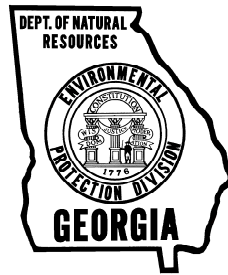


**Georgia's Redesignation Request and
Maintenance Plan for the Floyd County
Nonattainment Area for the 1997 PM_{2.5} NAAQS**

May 30, 2012



Prepared by:

Georgia Department of Natural Resources

Environmental Protection Division

Air Protection Branch

Executive Summary

This document contains Georgia's request under the Clean Air Act Amendments of (CAA) of 1990 that the Floyd County nonattainment area be redesignated to attainment with respect to the annual National Ambient Air Quality Standard (NAAQS) for PM_{2.5} (1997 fine particulate matter standard, retained in 2006). The document also includes Georgia's plan to maintain attainment of the PM_{2.5} standard in Floyd County.

This request is based on three years, 2007-2009, of ambient monitoring data showing attainment of the standard (15.0 µg/m³) consistent with the clean data policy memo (Stephen Page 12/14/2004); the implementation of permanent and enforceable reductions in PM_{2.5} and PM_{2.5} precursor emissions; compliance with all applicable requirements; and the Floyd County Maintenance Plan with projections demonstrating maintenance of the standard through the year 2023.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

TABLE OF CONTENTS

| | | |
|------------|--|-----------|
| 1.0 | Introduction | 1 |
| 1.1 | Nonattainment Designation and Attainment Demonstration..... | 1 |
| 1.2 | Redesignation Request..... | 2 |
| 1.3 | Maintenance Plan..... | 3 |
| 2.0 | Redesignation Request..... | 4 |
| 2.1 | Attainment of the Annual PM _{2.5} NAAQS..... | 4 |
| 2.1.1 | Monitoring Network..... | 4 |
| 2.1.2 | Ambient PM _{2.5} Data | 6 |
| 2.1.3 | Clean Data Determination | 6 |
| 2.2 | Implementation Plan Under Section 110(k)..... | 7 |
| 2.3 | Permanent and Enforceable and Other Reductions in Emissions..... | 7 |
| 2.3.1 | Source Apportionment of Ambient PM _{2.5} | 7 |
| 2.3.2 | State Control Measures - Georgia | 9 |
| 2.3.2.1 | SO ₂ and NO _x Controls and SO ₂ Limits..... | 10 |
| 2.3.2.2 | Smoke Management Plan | 15 |
| 2.3.3 | Federal Control Measures | 16 |
| 2.3.3.1 | Clean Air Interstate Rule | 17 |
| 2.3.3.2 | Tier 2 Vehicle Standards | 18 |
| 2.3.3.3 | Heavy-Duty Gasoline and Diesel Highway Vehicles Standards & Ultra Low-Sulfur Diesel Rule | 18 |
| 2.3.3.4 | Large Nonroad Diesel Engines Rule & Ultra Low-Sulfur Diesel Rule | 18 |
| 2.3.3.5 | Nonroad Large Spark-Ignition Engines and Recreational Engines Standard | 19 |
| 2.3.3.6 | NO _x SIP Call in Surrounding States | 19 |
| 2.3.4 | SO ₂ Emissions Reductions in Upwind States..... | 19 |
| 2.4 | Section 110 and Part D Requirements..... | 22 |
| 3.0 | Maintenance Plan..... | 23 |
| 3.1 | Maintenance Demonstration | 23 |
| 3.1.1 | Attainment Year Emissions Inventory | 24 |
| 3.1.1.1 | Point Sources | 25 |
| 3.1.1.2 | Nonpoint Sources | 26 |
| 3.1.1.3 | Onroad Mobile Sources..... | 27 |
| 3.1.1.4 | Nonroad Mobile Sources..... | 28 |
| 3.1.1.5 | Summary of 2007 Emissions Inventory | 29 |
| 3.1.2 | Projected Emissions Inventories | 29 |
| 3.1.2.1 | Methods and Projected Inventories | 29 |
| 3.1.2.2 | Point Sources..... | 31 |
| 3.1.2.3 | Nonpoint Sources | 33 |
| 3.1.2.4 | Onroad Mobile Sources..... | 34 |
| 3.1.2.5 | Nonroad Mobile Sources | 35 |
| 3.1.3 | Emissions Projections Summary and Demonstration of Maintenance of Attainment..... | 36 |
| 3.1.4 | Emissions Decreases | 38 |
| 3.1.5 | Verification of Continued Attainment..... | 39 |

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

| | | |
|------------|--|-----------|
| 3.2 | Contingency Provisions..... | 39 |
| 3.2.1 | Contingency Measure Triggers | 39 |
| 3.2.2 | Schedule and Procedure for Adoption and Implementation of Contingency Measures | 40 |
| 3.2.3 | Contingency Measures | 41 |
| 4.0 | <i>Motor Vehicle Emissions Budget.....</i> | 43 |
| 4.1 | Pollutants | 43 |
| 4.2 | Methodology | 44 |
| 4.3 | Motor Vehicle Emissions Budgets and Safety Margins | 45 |
| 5.0 | <i>Conclusion</i> | 46 |
| 6.0 | <i>References</i> | 49 |

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

LIST OF FIGURES

| | |
|--|-----------|
| Figure 1-1. PM_{2.5} Nonattainment Areas in Georgia | 1 |
| Figure 2-1. Locations of Floyd County PM_{2.5} sampling sites..... | 5 |
| Figure 2-2: Average factor contributions for 2003-04 at the Atlanta, Floyd County, and Macon STN sites using PMF..... | 8 |
| Figure 2-3. Locations and 2007 Energy Production of Coal-fired EGU Facilities in North Georgia..... | 11 |
| Figure 2-4. SO₂ Emissions and Generation from Plant Hammond, 2003 - 2009 | 14 |
| Figure 2-5. SO₂ Emissions and Generation from North Georgia Coal-fired EGU Facilities, 2003 - 2009 | 14 |
| Figure 2-6. Trend of Aggregated Annual SO₂ Emissions in States With Downwind Contributions to Georgia PM_{2.5} Exceeding 0.15 µg/m³ | 22 |

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

LIST OF TABLES

| | |
|--|----|
| Table 1-1. PM _{2.5} Design Value for Floyd County | 2 |
| Table 2-1. Floyd Co. PM _{2.5} Data Collection Sites..... | 6 |
| Table 2-2. Annual and Three-year Average Ambient PM _{2.5} Concentrations..... | 6 |
| Table 2-3. Average factor contributions to PM _{2.5} (µg/m ³) for 2003-04 at the Atlanta, Floyd County, and Macon STN sites using PMF | 9 |
| Table 2-4. Timetable of State Measure Implementation | 10 |
| Table 2-5. Annual SO ₂ Emissions and Generation (10 ⁶ MWh) from North Georgia Coal-fired EGU Facilities, 2003 - 2009 | 13 |
| Table 2-6. Timetable of Federal Measure Implementation | 17 |
| Table 2-7. Annual SO ₂ Emissions in States With Downwind Contributions to Georgia PM _{2.5} Exceeding 0.15 µg/m ³ | 21 |
| Table 3-1. 2007 Emissions Inventory Sources..... | 24 |
| Table 3-2. Point Source Emissions for 2007 (tons, annual)..... | 25 |
| Table 3-3. Non-EGU Point Source Emissions for 2007 (tons, annual)..... | 25 |
| Table 3-4. Nonpoint Source Emissions for 2007 (tons, annual)..... | 27 |
| Table 3-5. Largest Nonpoint PM _{2.5} Emissions by Source Classification..... | 27 |
| Table 3-6. Onroad Mobile Source Emissions for 2007 (tons, annual)..... | 28 |
| Table 3-7. Nonroad Mobile Source Emissions for 2007 (tons, annual)..... | 29 |
| Table 3-8. Attainment-year (2007) Emissions Inventory (tons, annual) | 29 |
| Table 3-9. Bases of Control and Growth Factors for 2017 and 2023 Inventories..... | 30 |
| Table 3-10. Projected Point Source Emissions (tons) | 32 |
| Table 3-11. Non-EGU Point Source Emissions for 2023 (tons, annual)..... | 32 |
| Table 3-12. Projected Nonpoint Source Emissions (tons) | 33 |
| Table 3-13. Largest Nonpoint PM _{2.5} Emissions by Source Classification, Year 2023..... | 34 |
| Table 3-14. Projected Onroad Mobile Source Emissions (tons) | 35 |
| Table 3-15. Projected Nonroad Mobile Source Emissions (tons) | 36 |
| Table 3-16. Projected Emissions – Total of All Sectors (tons)..... | 37 |
| Table 3-17. PM _{2.5} Speciation Data..... | 37 |
| Table 3-18. Emissions Decrease..... | 38 |
| Table 4-1. 2023 Motor Vehicle Emissions, Emissions Budgets, and Safety Margins..... | 45 |
| Table 5-1. Summary of Projected SO ₂ Emissions – Total of All Sectors (tons)..... | 46 |
| Table 5-2. Summary of Projected NO _x Emissions – Total of All Sectors (tons) | 47 |
| Table 5-3. Summary of Projected PM _{2.5} Emissions – Total of All Sectors (tons) | 47 |

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

LIST of APPENDICES

- Appendix A Source Apportionment of PM_{2.5} in Georgia
- Appendix B Georgia's Basic Smoke Management Plan and Memorandum of Understanding
- Appendix C Emissions Inventory Development for Floyd County
- Appendix C-1 Development of the Point Source Emissions Inventory for 2007 in the SESARM Region (Version 1.8), January 26, 2011
- Appendix C-2 Area and Nonroad 2007 Base Year Inventories, Final Report, June 2010
- Appendix C-3 Mobile Source Emissions Modeling for Floyd County PM_{2.5} Maintenance Plan Motor Vehicle Emissions Budget
- Appendix C-4 The Travel Demand Model for the Rome MPO
- Appendix C-5 Growth and Control Factors for Aircraft, Commercial Marine Vessel, and Locomotive Emissions (includes memorandum from K. Thesing and two spreadsheets)
- Appendix C-6 Documentation of the 2012 Projection Emission Inventory (VISTAS)
- Appendix C-7 Growth Factors for Nonpoint Sources and Non-EGU Point Sources
- Appendix C-8 MACTEC, August 2009. Point Source, On-road, and Fire Base Year, Future Year, and Control Strategy Emissions Inventories Draft Quality Assurance Project Plan
- Appendix C-9 E.H. Pechan and Associates, July 29, 2009. Quality Assurance Project Plan for Non-road and Area Source Base Year and Future Year Emissions Inventories

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

List of Acronyms

| Acronym | Meaning | Acronym | Meaning |
|----------------|---|----------------|---|
| AEO | Annual Energy Outlook | FGD | Flue Gas Desulfurization |
| AERR | Annual Emissions Reporting Requirements | FR | Federal Register |
| AIRS | Aerometric Information Retrieval System | FRM | Federal Reference Method |
| AQS | Air Quality Subsystem | FRUTS | Floyd-Rome Urban Transit Study |
| CAA | Clean Air Act | GDOT | Georgia Department of Transportation |
| CAIR | Clean Air Interstate Rule | GFC | Georgia Forestry Commission |
| CARB | California Air Resources Board | HC | Hydrocarbon |
| CERR | Consolidated Emissions Reporting Rule | HPMS | Highway Performance Monitoring System |
| CFR | Code of Federal Regulations | ICI | Industrial and Commercial/Institutional |
| CO | Carbon Monoxide | MOU | Memorandum of Understanding |
| CSAPR | Cross-state Air Pollution Rule | MOVES | Motor Vehicle Emissions Simulator |
| DNR | Department of Natural Resources | MPO | Metropolitan Planning Organization |
| DOT | Department of Transportation | MVEB | Motor Vehicle Emissions Budget |
| EGAS | Economic Growth Analysis System | MWe | Megawatt Electrical |
| EGU | Electric Generating Unit | MWh | Megawatt Hours |
| EPA | Environmental Protection Agency | NAA | Nonattainment Area |
| EPD | Environmental Protection Division | NAAQS | National Ambient Air Quality Standard |
| ERTAC | Eastern Regional Technical Advisory Committee | NCD | NMIM County Database |

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

| Acronym | Meaning | Acronym | Meaning |
|-------------------|--|-----------------|--|
| NEI | National Emissions Inventory | SCR | Selective Catalytic Reduction |
| NMIM | National Mobile Inventory Model | SEMAP | Southeastern Modeling Analysis Plan |
| NTE | Not-To-Exceed | SIP | State Implementation Plan |
| NO _x | Nitrogen Oxides | SMP | Smoke Management Plan |
| OAQPS | Office of Air Quality Planning and Standards | SO ₂ | Sulfur Dioxide |
| PM | Particulate Matter | SOA | Secondary Organic Aerosols |
| PM _{2.5} | Fine Particulate Matter | STN | Speciated Trends Network |
| PMF | Positive Matrix Factorization | tpy | Tons Per Year |
| ppm | parts per million | SUV | Sport Utility Vehicle |
| RACM | Reasonably Available Control Measures | ULSD | Ultra-Low Sulfur Diesel |
| RACT | Reasonably Available Control Technology | VISTAS | Visibility Improvement State and Tribal Association of the Southeast |
| RFP | Reasonable Further Progress | VMT | Vehicle Miles Traveled |
| SCC | Source Classification Code | WRD | Wildlife Resources Division |

Floyd County PM_{2.5} Nonattainment Area Redesignation Request and Maintenance Plan

1.0 Introduction

This document contains the technical support for the Georgia Environmental Protection Division's (EPD's) request that the Floyd County nonattainment area be redesignated as an area attaining the 1997 annual fine particulate matter (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) pursuant to Sections 107(d)(3)(D) and (E) of the Clean Air Act (CAA), as amended. This redesignation request was prepared in accordance with U.S. EPA Guidance issued in 1992 (memorandum dated September 4 of that year from John Calcagni¹).

