in place during the 2003-2005 monitoring period. The Macon West monitor was installed and began collecting data for the 2005 ozone season. Data from the Macon SE monitor for 2006 provided an even greater margin of compliance, however, 2006 data has yet to be certified and was not included in this analysis. The Macon SE monitor has remained in its original location during the period 2003-2005, and both monitors will remain in place throughout the maintenance period. Table 2-2 contains a summary of the fourth highest measured 8-hour ozone values for each year at the monitor in the Macon NAA. The Macon 8-hour ozone nonattainment area monitoring network has been operational since 1997. Data from the monitors in Table 2-1 is used in this evaluation.

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Figure 2-1 Georgia Ozone Monitor Locations as of 2004

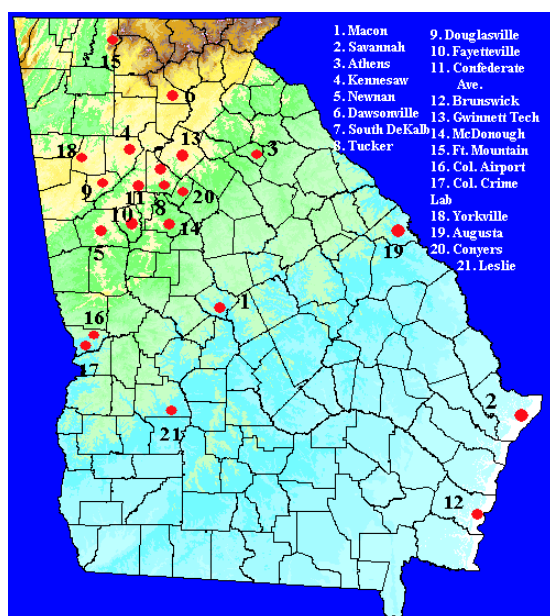


Table 2-1 Macon Ozone Monitor Locations as of 2005

Site Name	County	AQS Identification Number	Date Established
Macon SE	Bibb	13-021-0012	7 – May – 1997
Macon West	Bibb	13-021-0013	1 – May – 2004

2.1.3 Ambient Ozone Monitoring Data

All of the ozone ambient monitoring data that was collected during 2003, 2004, and 2005 was collected in accordance with 40 CFR 58 and has been stored in EPA's Air Quality System (AQS). This process was completed in November 2005. A copy of a printout showing the fourth highest ozone concentrations at these monitors for these years is included in Appendix B.

2.1.4 Exceedances of the Standard

The actual method for determining attainment of the 8-hour ozone standard is contained in 40 CFR 50.10. The standard is attained when the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.08 ppm, as determined by Appendix I, 40 CFR 50. The number of significant figures in the level of the standard dictates the rounding convention for comparing the computed 3-year average annual fourth-highest daily maximum 8-hour average ozone concentration with the level of the standard. The third decimal place of the computed value is rounded, with values equal to or greater than 5 rounding up. Thus, a computed 3-year average ozone concentration of 0.085 ppm is the smallest value that is greater than 0.08 ppm. As stated in Appendix I of 40 CFR 50, a valid maximum daily average value may not be available for each day of the year, and it is necessary to account for any such missing values when

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calculating the fourth highest value for a particular calendar year. The results of this analysis for the Macon area are shown in Table 2-2.

Table 2-2 is a summary of the fourth-highest daily maximum 8-hour average ozone concentration for the Macon SE monitor for each year from 2003 to 2005 and the average for that three-year period. Data for 2006 is also included in the table as additional information. The table illustrates 4th highest annual 8-hourly average concentrations and the 3-year average that demonstrates compliance with the NAAQS. Table 2-2 also includes additional years of monitoring data that demonstrates the downward trend in the measured ambient level ozone in Macon.

Table 2-2 Fourth Highest Values

Site Name	4 th Highest Value								3yr average	
	1999	2000	2001	2002	2003	2004	2005	2006	2003-05	2004-06
Macon SE	0.113	0.097	0.086	0.093	0.081	0.086	0.082	0.077	0.083	0.082

2.1.5 Chemical and Meteorological Analysis

The ozone observations presented in the previous sections demonstrate that the Macon area attained the 8-hour NAAQS for ozone for the 2003-2005 period. To satisfy Criterion 3, it must further be shown that “the improvement in air quality is due to permanent and enforceable reductions in emissions.” Section 2.2 and subsequent tables of this document demonstrate that permanent and enforceable reductions in emissions indeed have occurred, and the Maintenance Plan presented in Section 3.0 provides a commitment to ongoing control. However, because ozone varies with both emission rates and meteorological conditions, it may be asked whether the improvement in air quality can be attributed to the reductions in emissions or whether it arose solely from favorable meteorology. The sensitivity analysis discussion found in Appendix C strongly indicates that the ozone concentration reductions were the result of emission reductions and not due to favorable meteorology. Therefore, EPD maintains that regional controls of NO_x emissions contributed substantially to reductions in ozone concentrations during the period.