1.1 Nonattainment Designation and Attainment Demonstration

In 2005, EPA designated four PM_{2.5} nonattainment areas in Georgia: Chattanooga (which also includes parts of Alabama and Tennessee), Floyd County, Atlanta, and Macon. Figure 1-1 shows their locations. The Floyd County nonattainment area is located in the northwest portion of the state and south of Georgia's portion of the Chattanooga Nonattainment Area.

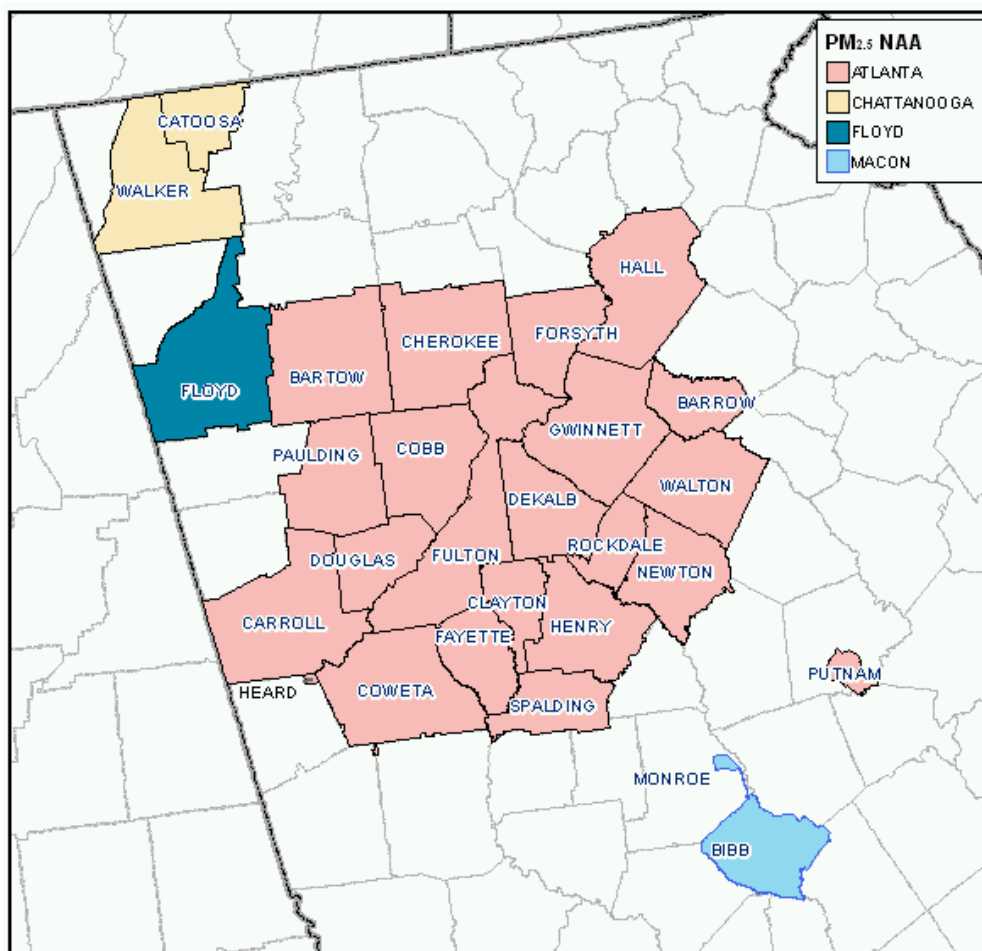


Figure 1-1. PM_{2.5} Nonattainment Areas in Georgia

¹ "Procedures for Processing Requests to Redesignate Areas to Attainment," September 4, 1992. John Calcagni, Director, Air Quality Management Division, OAQPS, USEPA.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

EPA made initial designations of nonattainment areas, including the Floyd County nonattainment area, for the 1997 annual PM_{2.5} NAAQS on January 5, 2005 (70FR944), and amended the designations on April 5, 2005 (70FR19844). The observed PM_{2.5} design value at Floyd County's nonattainment area monitor violated the annual standard, as shown in Table 1-1 below.

Table 1-1. PM_{2.5} Design Value for Floyd County

| Site Name | Monitor ID | PM _{2.5} Design Value 2001-2003 (µg/m ³) |
|------------------------|-------------|--|
| Rome-Coosa High School | 13-115-0005 | 15.7 |

The State of Georgia prepared and submitted a PM_{2.5} attainment demonstration plan for the Floyd County Nonattainment Area to EPA Region 4 on October 27, 2009 (cover date is October 20). The plan was based on modeling of the effects of existing and planned control measures on air quality in Floyd County and demonstrated attainment of the standard by April 5, 2010.

Since EPA has determined that the area has met the clean data requirements (76FR 18650) and attained the standard prior to the attainment date (76FR 55776) (see Section 2), the SIP requirements that the October 27, 2009 attainment demonstration was required to fulfill are suspended. The attainment demonstration plan has been withdrawn and will be replaced with this maintenance plan. Relief from the requirement to submit an attainment demonstration as well as Reasonable Further Progress (RFP), associated RACM, and contingency requirements upon clean data determination is specified in 40 CFR 51.1004(c) and also in a December 14, 2004 memo from Stephen Page of U.S. EPA.

1.2 Redesignation Request

This document contains Georgia's request that the Floyd County nonattainment area be redesignated to attainment with respect to the annual NAAQS for PM_{2.5} (1997 fine particulate matter standard, retained in 2006). Section 107(d) of the CAA 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 as required by CAA Section 175A.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

The supporting documentation to show that the above conditions have been met is contained in Sections 2 and 3. EPA's approval of this document will satisfy the fifth condition.

1.3 Maintenance Plan

The maintenance plan (see above) has two required components under Section 175A:

- A demonstration of maintenance of the standard for at least ten years after redesignation; and
- Contingency provisions for prompt correction of any future violations.

Per EPA guidance², the Floyd County PM_{2.5} maintenance plan also includes the following elements:

- An attainment year emissions inventory (to support the maintenance demonstration);
- A commitment to continued operation of ambient monitoring equipment in the area; and
- Verification of continued attainment.

The maintenance plan is presented in Section 3.

² "Procedures for Processing Requests to Redesignate Areas to Attainment," September 4, 1992. John Calcagni, Director, Air Quality Management Division, OAQPS, USEPA.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

2.0 Redesignation Request

As noted in Section 1.2 of this document, Section 107(d) of the CAA 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 CAA Section 175A.

This section of the document includes supporting documentation for the following:

- Attainment of the annual PM_{2.5} NAAQS based on ambient data from 2007 through 2009;
- Approval by EPA of the implementation plan under Section 110(k);
- Improvement of air quality with respect to PM_{2.5} is due to permanent and enforceable reductions in emissions; and
- The state has met all applicable requirements for the area under Section 110 and Part D.

2.1 Attainment of the Annual PM_{2.5} NAAQS

A monitoring site is in attainment of the annual PM_{2.5} standard when the annual standard design value is less than or equal to 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) per Appendix N of 40 CFR Part 50. The annual standard design value is the 3-year average of the annual mean, which is, in turn, the average of one year's 4-calendar-quarter averages. The data must be complete and quality-assured, consistent with 40 CFR Part 58 requirements, and other relevant EPA guidance. Therefore, for a single site to meet the standard, the annual design value calculated from the previous three calendar years must be less than or equal to the standard. For a nonattainment area to achieve attainment, all monitoring sites in the nonattainment area must be in attainment.

The Floyd County design value based on data from 2007 through 2009 is 13.3 $\mu\text{g}/\text{m}^3$ which demonstrates attainment of the standard. The monitoring network and ambient PM_{2.5} data are presented below.

2.1.1 Monitoring Network

One PM_{2.5} Federal Reference Method (FRM) monitor and one PM_{2.5} Speciated Trends Network (STN) monitor were located at the Rome-Coosa High School site (13-115-0005) until March 9, 2009. The PM_{2.5} FRM monitor was installed in accordance with 40 CFR 58 and had been collecting data since January 18, 1999 (Table 2-1). Its sampling schedule was every three days until March 1, 2007, when it started sampling daily. The PM_{2.5} speciation monitor had been collecting data since March 3, 2002. Speciated data is useful for determining the composition of the particulate matter but cannot be used for the purpose of determining attainment with the NAAQS. The sampling schedule of the PM_{2.5} speciation monitor was every six days. On March 10, 2009, the PM_{2.5} monitors at the Rome-Coosa High School site (13-115-0005) were relocated a short distance (less than one mile) to the Rome-Coosa Elementary School site (13-115-0003). PM_{2.5} sampling was continued from the

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

Rome-Coosa Elementary School site at the same collection frequency. The elementary school site did not collect PM_{2.5} data prior to relocation of the samplers from the high school site.

The locations of both monitoring sites are shown in Figure 2-1. PM_{2.5} data collection dates at the sites are presented in Table 2-1. As noted above, PM_{2.5} sampling has been discontinued at the Rome-Coosa High School site (13-115-0005).

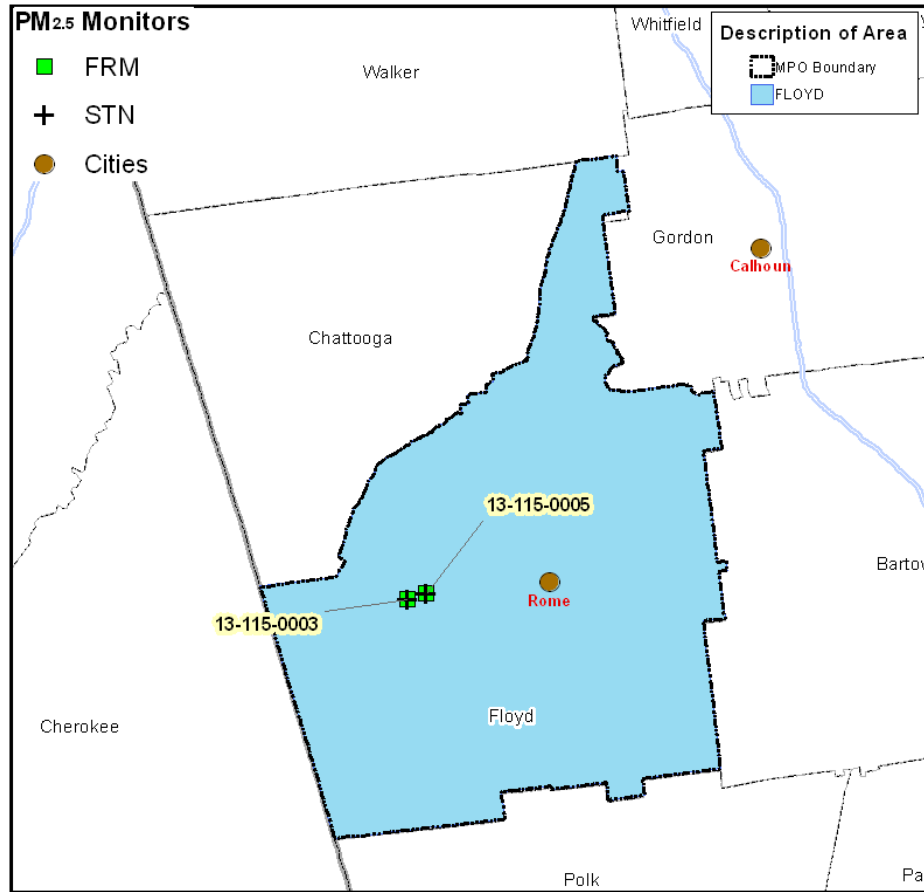


Figure 2-1. Locations of Floyd County PM_{2.5} sampling sites.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 2-1. Floyd Co. PM_{2.5} Data Collection Sites

| Site Name | AQS* Site ID | Start Date – FRM Data Collection | End Date - FRM Data Collection | Start Date – Speciation Data Collection | End Date - Speciation Data Collection |
|----------------------------|-----------------|--|--------------------------------------|--|--|
| Rome-Coosa High School | 13-115-0005 | Jan. 18, 1999 | March 9, 2009 | March 3, 2002 | March 9, 2009 |
| Rome-Coosa Elem. School | 13-115-0003 | March 10, 2009 | | March 10, 2009 | |

* EPA's Air Quality System

2.1.2 Ambient PM_{2.5} Data

Table 2-2 shows the annual average PM_{2.5} concentrations and the associated 3-year average that demonstrate attainment of the standard in Floyd County. The 2007 – 2009 3-year design value is 13.3 µg/m³, which is below the standard of 15.0 µg/m³. The table includes annual averages from 2003 through 2009, demonstrating the downward trend in the measured ambient PM_{2.5} level in the nonattainment area. The annual average PM_{2.5} concentration for 2010 was 13.2 µg/m³. This provides continued evidence that the county is meeting the standard. To date the quality-assured annual average for 2011 is not available.

Table 2-2. Annual and Three-year Average Ambient PM_{2.5} Concentrations

| Ambient PM _{2.5} Concentration (µg/m ³) | | | | | | | |
|--|------|------|------|------|------|------|----------------|
| 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2007 - 2009 |
| 16.2 | 15.6 | 16.6 | 15.9 | 15.7 | 13.0 | 11.3 | 13.3 |

2.1.3 Clean Data Determination

On April 5, 2011, EPA promulgated its determination (76 FR 18650) that the Floyd County nonattainment area had attained the 1997 annual average PM_{2.5} National Ambient Air Quality Standard (NAAQS). This determination was based upon quality-assured and certified ambient air monitoring data for the 2007-2009 period which showed a design value of 13.3 µg/m³. With the clean data determination, EPA suspended the requirements for the nonattainment area to submit an attainment demonstration, a reasonable further progress (RFP) plan, associated RACM, and contingency measures. These requirements are suspended as long as the area continues to attain the standard. This final rule became effective on May 5, 2011.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

2.2 Implementation Plan Under Section 110(k)

Section 110(k) of the CAA addresses EPA's actions on state implementation plan submittals (completeness, deadline for action by EPA, etc.). A September 4, 1992, memo from John Calcagni of EPA states the following:

“The SIP for the area must be fully approved under section 110(k), and must satisfy all requirements that apply to the area. It should be noted that approval action on SIP elements and the redesignation request may occur simultaneously.”

The State of Georgia has prepared and submitted a PM_{2.5} attainment demonstration plan for the Floyd County Nonattainment Area. The plan was submitted for approval to EPA Region 4 on October 27, 2009. As discussed in Section 1.1 of this redesignation request and maintenance plan, the attainment demonstration, associated RACM, RFP, and contingency requirements that the October 27, 2009 SIP revision was required to fulfill have been suspended. Therefore, the attainment demonstration has been withdrawn and substituted with submittal of this maintenance plan. There are no longer any Section 110(k) requirements to be met.

2.3 Permanent and Enforceable and Other Reductions in Emissions

In order for the nonattainment area to be redesignated to attainment, the State must demonstrate (and EPA must determine) that the improvement of ambient PM_{2.5} concentrations during the years 2007 through 2009 is due to permanent and enforceable reductions, unless otherwise stated, in emissions that were implemented following the nonattainment design value period (2001–2003). This subsection contains Georgia EPD's demonstration that the improved air quality is due to permanent and enforceable emissions reductions. The elements of the demonstration described below are as follows:

- Source apportionment, which links individual, observed ambient PM_{2.5} species to specific emissions sources;
- State control measures and associated emissions reductions;
- Federal control measures and associated emissions reductions; and
- Reductions in SO₂ emissions from upwind states.

2.3.1 Source Apportionment of Ambient PM_{2.5}

Source apportionment of speciated ambient pollutant measurements is an important tool for the prioritization of pollutant control strategies. Presented here are source-apportionment results for 2003-2004 speciated PM_{2.5} measurements in the Atlanta, Floyd County, and Macon areas (Figure 2-2 and Table 2-3). The source-apportionment results are based on Positive Matrix Factorization (PMF), a factor analytic method that distinguishes correlation patterns among speciated PM_{2.5} measurements in a given location. More detailed information on source apportionment is presented in Appendix A.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

The similarities between the PMF results for the three sites show the regional nature of PM_{2.5}. The major impacting factors at all sites are secondary sulfates, secondary organic aerosols (SOA), mobile sources, and biomass burning. The Atlanta area, as expected, has higher levels of mobile-source PM_{2.5}, compared to Floyd County and Macon. On the other hand, these latter two sites exhibit higher levels of soil dust, and the Macon site exhibits a relatively high contribution of Lime/Minerals PM_{2.5}. This is likely due to local sources in the industrial area where the site is located.

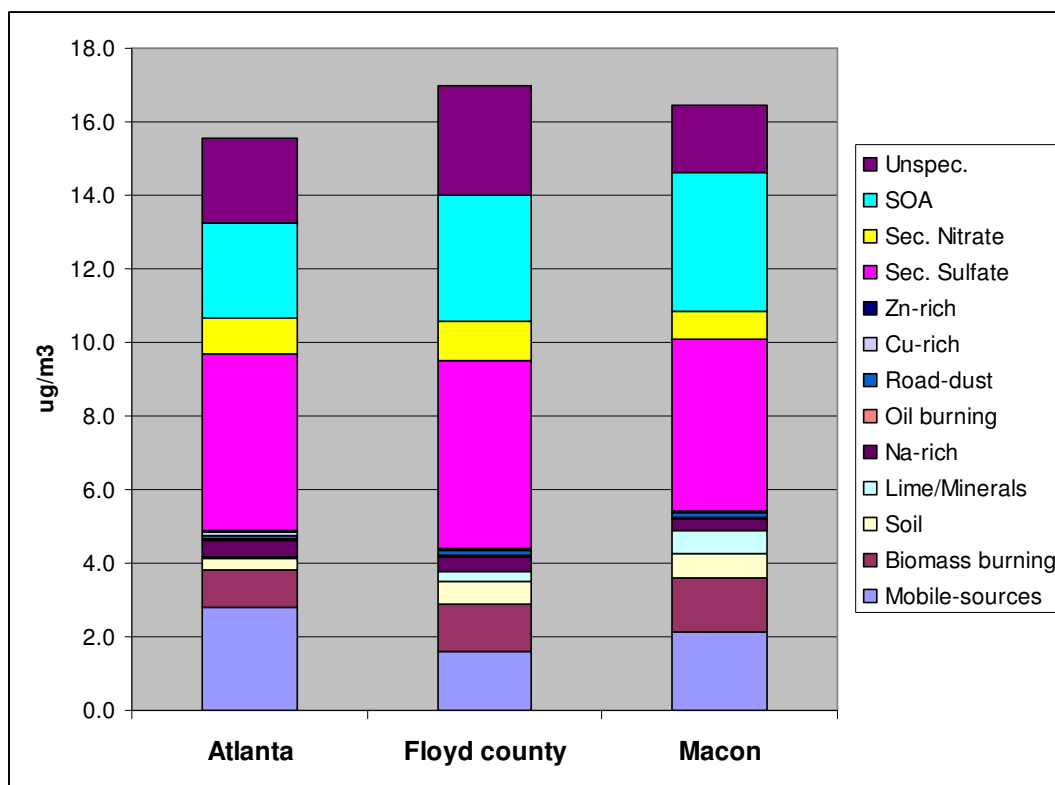


Figure 2-2: Average factor contributions for 2003-04 at the Atlanta, Floyd County, and Macon STN sites using PMF

These results are useful for an assessment of control strategies. Secondary sulfate makes up approximately five $\mu\text{g}/\text{m}^3$ (32 %) of ambient PM_{2.5}, the largest contribution of all of the factors. SOAs make up the next largest contribution at 20%. The contribution of secondary nitrate is only one-fifth of the contribution of sulfate. Contributions from all other source-categories were small in general, though the Macon and Rome sites seem to be affected by local sources related to lime/minerals processing and soil dust re-suspension.

Secondary sulfates are formed in the atmosphere from SO₂ emissions. As the sulfate fraction is the largest fraction of ambient PM_{2.5}, it is evident that controlling SO₂ emissions (generated primarily by coal-burning EGUs) would reduce PM_{2.5} levels throughout the state. Secondary nitrates are associated with NO_x emissions from combustion, primarily combustion in EGUs and in on-road mobile sources. SOAs are associated with biogenic emissions (natural emissions from living trees and other vegetation). It is not practical to control biogenic emissions. Biomass burning generates elemental carbon (soot) and is associated with wildfires, prescribed burning, and wood-fired boilers. In addition to NO_x, mobile sources generate elemental carbon.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

Table 2-3. Average factor contributions to PM_{2.5} (µg/m³) for 2003-04 at the Atlanta, Floyd County, and Macon STN sites using PMF

| Factor | Atlanta | Floyd County | Macon |
|-----------------|----------------|---------------------|--------------|
| Unspecified | 2.32 | 2.97 | 1.81 |
| SOA | 2.55 | 3.46 | 3.81 |
| Sec. Nitrate | 0.99 | 1.05 | 0.74 |
| Sec. Sulfate | 4.82 | 5.10 | 4.67 |
| Zn-rich | 0.03 | 0.03 | 0.03 |
| Cu-rich | 0.07 | 0.03 | 0.02 |
| Road-dust | 0.12 | 0.13 | 0.11 |
| Oil burning | 0.03 | 0.04 | 0.04 |
| Na-rich | 0.43 | 0.42 | 0.33 |
| Lime/Minerals | 0.05 | 0.24 | 0.59 |
| Soil | 0.29 | 0.61 | 0.67 |
| Biomass burning | 1.06 | 1.31 | 1.50 |
| Mobile sources | 2.78 | 1.61 | 2.12 |

2.3.2 State Control Measures - Georgia

Based on source factor analysis, Georgia's control strategy is focused on the reduction of emissions associated with secondary sulfates and nitrates, biomass burning, and mobile sources. Control of SO₂ is the most important component of the strategy, as secondary sulfates make up the largest controllable contribution to ambient PM_{2.5}. State measures that target reduction of these emissions are:

- SO₂ and NO_x controls on EGUs [Rule (sss)];
- SO₂ limits on EGUs [Rule (uuu)]; and
- Smoke Management Plan.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 2-4 shows the timetable of implementation of these measures as well as the species controlled by each. The correlation between the drop in PM_{2.5} annual averages and the implementation of the control measures, particularly Georgia Rule 391-3-1-.02(2)(sss), lends strong evidence that the improvements in air quality are a result of reduction in emissions and not a meteorologically-influenced phenomenon. Detailed discussions of the measures are presented in the following subsections.

Table 2-4. Timetable of State Measure Implementation

| Measure | Species controlled | 2001 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | '09 | '10 |
|---|-----------------------------------|------|------|------|------|------|------|------|------|------|------|
| PM_{2.5} ann. avg. (µg/m³), Floyd Co. | | 16.2 | 14.6 | 16.2 | 15.6 | 16.6 | 15.9 | 15.7 | 13.0 | 11.3 | 13.2 |
| Rule (sss) | SO ₂ , NO _x | | | | | | | | * | | |
| Smoke Management Plan | PM, NO _x | | | | | | | | | | |
| Rule (uuu) | SO ₂ | | | | | | | | | | |

* Controls were required on December 31, 2008, but were actually started up in the first half of the year.

2.3.2.1 SO₂ and NO_x Controls and SO₂ Limits

Atmospheric secondary sulfate is formed from emissions of SO₂. Coal-fired EGUs are by far the most significant source of SO₂ emissions in Georgia and in the Southeast. Georgia's Multipollutant Rule [391-3-1-.02(2)(sss)] requires flue gas desulfurization (FGD) and selective catalytic reduction (SCR) controls on the majority of coal-fired EGUs in Georgia. This state-enforceable rule was promulgated in 2007 for the purposes of lowering ozone and PM_{2.5} concentrations by controlling precursor emissions and for reducing mercury deposition. The FGD controls reduced SO₂ emissions rates from the affected emissions units by at least 95 percent and the SCR controls reduced NO_x emissions rates by approximately 85 percent. The SO₂ and NO_x controls were required in support of EPA's CAIR rule, which was promulgated in 2005 and required statewide caps for NO_x and SO₂ beginning in 2009 and 2010, respectively. The CAIR rule is discussed further in Section 2.3.3.