2.2 Permanent and Enforceable Reductions in Emissions

Due to the fact that this SIP revision is being submitted prior to the required submission of an attainment demonstration, no emission reductions have been previously required. However, significant emissions reductions have occurred and are discussed in section 3. The sensitivity analysis detailed in Appendix C identifies contributions from the Atlanta metropolitan areas. Major emission reduction programs enacted in the Atlanta area have led to significant actual, enforceable emission reductions that ultimately benefit the Macon area. These programs include state regulations implemented by EPD and approved into the subsequent SIP revisions and a number of federal control programs. The Atlanta rules (including state and federal rules) that were relied upon to attain the 1-hour NAAQS are found in Appendix D, and resulted in significant improvements in Macon area ambient ozone levels. In addition, significant voluntary reductions resulting from the conversion of Georgia Power’s Plant Scherer in Monroe County from bituminous to sub-bituminous

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coal combustion were completed in 2004 and contributed to the reduction of ozone levels in the Macon area. These voluntary reductions have been made permanent and enforceable as explained in section 3.3.1.

Other federal programs have been promulgated that have reduced and/or will reduce emissions. The following national standards are now being implemented in various phases:

1. Onboard Refueling Vapor Recovery for Light-Duty Vehicles
2. Architectural and Industrial Maintenance Coatings
3. Automobile Refinishing
4. The National Emission Standards for Hazardous Air Pollutants (NESHAP); the majority of which are also VOC
5. Phase II Acid Rain Program for NO_x
6. Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements (65 FR 6697).
7. Regional NO_x SIP Call

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3.0 Maintenance Plan

3.1 Overview

Criterion 5. The EPA has fully approved a maintenance plan, including a contingency plan, for the area under Section 175A.

Section 175A of the Clean Air Act Amendments of 1990 defines the general framework of a maintenance plan. The core provisions of Section 175A include a maintenance demonstration, the verification of continued attainment, and a contingency plan. In addition to these required provisions, an attainment inventory and monitoring program are provided by this plan in support of the maintenance demonstration and verification of continued attainment.

3.2 Attainment Inventory

3.2.1 Overview

Monitored attainment of the 8-hour standard was achieved for the 2003 - 2005 three-year period. The most recent comprehensive periodic (triennial) emissions inventory for the state of Georgia was compiled for 2002 pursuant to Section 182(a)(3)(A). In accordance with federal requirements, the triennial inventory for 2002 was submitted to EPA by June 1, 2004. Documentation supporting the Georgia 2002 CERR data is located in Appendix H.

According to the September 4, 1992, EPA guidance document entitled, "Procedures for Processing Requests to Redesignate Areas to Attainment", the base attainment inventory should be consistent with EPA's most recent guidance on emission inventories and should represent the emissions during the time period associated with the monitoring data showing attainment. For purposes of demonstrating maintenance of the standard, 2003 was chosen as the base year, representing the monitoring period of 2003 - 2005. The attainment year is 2005. Since the Macon NAA also includes a partial county area comprised of the portion of Monroe County identified in Section 1, area and non-road emissions for that portion of Monroe County are apportioned based on the population of the nonattainment area to the total population of Monroe County. EPD consulted EPA's Office of Air Quality Planning & Standards (OAQPS) who concurred that population scaling is the appropriate method. The population of Monroe County from the year 2000 census was 21,757 people. The US Census Bureau estimated that by July 1, 2003, the population of Monroe County was 23,244 persons, or a growth of 6.83%. The Georgia Department of Transportation (GDOT) calculated that, based on Census 2000, and selecting the census blocks whose centers were inside the nonattainment area boundary, that the population of the partial-county area in 2000 was 175 persons. Since the census blocks cover an area that is somewhat larger than the Monroe County partial nonattainment area, this is a conservative (high) value. Adjusting for the 6.38% growth between the 2000 and 2003 census, the population of the partial area by July 1, 2003 was 187 persons. Therefore, the partial area contains 0.80% of the population and 0.80% will be the scaling factor applied to emission inventory data to determine the emissions from the Monroe County Partial nonattainment area.