Georgia Rule (uuu), SO₂ Emissions from Electric Utility Steam Generating Units, is a companion rule to Rule (sss) and is both state and federally enforceable upon approval. Both of these rules were implemented in response to CAIR and require emissions reductions consistent with CAIR's original schedule starting in 2009. The rule requires 95% reduction of SO₂ emissions from the majority of Georgia's coal-fired EGUs, with the requirement being phased in from 2010 through 2016. All four EGUs at Plant Hammond are required to demonstrate 95% reduction starting on January 1, 2012.

It has been well demonstrated that ambient secondary sulfate in a given location can be significantly affected by SO₂ emissions from distant sources. Therefore, secondary sulfate in Floyd County is due

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

not only to SO₂ emissions from Plant Hammond, located inside the county, but also to SO₂ emissions from other coal-fired EGUs in north Georgia. Figure 2-3 shows the locations of the coal-fired EGU facilities in the northern half of Georgia as well as their respective energy production (in million megawatt-hours) in the year 2007. Plant Bowen, which is approximately 30 miles from Floyd County’s ambient monitor, was a close second to Plant Scherer in energy production and historically has been by far the highest SO₂-emitting facility in the state. Plant Scherer, which was first in Georgia in energy production, is located approximately 120 miles from the Floyd County monitor. The facilities shown in the figure comprise seven of the ten coal-fired EGU facilities that were operated in Georgia in 2007. In 2007, the energy produced by the seven facilities made up 97 percent of the statewide energy production from coal-fired facilities.

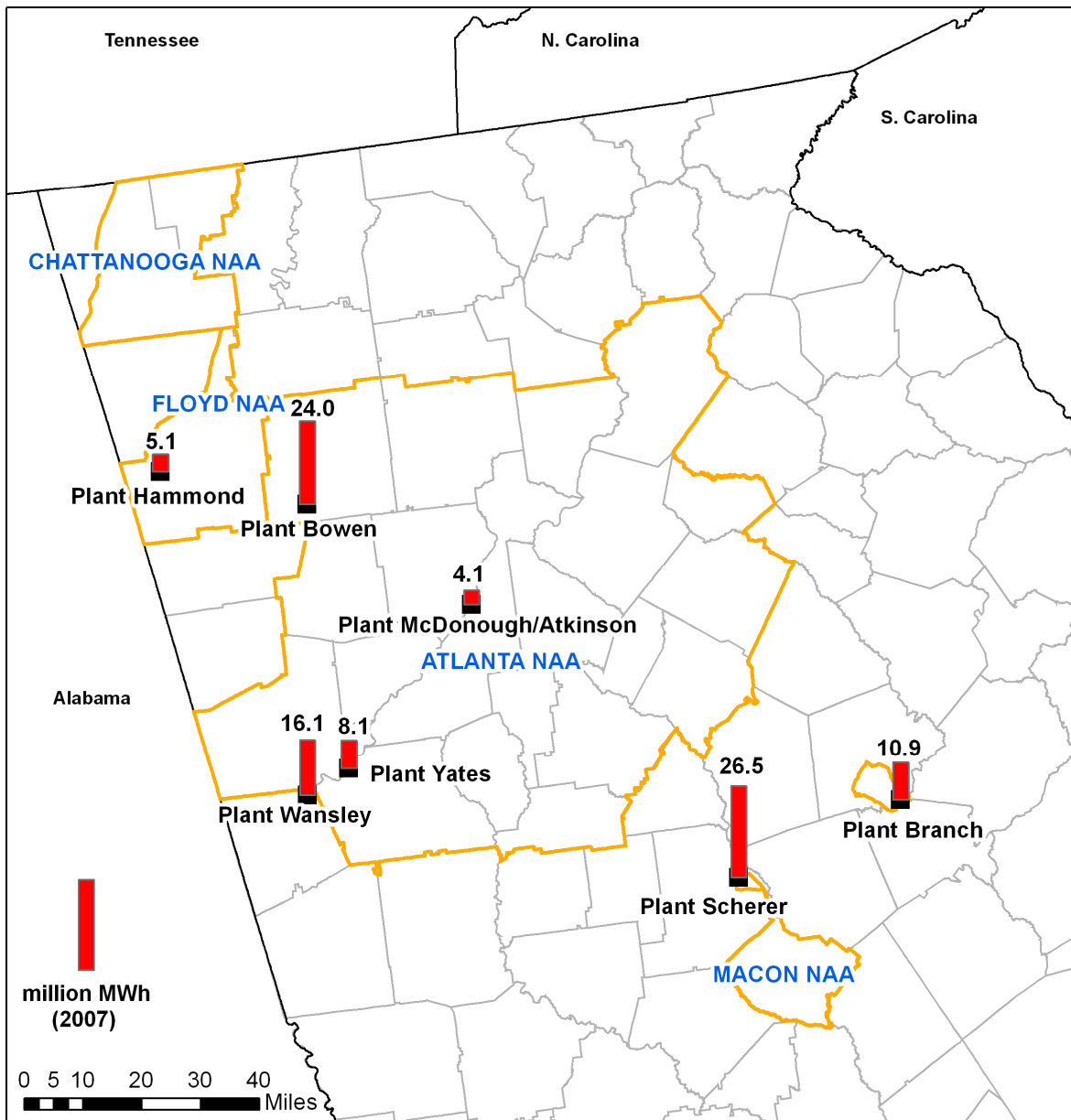


Figure 2-3. Locations and 2007 Energy Production of Coal-fired EGU Facilities in North Georgia

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

The required FGD control implementation date varies by EGU, starting on December 31, 2008. SO₂ controls were actually started on five units in May 2008. SO₂ controls were operating for the entire year of 2009 as follows:

- Plant Hammond – controls on 4 of 4 units;
- Plant Bowen – controls on 2 of 4 units; and
- Plant Wansley – controls on 1 of 2 units.

SO₂ controls on a third unit at Plant Bowen and on the second unit at Plant Wansley began operation on April 1, 2009.

Rule (sss) requires SCR controls to be operated year-round, starting at six EGUs in 2008 and 2009 (Bowen Units 2, 3, and 4; Wansley Units 1 and 2; and Hammond Unit 4). However, these NO_x controls were already in place and operating during the ozone season by the end of 2003. The Title V permit of each of the above facilities has been amended to permit operation of the FGD and SCR controls.

Table 2-5 shows the annual SO₂ emissions for Plant Hammond and the other six coal-fired facilities in north Georgia for the period 2003 through 2009. The table also includes the electrical generation, a measure of production, for the facilities for the same time period. This data is presented in graphical form in Figures 2-4 and 2-5.

Comparing 2003 and 2009 for Plant Hammond, SO₂ emissions were reduced by 97.5% whereas generation was down by 22.1%. For the seven facilities, SO₂ emissions were reduced by 50.4% and generation was down by only 4.5%. These statistics provide clear evidence that the reduction in PM_{2.5} concentration is due to permanent and enforceable controls rather than to reduced production.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 2-5. Annual SO₂ Emissions and Generation (10⁶ MWh) from North Georgia Coal-fired EGU Facilities, 2003 - 2009

| Facility | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Hammond | SO ₂ (tpy) | 35,900 | 37,700 | 39,500 | 40,600 | 47,800 | 12,500* | 900* |
| | generation | 4.79 | 4.11 | 4.64 | 4.27 | 5.09 | 4.32 | 3.73 |
| Bowen | SO ₂ (tpy) | 164,900 | 165,900 | 186,500 | 206,400 | 196,800 | 148,100* | 54,800* |
| | generation | 21.9 | 21.9 | 23.3 | 23.7 | 24.0 | 23.4 | 22.9 |
| Branch | SO ₂ (tpy) | 64,800 | 70,100 | 90,500 | 96,000 | 98,400 | 94,000 | 60,100 |
| | generation | 8.28 | 7.97 | 10.3 | 10.8 | 10.9 | 10.7 | 6.82 |
| McDonough | SO ₂ (tpy) | 23,900 | 22,700 | 27,700 | 28,800 | 28,500 | 24,300 | 15,900 |
| | generation | 3.75 | 3.52 | 3.92 | 4.07 | 4.07 | 3.43 | 2.34 |
| Scherer | SO ₂ (tpy) | 83,900 | 79,700 | 82,900 | 74,200 | 76,500 | 77,700 | 69,500 |
| | generation | 21.3 | 24.6 | 25.5 | 24.5 | 26.5 | 25.7 | 24.3 |
| Wansley** | SO ₂ (tpy) | 94,000 | 99,000 | 101,500 | 96,200 | 93,900 | 74,300* | 7,400* |
| | generation | 13.7 | 14 | 15.1 | 14.8 | 16.1 | 15.5 | 11.8 |
| Yates | SO ₂ (tpy) | 44,900 | 50,600 | 66,500 | 75,500 | 77,200 | 68,200 | 45,500 |
| | generation | 6.73 | 6.22 | 7.37 | 7.49 | 8.10 | 7.37 | 4.90 |
| TOTAL SO₂ | Tons/yr | 512,300 | 525,700 | 595,100 | 617,700 | 619,100 | 499,100 | 254,100 |
| TOTAL Generation | 10⁶ MWh | 80.45 | 82.32 | 90.13 | 89.6 | 94.76 | 90.42 | 76.79 |
| Ambient PM_{2.5}, Floyd Co. | annual average (ug/m³) | 16.2 | 15.6 | 16.6 | 15.9 | 15.7 | 13.0 | 11.3 |

Source: EPA Clean Air Markets Division

* SO₂ control, required by Georgia Rule (sss), was operational on one or more EGUs for partial or full year

** does not include emissions from facility's gas-fired units

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

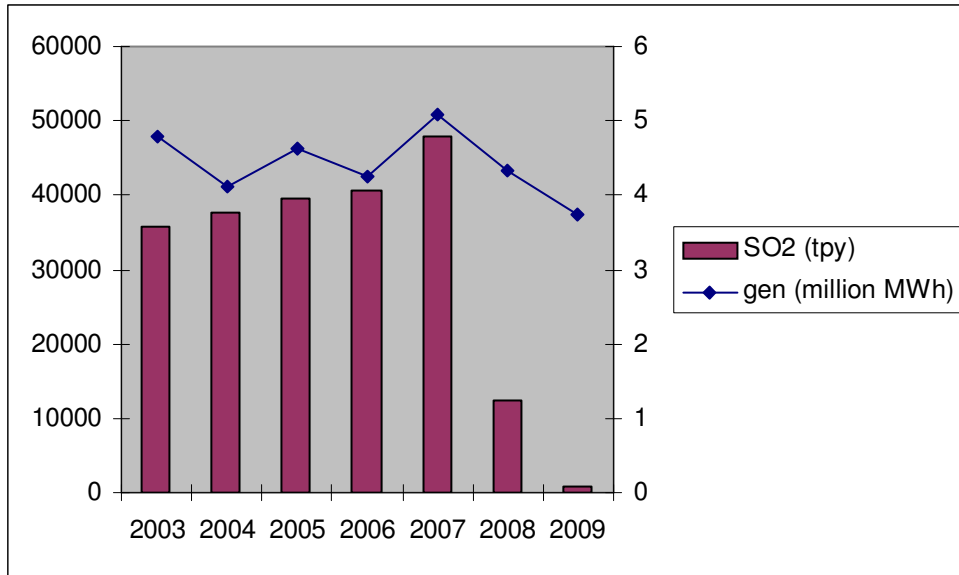


Figure 2-4. SO₂ Emissions and Generation from Plant Hammond, 2003 - 2009

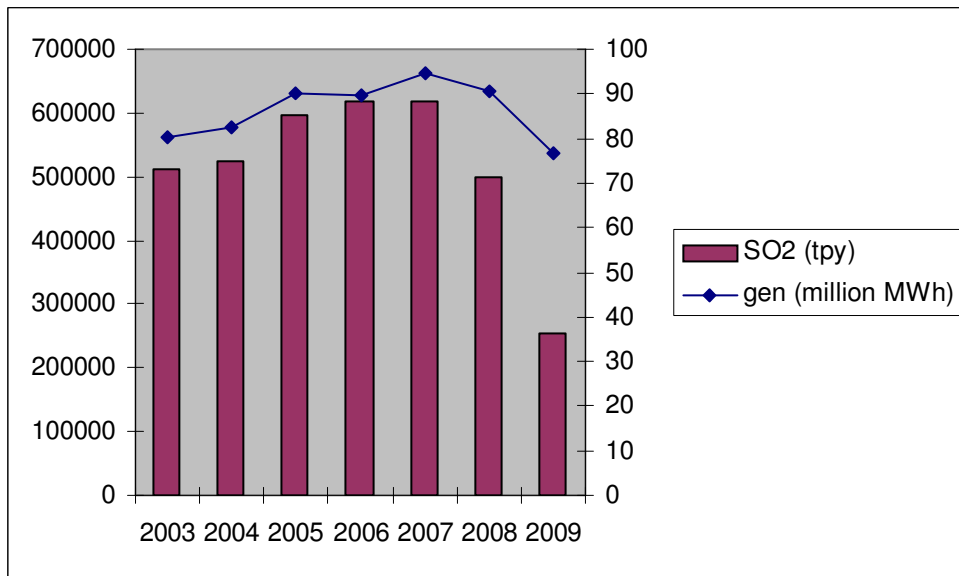


Figure 2-5. SO₂ Emissions and Generation from North Georgia Coal-fired EGU Facilities, 2003 - 2009

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

2.3.2.2 Smoke Management Plan

Forestry and agriculture, two of the Georgia's most significant industries, utilize prescribed burning practices to support production. Prescribed burning is the controlled application of fire to existing vegetative fuels to accomplish planned land management objectives or to mitigate catastrophic wildfires. In addition to managing forests and agricultural resources, prescribed burning helps protect lives and property by reducing accumulations of forest fuels and helps to sustain imperiled species and ecosystems. The Georgia General Assembly enacted the Georgia Prescribed Burning Act to authorize and promote the use of prescribed burning for community protection and for silvicultural, environmental, and wildlife purposes.

Large prescribed burns can produce significant PM_{2.5} emissions. These emissions, if not properly managed, can reach smoke-sensitive areas and have significant negative impacts on the air quality in these areas. Smoke-sensitive areas include Georgia's heavily populated areas and PM_{2.5} nonattainment areas. Without a prescribed burning program, there is a higher probability of catastrophic wildfires, which can threaten personal property and can have even higher negative impacts on air quality.

To prevent negative air quality impacts from prescribed burning, Georgia DNR and the Georgia Forestry Commission formulated and adopted Georgia's Basic Smoke Management Plan (SMP) dated April 16, 2008. The plan was developed in accordance with EPA's "The Interim Air Quality Policy on Wildland and Prescribed Fires" and the draft EPA guidance document, "Elements of a Smoke Management Program." The purpose of the SMP is to allow fire to function in its natural role in maintaining healthy wildland ecosystems while protecting public health and welfare by mitigating the impacts of air pollutants from wildland and prescribed fires on air quality and visibility. The plan is a necessary component in determining Exceptional Events related to prescribed burning and is an element of Georgia's Regional Haze SIP. The Georgia Forestry Commission (GFC), Georgia DNR's EPD, and Georgia DNR's Wildlife Resources Division (WRD) signed a Memorandum Of Understanding (MOU) to implement the SMP on April 16, 2008. The SMP and the MOU are included as Appendix B.

The SMP identifies the following components that should be considered in the planning of prescribed burns:

- smoke mitigation,
- smoke dispersion evaluation,
- public notification, and
- air quality monitoring.

Smoke mitigation, smoke dispersion evaluation, and air quality monitoring are important to mitigating the effects of prescribed burns on air quality in smoke-sensitive areas. Smoke mitigation is accomplished by avoiding smoke-sensitive areas, performing burns under favorable smoke dispersion conditions, and managing the generation and release of emissions over time. Smoke dispersion evaluations are performed by GFC-certified prescribed fire managers and are supported by the GFC's full-time fire weather meteorologist. Air quality monitoring and forecasting, performed by Georgia EPD, provides important air quality data to assist fire managers with their decisions on when to schedule prescribed burns.

Floyd County PM_{2.5} Nonattainment Area Redesignation Request and Maintenance Plan

In addition to mitigating the impacts of prescribed burns on air quality, the implementation of an SMP has benefits with regard to the computation of air quality design values. Design values are statistical measures of historical ambient pollutant concentrations that are compared to EPA's air quality standards to determine if attainment of the standard has been achieved. An atypical event, such as an unusually large forest fire, can produce PM_{2.5} emissions that will significantly increase ambient concentration measurements, and, therefore, design value computations, in a nonattainment area. EPA will allow the atypical ambient measurements to be excluded from the design value computation if the fire event is deemed to be an "exceptional event". In order for a large fire to qualify as an exceptional event, the EPA has stated that a state must demonstrate that a certified SMP was in place at the time of the event or that the state must ensure that the burner employs basic smoke management practices.

All outdoor burning is subject to enforcement through law enforcement officers of GFC, DNR and local law enforcement. The enforcement authority is the Georgia Forest Fire Protection Act, as well as EPD's authority to enforce Federal and State air quality regulations and laws. In addition, GFC has the authority to void certification of certified prescribed burners if investigation reveals that disregard for basic smoke management practices contributed to smoke intrusion into a smoke-sensitive area. This measure is State enforceable. It is not necessary for the continued maintenance of attainment in the Floyd area. However, implementation of the SMP will support the maintenance of the annual PM_{2.5} NAAQS.

2.3.3 Federal Control Measures

Federal control measures related to ambient PM_{2.5} are focused on the reduction of emissions associated with sulfates, nitrates, and direct PM. Federal measures that targeted reduction of these emissions between nonattainment designation and the clean data period are as follows:

- Clean Air Interstate Rule/Cross State Air Pollution Rule;
- Tier 2 Vehicle Standards;
- Heavy-Duty Gasoline and Diesel Highway Vehicles Standards and Ultra-Low Sulfur Diesel (ULSD) Rule;
- Large Nonroad Diesel Engines Rule and ULSD Rule;
- Non-Road Spark Ignition Engines and Recreational Engines Standard; and
- NO_x SIP Call in Surrounding States.

All of the measures were in place prior to 2007, with the exception of the large nonroad diesel rule (effective in 2008) and CAIR. Reductions associated with vehicles and engines will increase during the maintenance period as older engines are removed from service and replaced by new engines.

Table 2-6 shows the timetable of implementation of these measures as well as the species controlled by each. The continuous drop in PM_{2.5} concentration from 2005 through 2009 demonstrates that the improvement of air quality is due to the implementation of the control measures. Detailed discussions of the measures are presented in the following subsections.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 2-6. Timetable of Federal Measure Implementation

| | Species controlled | 2001 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | 2009 |
|--|---------------------------------------|------|------|------|------|------|------|------|------|------|
| PM_{2.5} ann. avg. (µg/m³) | | 16.2 | 14.6 | 16.2 | 15.6 | 16.6 | 15.9 | 15.7 | 13.0 | 11.3 |
| Clean Air Interstate Rule (CAIR) | NO _x * | | | | | | | | | |
| Tier 2 vehicle standards | NO _x | | | | | | | | | |
| Heavy Duty Engine Standard, first phase | NO _x , VOC | | | | | | | | | |
| Heavy Duty Engine Standard, second phase, and ULSD | PM, SO ₂ | | | | | | | | | |
| Large Nonroad Diesel Rule and ULSD | PM, NO _x , SO ₂ | | | | | | | | | |
| Nonroad Spark Ignition and Recreational Vehicle | NO _x , VOC, CO | | | | | | | | | |
| NO _x SIP Call in Surrounding States | NO _x | | | | | | | | | |

* also requires SO₂ controls after 2009

2.3.3.1 Clean Air Interstate Rule

On May 12, 2005, the U.S. EPA promulgated the “Rule To Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule)” referred to as CAIR. This rule established the requirement for States to adopt rules limiting the emissions of NO_x and sulfur dioxide (SO₂) and a model rule for the states to use in developing their rules. The purpose of the CAIR was to reduce interstate transport of precursors to fine particulate and ozone.

The CAIR rule applied to fossil-fuel-fired electric generation units (EGUs), including certain cogeneration units, with nameplate capacities of greater than 25 MWe. This rule set annual state caps for NO_x and SO₂ in two phases, with the Phase I caps starting in 2009 and 2010, respectively. Phase II caps for NO_x and SO₂ were to become effective in 2015.

As part of the CAIR rule, EPA determined that Georgia contributed significantly to downwind PM_{2.5} nonattainment areas and/or interfered with maintenance of the PM_{2.5} NAAQS (70 FR 25246-25250). Accordingly, a State CAIR rule [Georgia rule 391-3-1-.02(13)] was promulgated that, for the most part, mirrors the provisions of the federal rule.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

On July 11, 2008, the U.S. District Court of Appeals in the District of Columbia vacated the Clean Air Interstate Rule and remanded it to EPA. A rehearing of the Court's decision was requested and granted. On December 23, 2008, the court remanded CAIR to EPA without vacatur (i.e., the rule was still in place). EPA was directed to correct the deficiencies in CAIR that were identified in the court's decision.

To replace CAIR, EPA promulgated the final Cross-State Air Pollution Rule (76 FR 48208) on August 8, 2011. The Cross-State rule imposes restrictions on emissions of NO_x and SO₂ from states identified as having significant impacts on ozone and/or PM_{2.5} NAAQS attainment or as interfering with maintenance of these same standards in downwind states. The requirements of the Cross-state Rule were to become effective in 2012 and 2014 which is beyond the 2007-to-2009 clean data period for Floyd County. However, on December 30, 2011, the U.S. Court of Appeals for the D.C Circuit Court issued a ruling to stay CSAPR pending judicial review. Regardless of the timing of the transition from CAIR to CSAPR or the resulting court-ordered interstate transport remedy, emissions of NO_x and SO₂ have declined significantly and are expected to continue to decrease in the future due to the continuation of CAIR and Georgia's own EGU emission rules.

2.3.3.2 Tier 2 Vehicle Standards

Federal Tier 2 vehicle standards will reduce NO_x emissions from passenger vehicles. The standards 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 and was completely phased in by 2007. The Tier 2 standards will 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% to 95% cleaner than those on the road prior to implementation of Tier 2. The Tier 2 rule also reduced the sulfur content of gasoline to 30 parts per million (ppm) starting in January of 2006. Sulfur occurs naturally in gasoline but interferes with the operation of catalytic converters on vehicles resulting in higher emissions. Lower-sulfur gasoline is necessary to achieve the Tier 2 vehicle emission standards.

2.3.3.3 Heavy-Duty Gasoline and Diesel Highway Vehicles Standards & Ultra Low-Sulfur Diesel Rule

New U.S. EPA standards designed to reduce NO_x and VOC emissions from heavy-duty gasoline and diesel highway vehicles (14001 pounds or more) began to take effect in 2004. A second phase of standards and testing procedures, which began in 2007, will reduce particulate matter from heavy-duty highway engines and will also reduce highway diesel fuel sulfur content to 15 ppm to prevent damage to the emission control devices. The total program is expected to achieve a 90% reduction in particulate matter (PM) emissions and a 95% reduction in NO_x emissions for these new engines using low sulfur diesel, compared to older engines using diesel with higher sulfur content. SO₂ emissions will also be reduced due to the lower fuel sulfur content.

2.3.3.4 Large Nonroad Diesel Engines Rule & Ultra Low-Sulfur Diesel Rule

In May 2004, the U.S. EPA promulgated new rules for large nonroad diesel engines, such as those used in construction, agricultural, and industrial equipment, to be phased in between 2008 and 2014. The nonroad diesel rules also reduce the allowable sulfur in nonroad diesel fuel by over 99%. Prior

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

to 2006, nonroad diesel fuel averaged about 3,400 ppm sulfur. The rule limits nonroad diesel sulfur content to 500 ppm in 2006 and 15 ppm in 2010. The combined engine and fuel rules would reduce NO_x and PM emissions from large nonroad diesel engines by over 90%, compared to older engines using diesel with higher sulfur content. SO₂ emissions will also be reduced due to the lower fuel sulfur content.

2.3.3.5 Nonroad Large 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 nonroad engines. The new standard applies to all new engines sold in the United States and imported after these standards began and apply to large spark-ignition engines (forklifts and airport ground service equipment), recreational vehicles (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 started in 2007. Like the large spark-ignition engines, recreational vehicles contribute to ozone formation and ambient CO and PM levels. For the off-highway motorcycles and all-terrain-vehicles, model year 2006, the new exhaust emissions standard was phased-in by 50% and for model years 2007 and later at 100%. Recreational marine diesel engines over 37 kilowatts are used in yachts, cruisers, and other types of pleasure craft. Recreational marine engines contribute to ozone formation and PM levels, especially in marinas. Depending on the size of the engine, the standard began phasing in during 2006.

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

2.3.3.6 NO_x SIP Call in Surrounding States

In October 1998, the U.S. EPA made a finding of significant contribution of NO_x emissions from certain states and published a rule that set ozone season NO_x budgets for the purpose of reducing regional transport of ozone (63 FR 57356). This rule, referred to as the NO_x SIP Call, called for ozone season controls to be put on utility and industrial boilers, as well as internal combustion engines in 22 states in the Eastern United States. A NO_x emissions budget was set for each state and the states were required to develop rules that would allow the state to meet their budget. A NO_x trading program was established, allowing sources to buy credits to meet their NO_x budget as opposed to actually installing controls. The emission budgets were to be met by the beginning of 2004.