Using 2003 as the base year, the subsequent inventory years chosen were the interim years 2005, 2008, 2011, 2014, and 2017, and 2020, the end of the minimum-10-year maintenance period. 2002,

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2009, and 2018 are years for which VISTAS,⁷ the regional planning organization of which Georgia is a member, has developed inventories. Preparation of the VISTAS inventories is described in Appendix I. The general approach adopted by VISTAS was to use recently updated growth and control data from sources that included EPA's Clean Air Interstate Rule analyses; EPA's Heavy Duty Diesel rulemaking emission projections; EPA's Economic Growth Analysis System (EGAS 5.0); an updated Regional Economic Models, Inc. (REMI), Policy Insight® model (version 5.5, used in the development of EGAS 5.0); and the latest Annual Energy Outlook published by the Department of Energy. The resulting emissions inventories represent the best currently available estimate of past and future year emissions in Georgia. These emissions were annual county-level emissions for each source category classification (SCC) code. To calculate summer daily emissions, temporal profiles used in EPA's Sparse Matrix Operator Kernel Emissions (SMOKE), the emission modeling system used for VISTAS, were applied to VISTAS BaseG area and nonroad emissions. These profiles gave the fraction of emissions in each month. The fractions in June, July and August (a three-month total of 92 days) were used to calculate summer daily emissions as follows:

$$\text{Summer Daily Emissions} = \text{annual emissions} \times (\text{fraction in June} + \text{fraction in July} + \text{fraction in August}) / 92$$

The VISTAS inventory years of 2002, 2009, and 2018 do not correspond exactly to the years needed for this Maintenance Plan. Therefore, with the exception of mobile sources, emissions were projected by interpolating between the available summer daily emissions extracted from the VISTAS inventories, and by extrapolating, by linear regression, 2020 emissions from the 2002, 2009, and 2018 VISTAS inventory emissions. As stated above, future emission inventories developed by VISTAS represent the most comprehensive analysis of changes in emissions that are expected to occur in the coming years. EPD has conducted analysis that shows growth factors generated by EGAS, and aggregated by SCC and by county, follow a linear trend. The estimated change in emissions for interim years, linear in nature, obtained through interpolation of the quality-assured 2002, 2009 and 2018 VISTAS emission inventories is consistent with this finding. This approach facilitates tracking of emissions reductions with the VISTAS inventory values throughout the Maintenance Plan period, and ensures that targeted emissions reductions are achieved by the end of the maintenance period. Moreover, EPD maintains that any other approach would not result in significantly different or "better" inventories for the Maintenance Plan years. EPD thus considers interpolation/extrapolation an appropriate technique to estimate emissions for interim years. Spreadsheets showing the calculations are contained in the file available here:

http://www.gaepd.org/Files_PDF/plans/sip/macon_2002-2009-2018_interpolation_rev.xls

Additional details on the individual emissions source sectors are provided in the following sections.

3.2.2 Point Sources

For purposes of this maintenance inventory, point sources are defined as stationary sources that emit greater than 100 tons per year (TPY) of VOCs or NOx. There are two major types of point sources: electric generating unit (EGU) point sources and all other (non-EGU) point sources. The Macon nonattainment area includes one EGU source, Plant Scherer, and several non-EGU sources, two of which closed during the time period covered by the inventories and were removed from the inventory at the time of closure. Bassett Furniture was closed September 2004. Brown &

⁷ Visibility Improvement State and Tribal Association of the Southeast

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Williamson Tobacco, was purchased by R.J. Reynolds Tobacco Corporation and the facility was permanently shut down effective July of 2006.

3.2.3 Area Sources

Area sources can be defined as those sources and activities that are too small or too numerous to be handled individually in a point source inventory. Cutoff levels are those levels below the point source level discussed above. Nonattainment area totals are listed in summary Tables 3-1 and 3-2 under area sources.

3.2.4 On-road Mobile Sources

3.2.4.1 Mobile Source Budgets

The Macon area currently has no motor vehicle emissions budgets. This redesignation request, pursuant to 40 CFR 93.118(b)(2)(i) of the transportation conformity regulations, establishes motor vehicle emissions budgets for 2020, the last year of the maintenance period. As decided through interagency consultation, the "less than or equal to [2002] base year" interim emissions test will be used for any needed regional emissions analyses of ozone precursors through the year 2019. A discussion of the mobile⁸ source maintenance budgets follows in Section 3.2.4.3.

3.2.4.2 Mobile Source Emissions Inventory Methodology

Highway mobile emissions for the Macon area were developed using the MOBILE6.2 emission factor model⁹ and, for Bibb county, Georgia Department of Transportation's (GDOT) link-based emissions estimation procedure. "Off-model" techniques were used for the Monroe partial-county area, which is not included in the Macon travel demand model. For details, see Appendix E.