2.3.4 SO₂ Emissions Reductions in Upwind States

As noted previously, secondary sulfate concentrations in a given location can be significantly affected by SO₂ emissions from distant sources. During the period of 2003 through 2009, SO₂ emissions from coal-fired electric generation facilities upwind of Georgia have been significantly reduced.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

EPA promulgated the Cross-State Air Pollution Rule (76 FR 48208) on August 8, 2011, and projected future emissions to support the rulemaking. Modeling in support of the Cross-State Rule has established linkages between emissions from upwind states and ambient PM_{2.5} concentrations in downwind receptor states. EPA's projections indicate that 2012 emissions for the base case (which disallows reductions from existing or future CAIR controls) from ten upwind states will contribute 0.15 µg/m³ (1 % of the 1997 annual PM_{2.5} standard) or more to ambient PM_{2.5} concentrations in Georgia's 2012 projected nonattainment area (Atlanta). The ten states are Alabama, Illinois, Indiana, Kentucky, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and West Virginia. [Source: Appendix D of the Air Quality Modeling Final Rule Technical Support Document, June 2011, docket item EPA-HQ-OAR-2009-0491-4140.]

Table 2-7 shows the SO₂ emissions trends from coal-fired EGU facilities in the ten upwind states during the period 2003 through 2009. The total SO₂ emissions from the ten states dropped approximately 15 percent from 2003 to 2007 and over 50 percent from 2003 to 2009. The trend of aggregated SO₂ emissions from these states is presented in Figure 2-6.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

**Table 2-7. Annual SO₂ Emissions in States With Downwind Contributions to Georgia
PM_{2.5} Exceeding 0.15 µg/m³**

| State | 2003 | 2005 | 2007 | 2009 |
|--------------|------------------|------------------|------------------|------------------|
| AL | 458,622 | 460,072 | 447,189 | 277,972 |
| IL | 365,333 | 326,632 | 272,571 | 229,364 |
| IN | 804,829 | 870,812 | 714,529 | 413,726 |
| KY | 529,559 | 500,224 | 379,837 | 252,002 |
| NC | 462,041 | 500,936 | 370,826 | 110,948 |
| OH | 1,175,905 | 1,085,485 | 954,646 | 600,687 |
| PA | 967,185 | 985,508 | 951,186 | 573,618 |
| SC | 203,956 | 217,386 | 172,726 | 97,941 |
| TN | 339,536 | 266,081 | 237,231 | 108,042 |
| WV | 539,858 | 467,082 | 371,996 | 174,583 |
| TOTAL | 5,846,824 | 5,680,218 | 4,872,738 | 2,838,883 |

Source: EPA Clean Air Markets Division, Acid Rain Program

EPD understands that the emissions reductions in the upwind states are not permanent and enforceable reductions in Georgia. However, we believe that the reductions provide further evidence that the reduced PM_{2.5} levels in Georgia during the period 2007-2009 are due to SO₂ emissions reductions achieved both within and outside Georgia. The majority of upwind reductions are due to state rules or consent orders requiring reduced SO₂ emissions. With the promulgation of the Cross-State Air Pollution Rule, it is highly unlikely that these reductions will be reversed in the future. (It should be noted that on December 30, 2011, the U.S. Court of Appeals for the D.C Circuit Court issued a ruling to stay CSAPR pending judicial review. Regardless of the timing of the transition from CAIR to CSAPR, or the resulting court-ordered interstate transport remedy, emissions of SO₂ from upwind states have declined significantly and are expected to continue to decrease in the future.)

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

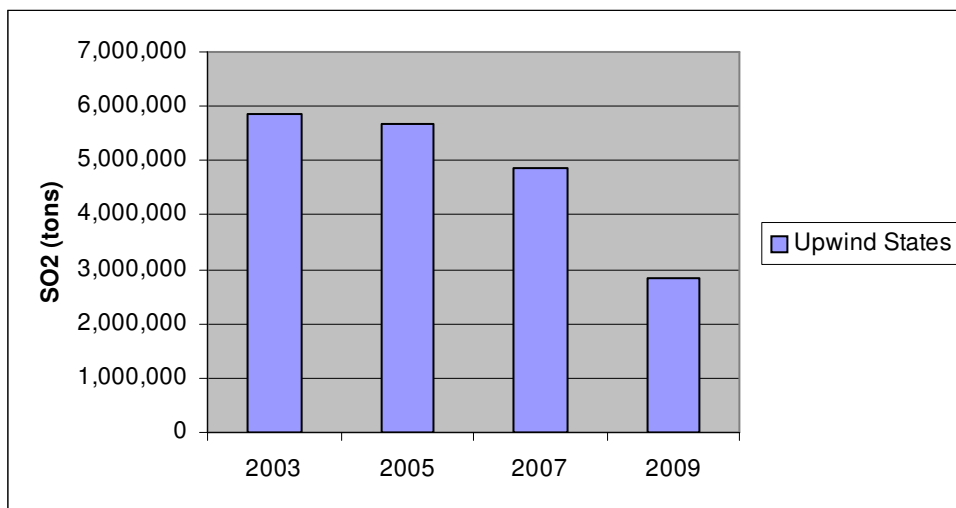


Figure 2-6. Trend of Aggregated Annual SO₂ Emissions in States With Downwind Contributions to Georgia PM_{2.5} Exceeding 0.15 µg/m³

2.4 Section 110 and Part D Requirements

Section 110 of the CAA contains the requirements for state implementation plans (SIPs). The purpose of a SIP is to provide for the implementation, maintenance, and enforcement of national primary ambient air quality standards. Part D, Subpart 1, of CAA Title I (Sections 171 to 179) contains general requirements for areas that have been designated nonattainment. As stated in Section 1.1 of this maintenance plan, Floyd County was designated as nonattainment for the 1997 annual fine PM standard in April of 2005. The county is not now and has not previously been designated nonattainment for any other NAAQS.

Georgia EPD submitted a PM_{2.5} nonattainment plan for Floyd County per Title I Part D. With the determination that the Floyd County nonattainment area has attained the 1997 annual fine PM standard (Section 2.1.3), the area is no longer subject to the nonattainment provision of CAA Section 110 and Part D requirements for demonstrating attainment, RFP, associated RACM, and contingency for areas designated as nonattainment with the NAAQS. Therefore, the nonattainment plan was subsequently withdrawn. All other Section 110 and Part D requirements pertaining to the Floyd County area have previously been approved or are currently subject to approval by EPA.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

3.0 Maintenance Plan

Section 175A of the Clean Air Act Amendments of 1990 defines the general framework of a maintenance plan. The core provisions of Section 175A are a quantitative demonstration of maintenance of the standard (PM_{2.5} in this case) and contingency provisions for prompt adoption of corrective measures if attainment is not maintained. Per guidance from EPA,³ this maintenance plan includes a method to verify continued attainment to support the maintenance demonstration. Per the same guidance, this plan also includes a plan to use the ambient monitoring network for verification of continued attainment or, if applicable, for triggering contingency provisions.

3.1 Maintenance Demonstration

Section 175A of the CAA requires a state that is requesting redesignation to submit a revision to its SIP which provides for maintenance of the applicable standard for a minimum of 10 years after the redesignation date. Section 107(d)(3)(D) provides EPA up to 18 months from receipt of a complete submittal to process a redesignation request. Therefore, Georgia EPD is providing a demonstration of maintenance through the year 2023.

There are two generally-accepted methodologies for demonstrating maintenance. Under the first method, an emissions inventory is compiled for one of the three years which are used to show clean (i.e., attaining) ambient data (see Section 2.1). This year is the baseline or attainment year. Emissions projections are formulated for the final year of the maintenance period and for intermediate years. If each of the projected emission levels is less than the emission level for the attainment year, maintenance of the standard is demonstrated. This assumes that ambient concentrations will remain below the standard if future annual emissions are kept below the inventoried emissions in the chosen attainment year. Under the second maintenance demonstration method, air quality modeling is used to project ambient pollutant concentrations and annual design values for the final year and intermediate years. If all of the modeled, rolling, 3-year averages of the annual design values are below the standard, maintenance is demonstrated.

Georgia EPD has adopted the method of comparing attainment year emissions to projected emissions for this maintenance plan. This approach has been used in the previous maintenance plans submitted by EPD and approved by EPA. The following sections discuss the attainment year inventory, the projected inventories, and verification of continued attainment.

³ “Procedures for Processing Requests to Redesignate Areas to Attainment,” September 4, 1992. John Calcagni, Director, Air Quality Management Division, OAQPS, USEPA.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

3.1.1 Attainment Year Emissions Inventory

Georgia EPD has selected 2007 as the year for the attainment year emissions inventory. 2007 is one of the three years (2007–2009) on which Floyd County’s clean data determination is based. The pollutants inventoried and addressed in this maintenance plan are direct PM_{2.5}, SO₂, and NO_x. The following emissions sectors are included in the inventory:

- Point sources (EGU and non-EGU).
- Nonpoint sources (including fire),
- Onroad mobile sources, and
- Nonroad mobile sources (including marine vessels, aircraft, and rail).

The 2007 inventory, with the exception of on-road mobile emissions, was prepared for Georgia by the contractors for the Southeastern Modeling, Analysis, and Planning (SEMAP) project. SEMAP is funded by the same ten states that participated in the Visibility Improvement – State and Tribal Association of the Southeast (VISTAS) project. Under the SEMAP project, emissions estimates are reported by county and source classification code (SCC). The SEMAP emissions inventories were developed using data from a number of sources, including state and local agencies and EPA’s National Emissions Inventory (NEI). Georgia EPD developed in-house the 2007 inventory of on-road mobile emissions.

The data sources for the attainment-year emissions inventories are summarized in Table 3-1. Additional details on the data sources and inventory methods are presented in the following subsections and in Appendix C.

Table 3-1. 2007 Emissions Inventory Sources

| Emissions Source Sector | Inventory Source | Version / Year Generated | Basis |
|--------------------------------|----------------------------|---------------------------------|---|
| Point – EGU | SEMAP Georgia Power Co. | Version 1.8, 2011 | EPA’s NEI |
| Point – non-EGU | SEMAP | Version 1.8, 2011 | EPA’s NEI |
| Nonpoint | SEMAP | Version 1.1, 2010 | EPA’s NEI |
| Onroad Mobile | GDOT | 2011 | Georgia DOT [travel demand model and Highway Performance Monitoring System (HPMS)] and MOVES2010a |
| Nonroad Mobile | SEMAP | Final Report, 2010 | NMIM2008, 2007 NMIM County Database, 2008 NEI, ERTAC |

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

3.1.1.1 Point Sources

Point sources captured in the inventory include stationary sources whose actual emissions equal or exceed 100 tons per year of SO₂, NO_x, or particulate matter. Emissions from point sources have been calculated for EGU and non-EGU sources.

Plant Hammond, which includes four EGUs, is the lone electric generation facility inside the nonattainment area. The non-EGU point sources in Floyd County are as follows:

- Temple–Inland Rome Lumber Mill,
- Temple–Inland Rome Linerboard Mill,
- Metal Container Corporation,
- Packaging Products Corporation, and
- General Shale Brick Plant 40.

2007 emissions of SO₂, NO_x, and PM_{2.5} from EGU and non-EGU facilities are presented in Table 3-2. The Temple–Inland Rome Linerboard Mill is by far the largest source of emissions from non-EGU point sources. Emissions from the individual non-EGU point sources are shown in Table 3-3.

Table 3-2. Point Source Emissions for 2007 (tons, annual)

| Pollutant | EGU (Plant Hammond) | Non-EGU | Total Point |
|-------------------|----------------------------|----------------|--------------------|
| SO ₂ | 47,809 | 3,466.6 | 51,275 |
| NO _x | 7,558 | 2,607.0 | 10,165 |
| PM _{2.5} | 572 | 380.6 | 953 |

Table 3-3. Non-EGU Point Source Emissions for 2007 (tons, annual)

| Pollutant | T-I Rome Lumber | T-I Rome Linerboard | Metal Container | Packaging Products | Gen. Shale Br. Plt. 40 |
|-------------------|------------------------|----------------------------|------------------------|---------------------------|-------------------------------|
| SO ₂ | 0.0 | 3337.5 | 0.1 | 0.0 | 129.0 |
| NO _x | 0.0 | 2591.2 | 13.4 | 2.5 | 0.0 |
| PM _{2.5} | 0.0 | 379.1 | 1.3 | 0.2 | 0.0 |

The 2007 point source inventory is based on the National Emissions Inventory (NEI) reports for reporting years 2005, 2007, and 2008. Emissions from sources that reported for 2007 were generally

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

used as reported. For facilities with 2005 and 2008 emissions (but no 2007 emissions), 2007 emissions were estimated based on a linear interpolation between facility level 2005 and 2008 emissions on a pollutant-by-pollutant basis to calculate facility-level 2007 emissions. For facilities with only 2008 data (no 2007 or 2005 data available), the SIC growth factors from the VISTAS Best & Final inventory were used to backcast 2008 reported emissions to 2007. For facilities with only 2005 data (no 2007 or 2008 data available), the SIC growth factors from the VISTAS Best & Final inventory were used to project 2005 reported emissions to 2007. After the above backcasting and projecting was performed, additional adjustments were made for facilities where only 2005 data were available and the facility did not operate in 2007 or operated for only part of 2007. In addition, PM augmentation was performed to generate missing emissions estimates for filterable and primary PM_{2.5}, filterable and primary PM₁₀, and condensable PM. See Appendices C and C-1 for more details on the development of the 2007 point source emissions inventory.

3.1.1.2 Nonpoint Sources

Nonpoint sources captured in the inventory include stationary sources whose emissions levels of SO₂, NO_x, and particulate matter are each less than 100 tons per year. Emissions from nonpoint sources in 2007 were obtained from the SEMAP nonpoint source inventory Version 1.1, which was developed by Pechan. A default 2007 nonpoint source inventory was created that includes all of the source categories covered by the 2008 nonpoint source NEI.

For all source categories except industrial and commercial/institutional (ICI) fuel combustion, emissions data from the 2008 nonpoint source NEI were directly incorporated when the NEI emissions were based on 2007 emissions activity data. The NEI emissions estimates were recalculated to reflect 2007 activity levels when the NEI emissions reflected 2006 or 2008 activity levels. Emissions associated with activity reflected in the point source inventory were removed from the nonpoint inventory.

For ICI fuel combustion, the 2008 nonpoint source NEI developed emissions activity estimates rather than emission estimates. Because of the potential importance of these source categories and the availability of methodological improvements, Pechan utilized an emissions estimation method for ICI fuel combustion that incorporates a few refinements to the NEI method. These emissions were supplemented with carry-forward categories from Georgia's 2005 CERR submission grown using EPA's Economic Growth Analysis System (EGAS). For more information regarding the SEMAP nonpoint inventory, please refer to Appendices C and C-2.

The 2007 nonpoint source emissions for Floyd County are presented in Table 3-4. The largest contributors to SO₂ emissions were coal-fired and residual-oil-fired industrial boilers. The largest contributors to NO_x emissions were industrial wood-fired and coal-fired boilers. The largest contributors to PM_{2.5} emissions were industrial wood-fired boilers and road dust from unpaved roads.

Emissions from fires in 2007 were obtained from the SEMAP final "actual" fire emissions inventory and are shown in Table 3-4. This inventory was developed using 2007 burned area data submitted by Georgia, as well as updated fuel consumption and emissions factors.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 3-4. Nonpoint Source Emissions for 2007 (tons, annual)

| Pollutant | Nonpoint (excluding fire) | Fire | Total Nonpoint |
|-------------------|--------------------------------------|-------------|---------------------------|
| SO ₂ | 743 | 16 | 758 |
| NO _x | 877 | 59 | 936 |
| PM _{2.5} | 1645 | 210 | 1855 |

The 2007 level of PM_{2.5} emissions from nonpoint sources, excluding fire, was 1645 tons. This quantity accounted for over 50 percent of total PM_{2.5} emissions in Floyd County. The top three nonpoint source classifications for PM_{2.5} emissions were industrial wood-fired boilers, dust from unpaved roads, and residential open burning of household waste (see Table 3-5).

Table 3-5. Largest Nonpoint PM_{2.5} Emissions by Source Classification

| SCC | Description | 2007 PM_{2.5} (tons) |
|------------|--|---|
| 2102008000 | Stationary Fuel Comb /Industrial /Wood /Total: All Boiler Types | 797 |
| 2296000000 | Unpaved Roads /All Unpaved Roads /Total: Fugitives | 438 |
| 2610030000 | Open Burning /Residential /Household Waste | 103 |

3.1.1.3 Onroad Mobile Sources

U.S. EPA's MOVES2010a mobile source emissions model was run in inventory mode to generate 2007 on-road mobile source emissions of SO₂, NO_x, and PM_{2.5}. The 2007 onroad mobile source emissions for Floyd County are presented in Table 3-6.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

Table 3-6. Onroad Mobile Source Emissions for 2007 (tons, annual)

| Pollutant | Onroad Emissions |
|-------------------|-------------------------|
| SO ₂ | 14 |
| NO _x | 3378 |
| PM _{2.5} | 117 |

The following non-default inputs to the MOVES model were used:

- registration distribution by age,
- vehicle population,
- vehicle miles traveled (VMT), and
- hourly temperature and relative humidity.

The age distribution and vehicle population inputs were based on 2002 vehicle counts by MOBILE6 vehicle type obtained from R.L. Polk & Company. The vehicle population was grown to 2007 using a combination of Georgia Department of Revenue registration data (for buses and motorcycles) and the change in person population estimates from the U.S. Census (for the other MOBILE6 vehicle types). VMT fractions were based on MOVES defaults by source type and adjusted using GDOT count data.

Actual 2007 temperature and humidity data extracted from the "NCD20090531" version of the county database in EPA's National Mobile Inventory Model were used as meteorological inputs to MOVES2010a for 2007. For a detailed discussion on how the on-road mobile emission inventory was developed, see Appendices C, C-3, and C-4.

3.1.1.4 Nonroad Mobile Sources

The nonroad sector is comprised of nonroad engines included in EPA's NONROAD model, such as recreational marine and land-based vehicles, farm, construction and industrial machinery, and lawn and garden equipment. This sector also includes engines not modeled in NONROAD, specifically aircraft, commercial marine vessels, and locomotives. There are no commercial marine vessel emissions sources in Floyd County. 2007 nonroad mobile emissions are presented in Table 3-7.

Emissions from NONROAD model source categories in 2007 were obtained from the SEMAP final nonroad mobile sources emissions inventory. These emissions were calculated using EPA's latest National Mobile Inventory Model, NMIM2008, which incorporates EPA's latest NONROAD model (NONROAD2008) and reflects all of EPA's final nonroad standards to date. The county/monthly gasoline profile assignments in the County/Year/Month table and the gasoline fuel profiles in the Gasoline table of the 2007 NMIM county-level database (NCD) were updated with data provided by the state of Georgia. For more information regarding the SEMAP nonroad inventory, please refer to Appendices C and C-2. 2007 Emissions from aircraft and locomotives were obtained from the

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

SEMAP final nonroad mobile source emissions inventory. For more information regarding the SEMAP marine, aircraft, and locomotives inventory, please refer to Appendices C and C-5.

Table 3-7. Nonroad Mobile Source Emissions for 2007 (tons, annual)

| Pollutant (tons) | Nonroad - except air and rail | Aircraft | Locomotive | Total Nonroad |
|-------------------------|--------------------------------------|-----------------|-------------------|----------------------|
| SO ₂ | 22.5 | 0.1 | 6.4 | 29 |
| NO _x | 419.7 | 0.8 | 575.0 | 996 |
| PM _{2.5} | 43.8 | 2.1 | 19.9 | 66 |

3.1.1.5 Summary of 2007 Emissions Inventory

The total 2007 Floyd County emissions of SO₂, NO_x, and PM_{2.5} are presented for each source sector in Table 3-8. The majority of SO₂ emissions, by far, are from point sources. The majority of NO_x emissions is from point and onroad mobile sources. The majority of PM_{2.5} emissions are from nonpoint and point sources.

Table 3-8. Attainment-year (2007) Emissions Inventory (tons, annual)

| Pollutant (tons) | Point Total | Point EGU | Point Non-EGU | Nonpoint | Onroad Mobile | Nonroad Mobile | Total |
|-------------------------|--------------------|------------------|----------------------|-----------------|----------------------|-----------------------|--------------|
| SO ₂ | 51,275 | 47,809 | 3,467 | 758 | 14 | 29 | 52,077 |
| NO _x | 10,165 | 7,558 | 2,607 | 936 | 3,378 | 996 | 15,475 |
| PM _{2.5} | 953 | 572 | 381 | 1,855 | 117 | 66 | 2991 |

3.1.2 Projected Emissions Inventories

As discussed previously, Georgia EPD is providing a demonstration of maintenance through the year 2023 (the maintenance year). Emissions projections to support maintenance through 2023 have been prepared for the years 2017 and 2023. In addition, emissions have been calculated by interpolation for the years 2014 and 2020. Emissions for these additional years provide additional reference points for periodic assessment of maintenance of the standard. Maintenance period emissions controls, projection methods, and projected inventories are discussed in the remainder of this subsection.

3.1.2.1 Methods and Projected Inventories

Projected emissions inventories are calculated by applying applicable control and growth factors to the 2007 emissions of individual sources or source categories. The control and growth factors may

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

apply for some or all of the years 2008 (year following attainment inventory) through 2023 (out year). The bases used to determine these factors are summarized in Table 3-9.

Table 3-9. Bases of Control and Growth Factors for 2017 and 2023 Inventories

| Source Category | Control Basis | Growth Factor Basis |
|---|---|--|
| Point – EGU | Implementation of GA rule (sss) for SO ₂ and NO _x controls; VISTAS 2012 projection inventory | Coal consumption forecasts in 2010 Annual Energy Outlook (AEO) |
| Point – non-EGU | Regulatory review - no additional controls defined at this time | EGAS growth factors by SCC and county for 2017 and 2023. |
| Nonpoint | Regulatory review - no additional controls defined at this time | EGAS growth factors by SCC for 2017 and 2023. |
| Nonpoint – fire | No additional controls anticipated | No growth anticipated |
| Onroad Mobile | MOVES inventory mode (PM _{2.5} , NO _x , SO ₂) for 2023. All known Federal controls. | MOVES inventory mode (PM _{2.5} , NO _x , SO ₂) for 2023. Vehicle population growth from human population projections. Vehicle miles traveled (VMT) growth from Georgia DOT. |
| Nonroad Mobile | NMIM 2008 | NMIM 2008 |
| Nonroad Mobile – marine, aircraft, and rail | SEMAP (Pechan) control factors by SCC for 2017 and 2023 | SEMAP (Pechan) growth factors by SCC for 2017 and 2023 |

The pollutants whose emissions are projected are SO₂, NO_x, and direct PM_{2.5}. As with the attainment inventory, emissions from the following sectors are projected:

- Point sources (EGU and non-EGU).
- Nonpoint sources (including fire).
- Onroad mobile sources.
- Nonroad mobile sources (including marine vessels, aircraft, and rail).

The projected inventories are presented in the following subsections. The methods used to develop the emissions projections are presented in more detail in Appendix C.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

3.1.2.2 Point Sources

EGU point source emissions in 2017 and 2023 were estimated using growth factors and control factors. Growth factors were calculated based on coal consumption for the southeastern region in the Energy Information Administration's AEO2010 report. The SO₂ control factor due to Flue Gas Desulfurization (FGD) was assumed to be 95% according to the VISTAS 2012 Projection Emissions Inventory (see Appendices C and C-6). Georgia's Rule (sss) requires SO₂ controls on all four of Plant Hammond's EGUs on December 31, 2008. The SO₂ controls on the four EGUs at Plant Hammond will be operating at all times going forward from 2009, whereas the controls were operated for only 55 percent of the 3-year attainment period (36 months from 2007 through 2009). In addition, Georgia Rule (uuu) requires 95% reduction of SO₂ for all four of Plant Hammond's EGUs beginning January 1, 2012. The NO_x control factor due to Selective Catalytic Reduction (SCR) was assumed to be 82.5% according to the VISTAS 2012 Projection Emissions Inventory. Georgia's Rule (sss) requires NO_x control, with a year-round operation date of December 31, 2008, on only one (Unit 4) of Hammond's four units. The PM_{2.5} control factor associated (as a co-benefit) with the new SO₂ controls was assumed to be 50% based on Table 5.4-1 on page 5.4-24 of EPA's document "Stationary Source Control Techniques Document for Fine Particulate Matter" (EC/R Incorporated, 1998).

As noted in subsection 2.3.3, EPA promulgated CSAPR in 2011 but the rule was stayed later in the year. When the rule was promulgated, Georgia was identified as a covered state and, therefore, would have been required to comply with statewide allocations of SO₂ and/or NO_x emissions from covered EGUs starting in 2012. The future of the rule is not known at this time and, therefore, the rule's requirements have not been incorporated into the emissions projections presented here. Any further reductions that may ultimately be required by the Cross-State Rule will only strengthen the case for maintenance of the NAAQS as documented in this plan.