These mobile source emissions inventories reflect all federal and state mobile source control rules, including federal tailpipe standards and, in Monroe county, Georgia's low-sulfur/low RVP¹⁰ gasoline marketing rule. Mobile source emissions were estimated for the 2003 base year; two horizon years, 2009 and 2015; and 2020. Mobile source emissions for the interim SIP years (2005, 2008, 2011, 2014, and 2017) were interpolated.¹¹

The Macon area mobile source emission totals are listed in Section 3.3, summary Tables 3-1 and 3-2, under mobile sources. The input parameters for the mobile source emissions modeling were established through interagency consultation and are listed below:

- Emission Factor Model: MOBILE6.2.03
- MOBILE6 Inputs
 - Average hourly temperature, humidity, and average barometric pressure for the 10 highest Macon ozone days during 2000 – 2002
 - Fuel

⁸ Unless otherwise specified, in this document the term "mobile" is used to describe emissions from on-road motor vehicles. The term "nonroad" is used to describe emissions from off-road equipment and vehicles.

⁹ <http://www.epa.gov/otaq/m6.htm#m60>

¹⁰ (Reid vapor pressure, a measure of gasoline volatility)

¹¹ Interpolating emissions between available network years is consistent with the transportation conformity rule at 40 CFR Part 93.118(d)(2).

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- Default federal gasoline sulfur requirements for Bibb county; 30 parts per million sulfur limit in Monroe county, which is covered by Georgia's gasoline marketing rule
- RVP of 9.0 pounds per square inch in Bibb county; 7.0 in Monroe county
- 2002 regional fleet age distribution¹²
 - Derived from R.L. Polk & Co. registration data for the five counties in the Macon metropolitan statistical area: Bibb, Crawford, Jones, Monroe, and Twiggs
 - Applied to 15 of the 16 MOBILE6.2.03 composite vehicle classifications - LDV, LDT1, LDT2, LDT3, LDT4, HDV2B, HDV3, HDV4, HDV5, HDV6, HDV7, HDV8A, HDBS, HDBT, MC
 - Default for HDV8B
- Default VMT fractions

The MOBILE6 input (filename.IN), output (filename.TXT), and supporting (filename.D) files used in the mobile source emissions modeling are contained in the compressed file available here:

http://www.gaepd.org/Files_XLS/plans/sip/macon_maintenance_m6_files.zip

The output summaries from the link-based mobile source emissions inventory processor, and from the emissions analysis for the Monroe partial-county portion of the nonattainment area, are included in Appendix E.

3.2.4.3 Mobile Source Maintenance Budgets

In accordance with the Transportation Conformity Rule, this maintenance plan establishes motor vehicle emissions budgets for the last year of the maintenance plan (2020). These motor vehicle emissions budgets (MVEB) are being established for the year 2020. As stated in Section 3.2.4.1, the "less than or equal to [2002] base year" interim emissions test will be used for any needed regional emissions analyses through the year 2019.

This maintenance plan establishes an attainment inventory for the year 2003, the first year of the three-year period with monitoring data showing attainment. This attainment inventory identifies the base level of emissions in the area which is sufficient to maintain the 8-hour ozone NAAQS. Maintenance of the 8-hour ozone NAAQS is demonstrated by showing that future emissions of NO_x and VOC will not exceed the level of the attainment inventory. NO_x and VOC emissions from on-road mobile sources were projected for the year 2020 as discussed in Section 3.2.4.2. NO_x and VOC emissions were also projected for the year 2020 for point, area and nonroad mobile sources as described in Sections 3.2.2, 3.2.3, and 3.2.5, respectively. These projections are shown in Table 3-1 for NO_x and Table 3-2 for VOC. As can be seen in Tables 3-1 and 3-2, total emissions of NO_x and VOC are projected to decrease from the base year (2003) through the year 2020. Specifically, NO_x emissions are projected to decrease by 36.6644 tons per day and VOC emissions are projected to decrease by 10.4653 tons per day. These projected decreases in emissions from the base year through 2020 are termed the "safety margins." In establishing motor vehicle emissions budgets for

¹² Registration data was from R. L. Polk & Co.'s National Vehicle Population Profile ® current as of October 2002 and from R. L. Polk & Co.'s TIPNet ® current as of March 2003. See Appendix E, Exhibit 2, for more details on this registration distribution by age.

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the last year of the maintenance plan (2020 in this case), all or a portion of the safety margins may be allocated to the MVEB.

As a result of interagency consultation meetings and other discussions with planning partners, 25% of the projected 2020 safety margins for NO_x and VOC are being allocated to the MVEB to allow for likely changes in mobile source and travel demand modeling assumptions by the time EPA's approval of the maintenance plan triggers a requirement for a conformity determination using those budgets. This maintenance plan establishes the MVEB at 14.7712 tons per day for NO_x ($5.6051 + (36.6644 \times 0.25) = 14.7712$) and 7.8744 tons per day for VOC ($5.2581 + (10.4653 \times 0.25) = 7.8744$). These MVEB are for the year 2020. The MVEB for NO_x will be the projected 2020 emissions for on-road mobile sources plus 25% of the projected 2020 NO_x emissions safety margin. The MVEB for VOC will be the projected 2020 emissions for on-road mobile sources plus 25% of the projected 2020 VOC emissions safety margin. The Macon area emissions and safety margins are listed in Tables 3-1 and 3-2.

The calculations below show how the MVEB, in tons per day (tpd), were determined for the year 2020.

On-Road Mobile NO_x Emissions for 2020 (5.6051 TPD) + 25% of NO_x Emissions Safety Margin for 2020 (9.1661 TPD) = NO_x MVEB for 2020 (14.7712 TPD)

On-Road Mobile VOC Emissions for 2020 (5.2581 TPD) + 25% of VOC Emissions Safety Margin for 2020 (2.6163 TPD) = VOC MVEB for 2020 (7.8744 TPD)

Macon Area MVEB

Year for which MVEB Established	Where Established	NO_x TPD	VOC TPD
2020	Macon Eight-Hour Maintenance Plan	14.7712	7.8744

3.2.5 Nonroad Mobile Sources

Nonroad mobile sources are mobile sources that do not travel on local roads, state highways and interstates. Nonroad mobile source emissions result from the use of fuel in a diverse collection of vehicles and equipment:

- agricultural equipment, such as tractors;
- aircraft, such as jets and prop planes;
- airport ground-support equipment, such as terminal tractors;
- commercial equipment, such as generators, air compressors, and pressure washers;
- construction and mining equipment, such as graders and backhoes;
- industrial equipment, such as fork lifts and sweepers;

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- lawn and garden equipment, such as lawn mowers and leaf and snow blowers;
- logging equipment, such as chain saws and shredders;
- railroad equipment, such as train engines; and
- recreational vehicles and watercraft, such as all-terrain vehicles, off-road motorcycles, and boats.

Nonroad mobile source emissions for 2002, 2009, and 2018 were, with the exception of those from aircraft and locomotives, calculated by the VISTAS contractors using EPA's NONROAD2005 emissions model. The NONROAD model reflects the effects of all federal controls on nonroad sources of emissions. At this time, the NONROAD model does not calculate emissions for railroad (line-haul) or aircraft activity. See Appendix H¹³ for a description of how the VISTAS contractors developed 2002, 2009, and 2018 inventories for those source categories.

Nonroad inventories for 2020 for this Maintenance Plan were developed in the following manner:

- NONROAD2005 was run for 2020 summer day emissions in Bibb and Monroe counties;
- 2020 NONROAD model outputs for Monroe were multiplied by the population-based partial-county factor described in Section 3.2.1;
- emissions from the Bibb and Monroe nonroad sources not calculated by the NONROAD model¹⁴ were extracted from the 2002, 2009, and 2018 summer day inventories described in Section 3.2.1;
- Excel's FORECAST function was used to project, by linear regression, 2020 emissions from the 2002, 2009, and 2018 non-NONROAD inventories;
- 2020 non-NONROAD projected emissions for Monroe county were multiplied by the partial-county factor;
- Bibb 2020 NONROAD outputs, Bibb 2020 non-NONROAD projections, Monroe 2020 partial-county NONROAD outputs, and Monroe 2020 partial-county non-NONROAD projections were all summed to get a total 2020 estimate of emissions from the nonroad sector.

Nonattainment area totals are listed in summary Tables 3-1 and 3-2 under nonroad sources.

¹³ *Documentation of VISTAS Inventories and Georgia 2002 CERR Inventory*,
http://www.gaepd.org/Files_PDF/plans/sip/app_vistas_inventory_documentation.pdf

¹⁴ A list of all such sources, many of which are not present in Bibb or Monroe, is available here:
http://www.gaepd.org/Files_XLS/plans/sip/list_of_non-NONROAD_SCCs_rev.xls

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3.3 Maintenance Demonstration

The required maintenance plan must become a part of the SIP and provide for maintenance of the air quality in the affected area for at least 10 years after redesignation. EPD has chosen 2020 as the end year of the maintenance plan for the Macon NAA.

The general approach used for the maintenance plan to demonstrate that attainment of the 8-hour ozone standard will continue to be maintained is based upon restricting future anthropogenic emissions to a level that is representative of attainment of the standard. If these future emissions are no greater than the actual emissions during a year in which attainment of the standard was monitored, then it can be assumed that attainment of the standard will also be achieved in future years under similar meteorological conditions.

It can be seen from Tables 3-1 and 3-2 that there is a calculated safety margin for both VOC and NOx for each year in the maintenance plan.

**Table 3-1 Macon Ozone Attainment Area Maintenance Plan
NOx Emissions (Tons per Summer Day)**

Source Category	2003	2005	2008	2011	2014	2017	2020
non-EGU	5.9471	5.6213	5.1325	5.0792	5.2435	5.4079	5.5590
EGU	74.9781	67.7887	57.0046	53.4099	53.4099	53.4099	53.4099
Area	1.5008	1.5136	1.5328	1.5641	1.6013	1.6385	1.6609
Mobile	18.4512	16.8661	14.4883	11.8974	9.2000	7.2225	5.6051
Nonroad	4.1467	3.9555	3.6687	3.3229	2.9475	2.5722	2.1246
Total	105.0239	95.7452	81.8270	75.2734	72.4022	70.2509	68.3595
Maintenance Plan Decrease from 2003 (NOx Safety Margin*)		9.2787	23.1969	29.7505	32.6217	34.7730	36.6644

*After assigning 9.1661 TPD of the 2020 NOx safety margin to the Motor Vehicle Emissions Budget, the revised 2020 NOx safety margin will be 27.4983 TPD.

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**Table 3-2 Macon 8-Hour Ozone Attainment Area Maintenance Plan
VOC Emissions (Tons per Summer Day)**

Source Category	2003	2005	2008	2011	2014	2017	2020
non-EGU	5.4752	4.9767	4.2290	4.1672	4.4484	4.7295	4.8890
EGU	1.0197	0.9818	0.9249	0.9060	0.9060	0.9060	0.9060
Area	16.7094	16.6437	16.5452	17.1532	18.1145	19.0758	19.1643
Mobile	16.1605	14.7602	12.6598	10.5215	8.3645	6.6906	5.2581
Nonroad	4.5063	4.4556	4.3797	4.1626	3.8751	3.5875	3.1884
Total	43.8711	41.8180	38.7385	36.9105	35.7084	34.9894	33.4058
Maintenance Plan Decrease from 2003 (VOC Safety Margin**)		2.0531	5.1326	6.9606	8.1627	8.8817	10.4653

**After assigning 2.6163 TPD of the 2020 VOC safety margin to the Motor Vehicle Emissions Budget, the revised 2020 VOC safety margin will be 7.8490 TPD.

3.3.1 Plan to Maintain Air Quality

The EPD has previously implemented programs in the previous 1-hour ozone nonattainment area for Atlanta that Appendix C demonstrates are significant influences in the transport of ozone. Those measures will remain enforceable as part of the SIP provisions responsible for ozone attainment in the Atlanta area and will help ensure that the maintenance of the 8-hour standard for the Macon area will continue. Sources subject to existing ozone SIP measures are prohibited from reducing emission controls for those areas ("anti-backsliding") unless such a relaxation is first approved by the EPA as a revision to the Georgia SIP.

The Macon area was not previously subject to any attainment demonstration SIP measures as the area attained the standard prior to the required deadline for an 8-hour attainment demonstration SIP revision (an attainment demonstration SIP is not required according to the guidance provided by the Seitz Memo). However, significant reductions have occurred on point, area, mobile, and nonroad sources to reduce emissions of oxides of nitrogen (NOx) and volatile organic compounds (VOCs). In addition, those significant reductions made in the Atlanta NAA can be found in Appendix D.

In addition to the reductions discussed above, Georgia Rule 393-3-1.02(2)(jjj) was modified by the Board of Natural Resources on January 24, 2007, to ensure that voluntary reductions achieved from conversion of the emission Units located at Georgia Power Plant Scherer, located in the partial county area of Monroe County, from bituminous to sub-bituminous coal combustion (resulting in lower NOx emissions) are permanent and enforceable. Revised Georgia Rule 391-3-1-.02(2)(jjj) can be found in Appendix F.

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3.3.2 Verification of Continued Attainment

Verification of continued attainment is accomplished through operation of the ambient ozone monitoring network and the periodic updates of the area's emissions inventory.

The current ambient ozone monitors operating at the Bibb County site will continue to operate unless a change is approved by EPA. No plans are underway to discontinue operation, relocate, or otherwise affect the ambient monitoring network in place. As noted in Section 2.0, the 1990 Amendments required a triennial Periodic Emissions Inventory for the nonattainment area. The most recent inventory for Georgia was compiled for 2002. The Consolidated Emissions Reporting Rule (CERR) was promulgated by EPA on June 10, 2002. For the purposes of verifying continued attainment based upon the emissions inventory, the three main components of the inventory will be updated on different schedules. The major point sources of air pollution will continue to submit data on their emissions on an annual basis. This has been required under 40 CFR 51, Subpart Q for many years. For the area source and mobile source portions of the inventory, these emissions will continue to be quantified on a three-year cycle. The inventory will be updated and maintained on a three-year cycle. As required by the CERR, the next overall emissions inventory will be compiled for 2005.

3.3.3 Contingency Plan

Section 175A(d) of the Clean Air Act Amendments requires that the maintenance plan include provisions for contingency measures that would promptly be implemented by the state to correct any violation of the 8-hour ozone NAAQS after redesignation of an area as an attainment area. A list of potential contingency measures that could be considered for future implementation in such an event should also be included in the maintenance plan.

EPD has developed a contingency plan for the Macon area 8-hour nonattainment area. Contingency measures are intended to provide further emission reductions in the event that violations of the 8-hour NAAQS occur after redesignation to attainment. Consistent with this plan, EPD agrees to adopt and implement, as expeditiously as practicable, the necessary corrective actions in the event that violations of the 8-hour ozone NAAQS occur anywhere within the Macon maintenance area after redesignation to attainment. Contingency measures as described below would be implemented within 24 months of a contingency Measure Trigger unless EPD demonstrated that technical or economic feasibility warranted an implementation period longer than 24 months.

Under Section 175A(d), the minimum requirement for contingency measures is the implementation of all measures that were contained in the SIP before the redesignation. However, due to the fact that this area has attained the 8-hour ozone NAAQS prior to requiring the submittal of an Attainment Demonstration SIP revision, the area is currently not subject to any ozone abatement measures, and none are required as per guidance prescribed by the Seitz Memo.

The State of Georgia will use actual ambient monitoring data as the indicator to determine whether contingency measures would be implemented. In accordance with 40 CFR Part 58, ambient ozone monitoring data that indicates a violation of the ozone NAAQS will begin the process to implement these contingency measures according to the protocols identified below. The contingency plan provides for corrective responses should the 8-hour ozone NAAQS be violated, or if emissions in the Macon maintenance area increase significantly above current levels.

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Contingency Measure Trigger:

Tier I: Any 8-hour ozone monitoring reading exceeding 0.084 ppm at either ambient monitoring station located in the Macon maintenance area or, if the periodic emission inventory updates reveal excessive or unanticipated growth greater than 10% in emissions of either ozone precursor over the baseline or intermediate emissions inventories for the Macon maintenance area (as determined by the triennial emission reporting required by CERR). EPD will evaluate the exceedances as expeditiously as practicable to determine if the trend is likely to continue. If it is determined that additional emission reductions are necessary, EPD will implement the Tier II schedule below to implement any required measures as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures. It should be noted that EPA does not require a state to implement contingency measures when occasional exceedances are recorded.

Tier II: Any recorded violation of the 8-hour ozone NAAQS at either of the Bibb County ambient monitoring stations in the Macon maintenance area. EPD will conduct a comprehensive study to determine the causes of the violation or emissions inventory increase and to determine if the trend is likely to continue. Since the Macon NAA is often influenced by emissions from the Atlanta NAA, the study will also determine if the source of the violation is due to local emissions, or emissions from the Atlanta NAA.

If it is determined that the violation is due to local sources, EPD will implement within 24 months any required measures as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures. If the transport is determined to be associated with the Atlanta NAA, EPD will evaluate the Atlanta 8-hour Nonattainment SIP Revision for possible reductions.

The comprehensive analysis, based on quality assured ambient data, will examine:

- the number, and severity of the ambient ozone violations of the standard;
- the meteorological conditions contributing to ozone levels;
- potential local contributing emissions sources;
- potential, contributing emission sources of transport;
- the geographic applicability of possible contingency measures;
- emission trends, including implementation timelines of potential control measures;
- current and recently identified control technologies; and
- air quality contributions from outside the state of Georgia.

Implementation, if the analysis determines that additional measures are required, will be conducted as expeditiously as practicable, but no later than 24 months and consistent with the table below, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures. If it is determined that implementation will take longer than 24 months, then EPD will submit to EPA, for approval, a revised schedule for the development of contingency measures. EPD will submit to EPA the results of this analysis as expeditiously as practicable, but no later than 6 months after EPD makes a determination, based on quality-assured ambient data, that a violation of the NAAQS has occurred.

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Table 3-3 Timeline for the development of contingency required regulations

Timeline begins when a determination is made based on quality-assured data that a trigger has occurred.	
Comprehensive analysis	6 months
Identify potential sources for reductions.	3 months
Identify applicable control measures.	3 months
Initiate a stakeholder process.	3 months
Draft SIP regulations.	3 months
Initiate rulemaking process (including public comment period, hearing, Board adoption and final submission to EPA). This process may be initiated simultaneous with drafting of regulations.	6 months
Completion no later than:	24 months

Contingency Measures

If the analysis required above determines that the Macon area is the sources of emissions that contribute to the violation, EPD will evaluate those measures as specified in Section 172 of the CAA for control options as well as other available measures. Contingency measure(s) will be selected from those identified below or from any other measure deemed appropriate and effective at the time the selection is made. Any resulting contingency measure(s) will be based upon cost effectiveness, emission reduction potential, economic and social considerations, ease and timing of implementation, and other appropriate factors. Implementation of necessary controls will take place as expeditiously as possible, but no later than 24 months after Georgia makes a determination, based on quality-assured ambient data, that a violation of the NAAQS has occurred, unless EPD demonstrated that technical or economic feasibility warranted an implementation period longer than 24 months(which will result in submission of a revised schedule) .

- Reasonably Available Control Measures (RACM) for all sources of NOx
- Reasonably Available Control Technology (RACT) for existing point sources of NOx
- Expansion of RACM/RACT to area(s) of transport within the State
- Mobile Source Measures
- Additional NOx reduction measures yet to be identified

As the Macon NAA is located in very close proximity to the Atlanta metropolitan areas, which is currently subject to NAA SIP provisions, there is, as described in Appendix D, a significant contribution of ozone and ozone precursor emissions to the Macon NAA. Additional control options for the Atlanta metropolitan area are limited due to the fact that the area has previously been subject to the 1-hour ozone severe designation, and most significant emission control measures have been utilized. Those measures ultimately resulted in the attainment of the 1-hour ozone standard for the Atlanta area as well as subsequent improvements in the Macon area. In addition, the current 8-hour ozone NAA designation for Atlanta will require even more stringent controls to an even larger NAA that is expected to have an additional beneficial impact on the transport related ambient 8-hour ozone levels to the Macon area. EPD contends that significant improvements in ambient level ozone due to the current SIP measures for the Atlanta NAA, as well as the continued planning for the Atlanta 8-

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hour ozone NAA, will ensure continued permanent and enforceable reductions in the precursors of ozone emissions from Atlanta's contribution to Macon's ambient level ozone levels. However, in the event that the analysis required above determines that the Atlanta 8-hour nonattainment area is the source of the emissions for any violation of the 8-hour Ozone standard, the Atlanta plan will be addressed as necessary for additional emission reductions.

Adoption of additional control measures is subject to necessary administrative and legal processes. EPD will solicit input from interested and affected persons (stakeholders) in the area prior to selecting appropriate contingency measures. No contingency measure will be implemented without providing the opportunity for full public participation. This process will include publication of notices, an opportunity for public hearing, and other measures required by Georgia law.

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4.0 Conclusion

The most recent three years of ozone monitoring data for the Macon area demonstrate compliance with the 8-hour NAAQS for ground-level ozone.

Since the late 1970s, major programs enacted in the Atlanta area have led to significant actual, enforceable emissions reductions, which have led to improvements in the air quality in Atlanta and subsequently in the Macon area as well. Significant emissions reductions have also been demonstrated for the Macon area as well. This redesignation request and maintenance demonstration SIP revision has been prepared to meet the requirements of the Section 107(d) of the 1990 Clean Air Act Amendments.

Due to the sensitivity of Macon to the Atlanta NAA, those regulations currently in place for the Atlanta NAA, will remain and are expected to allow the area to maintain the 8-hour NAAQS by mitigating Georgia's most significant in-state sources of ozone transport.

Georgia hereby requests that the Macon area be redesignated from nonattainment to attainment with respect to the 8-hour NAAQS for ozone. Further, Georgia hereby petitions EPA to make a determination that the Macon area is eligible for application of EPA's Clean Data Policy, based on the Macon area's attainment of the 8-hour ozone standard.