Projected EGU point source emissions are presented in Table 3-10. The projections show a dramatic reduction in SO₂ emissions as well as significant reductions in NO_x and PM_{2.5} emissions. Emissions levels for 2014 were calculated by linear interpolation between 2007 and 2017. Emissions levels for 2020 were calculated by linear interpolation between 2017 and 2023.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 3-10. Projected Point Source Emissions (tons)

| Pollutant | 2007 (attainment) | 2014 | 2017 | 2020 | 2023 |
|--------------------|------------------------------|-------------|-------------|-------------|-------------|
| EGU | | | | | |
| SO ₂ | 47,809 | 16,038 | 2,422 | 2,466 | 2,509 |
| NO _x | 7,558 | 5,526 | 4,655 | 4,738 | 4,821 |
| PM _{2.5} | 572 | 375 | 290 | 295 | 300 |
| Non-EGU | | | | | |
| SO ₂ | 3,467 | 3,627 | 3,696 | 3,777 | 3,857 |
| NO _x | 2,607 | 2,741 | 2,798 | 2,922 | 3,045 |
| PM _{2.5} | 381 | 399 | 407 | 427 | 446 |
| Total Point | | | | | |
| SO ₂ | 51,275 | 19,666 | 6,119 | 6,242 | 6,366 |
| NO _x | 10,165 | 8,267 | 7,453 | 7,660 | 7,866 |
| PM _{2.5} | 953 | 774 | 697 | 722 | 747 |

Projected non-EGU point source emissions are shown in Table 3-10 (county totals) and in Table 3-11 (by facility, 2023 only). The emissions for 2017 and 2023 were estimated using SCC-specific and county-specific growth factors generated with EPA’s Economic Growth Analysis System version 5.0 (EGAS 5.0). Appendix C-7 contains the SCC-specific growth factors for Floyd County. The projections show moderate increases in emissions of all three pollutants. No additional future controls can be defined for non-EGU point sources at this time. Emissions levels for 2014 and 2020 were calculated by interpolation as described above.

Table 3-11. Non-EGU Point Source Emissions for 2023 (tons, annual)

| Pollutant | T-I Rome Lumber | T-I Rome Linerboard | Metal Container | Packaging Products | Gen. Shale Brick Plt. 40 |
|-------------------|----------------------------|--------------------------------|----------------------------|-------------------------------|-------------------------------------|
| SO ₂ | 0.0 | 3675.3 | 0.1 | 0.0 | 181.9 |
| NO _x | 0.0 | 3025.8 | 16.2 | 3.0 | 0.0 |
| PM _{2.5} | 0.0 | 444.4 | 1.8 | 0.2 | 0.0 |

Projected total point source emissions (sum of EGU and non-EGU) are shown in Table 3-10. The projections show dramatic decreases in emissions of SO₂ as well as moderate decreases in emissions of NO_x and PM_{2.5}.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

3.1.2.3 *Nonpoint Sources*

Nonpoint source emissions, excluding fire, in future years 2017 and 2023 were estimated using SCC- and county-specific growth factors generated with EGAS 5.0. Appendix C-7 contains the SCC-specific growth factors for Floyd County. No additional future controls can be defined for these sources at this time.

Projections of nonpoint source emissions are presented in Table 3-12. Emissions from fire in future years 2017 and 2023 were assumed to be the same as 2007 emissions. The projections show a small increase in emissions of SO₂ as well as moderate increases in emissions of NO_x and PM_{2.5}.

Table 3-12. Projected Nonpoint Source Emissions (tons)

| Pollutant | 2007 (attainment) | 2014 | 2017 | 2020 | 2023 |
|---|------------------------------|-------------|-------------|-------------|-------------|
| <i>Nonpoint (excluding fire)</i> | | | | | |
| SO ₂ | 743 | 768 | 779 | 791 | 803 |
| NO _x | 877 | 967 | 1,006 | 1,045 | 1,084 |
| PM _{2.5} | 1,645 | 1,862 | 1,954 | 2,039 | 2,123 |
| <i>Fire</i> | | | | | |
| SO ₂ | 16 | 16 | 16 | 16 | 16 |
| NO _x | 59 | 59 | 59 | 59 | 59 |
| PM _{2.5} | 210 | 210 | 210 | 210 | 210 |
| <i>Total Nonpoint</i> | | | | | |
| SO ₂ | 758 | 784 | 794 | 807 | 819 |
| NO _x | 936 | 1,026 | 1,066 | 1,104 | 1,144 |
| PM _{2.5} | 1,855 | 2,072 | 2,164 | 2,249 | 2,333 |

The top three nonpoint source classifications for 2023 PM_{2.5} emissions are industrial wood-fired boilers, dust from unpaved roads, and residential open burning of household waste (see Table 3-13). Projected PM_{2.5} emissions from these three source classifications make up over 70 percent of total projected PM_{2.5} emissions.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

Table 3-13. Largest Nonpoint PM_{2.5} Emissions by Source Classification, Year 2023

| SCC | Description | 2023 PM _{2.5} (tons) |
|------------|--|----------------------------------|
| 2102008000 | Stationary Fuel Comb /Industrial /Wood /Total: All Boiler Types | 1044 |
| 2296000000 | Unpaved Roads /All Unpaved Roads /Total: Fugitives | 567 |
| 2610030000 | Open Burning /Residential /Household Waste | 133 |

3.1.2.4 Onroad Mobile Sources

EPD ran U.S. EPA’s MOVES2010a mobile source emissions model in inventory mode to generate 2023 onroad mobile source emissions of SO₂, NO_x, and PM_{2.5}. Intermediate-year emissions were generated by interpolating between 2007 and 2023. The following non-default inputs to the model were used:

- Vehicle age distribution,
- average speed distribution,
- vehicle population.
- vehicle miles traveled (VMT),
- road type distribution,
- ramp fraction, and
- hourly temperature and relative humidity.

The vehicle age distribution was based on R.L. Polk & Co. registration data. MOVES defaults were used for Heavy-Duty Diesel Vehicle Class 8B. Person population growth projections for the Floyd County Metropolitan Planning Organization (MPO) area were used to calculate the 2023 vehicle population. The 2023 annual VMT were calculated by Georgia DOT using travel demand model outputs and HPMS counts, as well as speed distribution, road type distribution, and ramp fraction. Temperature and humidity inputs were assumed to be the same as year 2007.

The projected onroad mobile source emissions levels are presented in Table 3-14. Onroad emissions of all three pollutants trend downward significantly during the maintenance period. The trend in SO₂ is of less importance since onroad mobile sources emit very little SO₂. For a detailed discussion on how the onroad mobile emission inventory was developed, see Appendices C, C-3, and C-4.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

Table 3-14. Projected Onroad Mobile Source Emissions (tons)

| Pollutant (tons) | 2007 (attainment) | 2014 | 2017 | 2020 | 2023 |
|-----------------------------|------------------------------|-------------|-------------|-------------|-------------|
| SO ₂ | 14.1 | 11.6 | 10.5 | 9.4 | 8.3 |
| NO _x | 3378.3 | 2270.9 | 1796.2 | 1321.6 | 847.0 |
| PM _{2.5} | 117.3 | 79.9 | 63.9 | 47.8 | 31.8 |

3.1.2.5 Nonroad Mobile Sources

Projections of nonroad emissions in 2017 and 2023, excluding air and rail sources, were calculated using NMIM2008 with the same meteorological inputs as for 2007. Defaults in NMIM 2008 were used for other inputs.

Growth factors for all aircraft engine and airport-related SCCs were based on landing and take-off operation (LTO) projections available from the Federal Aviation Administration’s Terminal Area Forecasts (FAA, 2010). Growth rates for military aircraft were held constant at 2007 levels. No control factors were applied to aircraft emissions.

Growth factors for freight rail sector emissions were based on fuel consumption forecasts. For passenger and commuter rail, growth factors were developed from national forecasts of intercity rail diesel consumption and commuter rail diesel consumption. Control factors were based on U.S. EPA’s locomotive engine regulatory impact analysis and associated emission factor guidance.

The nonroad mobile source emissions projections are presented in Table 3-15. Total emissions of all three pollutants trend downward significantly during the maintenance period. As with onroad sources, the downward trend in SO₂ is of less importance since nonroad sources emit very little SO₂. For a detailed discussion on how the nonroad mobile emissions projections were developed, see Appendix C.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 3-15. Projected Nonroad Mobile Source Emissions (tons)

| Pollutant (tons) | 2007 (attainment) | 2014* | 2017 | 2020* | 2023 |
|-----------------------------|------------------------------|--------------|-------------|--------------|-------------|
| <i>Nonroad**</i> | | | | | |
| SO ₂ | 22.5 | | 0.6 | | 0.7 |
| NO _x | 419.7 | | 223.0 | | 170.5 |
| PM _{2.5} | 43.8 | | 28.6 | | 22.0 |
| <i>Aircraft</i> | | | | | |
| SO ₂ | 0.1 | | 0.1 | | 0.1 |
| NO _x | 0.8 | | 0.8 | | 0.8 |
| PM _{2.5} | 2.1 | | 1.9 | | 1.9 |
| <i>Locomotive</i> | | | | | |
| SO ₂ | 6.4 | | 0.3 | | 0.3 |
| NO _x | 575.0 | | 389.1 | | 307.9 |
| PM _{2.5} | 19.9 | | 9.7 | | 6.9 |
| <i>Tot. Nonroad</i> | | | | | |
| SO ₂ | 29 | 9 | 1 | 1 | 1 |
| NO _x | 996 | 728 | 613 | 546 | 479 |
| PM _{2.5} | 66 | 48 | 40 | 36 | 31 |

* interpolation to 2014 and 2020 performed only for total nonroad emissions

** excluding aircraft and locomotive emissions

3.1.3 Emissions Projections Summary and Demonstration of Maintenance of Attainment

The consolidated emissions projections for all Floyd County sources are presented in Table 3-16. Emissions of SO₂ and NO_x drop significantly from 2007 to 2023. This is a reflection of the implementation of the majority of state and federal controls during the first half of the maintenance period. Overall, emissions of SO₂ and NO_x are projected to decline by 86 percent and 33 percent, respectively, over the course of the maintenance period.

Emissions of PM_{2.5} are flat from 2007 to 2017 and rise slightly from 2017 through 2023. This is a reflection of an increase in nonpoint source emissions (primarily industrial wood boilers and road dust) which is partially offset by reductions in the point and mobile sectors. The overall rise in PM_{2.5} is 5.0 percent of attainment year emissions. Therefore, further evaluation is needed to judge whether the increase in PM_{2.5} emissions, in combination with the decreases in SO₂ and NO_x emissions, is likely to provide for maintenance of the standard.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 3-16. Projected Emissions – Total of All Sectors (tons)

| Pollutant (tons) | 2007 (attainment) | 2014 | 2017 | 2020 | 2023 | % change, 2007 - 2023 |
|-----------------------------|------------------------------|-------------|-------------|-------------|-------------|----------------------------------|
| SO ₂ | 52,077 | 20,471 | 6,925 | 7,060 | 7,194 | - 86.2 |
| NO _x | 15,475 | 12,292 | 10,928 | 10,632 | 10,336 | - 33.2 |
| PM _{2.5} | 2,991 | 2,973 | 2,965 | 3,054 | 3,142 | + 5.0 |

Each of the three pollutants is characterized by a different relationship between emissions and air quality. Therefore, simply summing the emissions of the pollutants does not provide a meaningful indicator of the combined air quality impact of these emission changes. A more appropriate indicator is the percentage change in emissions for each emitted pollutant, weighted according to the air quality impact for each.

For this purpose, Georgia EPD examined PM_{2.5} speciation data available from the EPA Air Explorer Web site for 2007-2009 for the Floyd County monitor (see Table 3-17). The 3-year average of this data suggests that ambient PM_{2.5} in Floyd County consists of approximately 45.2 percent sulfate, 1.9 percent nitrate, 45.3 percent organic particulate (which consists of directly-emitted primary organic matter and atmospherically formed secondary organic aerosol), 4.0 percent miscellaneous inorganic particulate (sometimes labeled “crustal particles”), and 3.6 percent other types of particulate matter. Therefore, using a conservative assumption that all of the organic particulate is primary organic matter, direct PM_{2.5} species make up 49.3 percent (sum of 45.3 and 4.0) of the total ambient PM_{2.5}.

Table 3-17. PM_{2.5} Speciation Data

| Site and Year | sulfate (µg/m³) | nitrate (µg/m³) | organic particulate (µg/m³) | crustal (µg/m³) | other (µg/m³) | Total (µg/m³) |
|-------------------------|---------------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|-------------------------------------|
| Rome-Coosa HS 2007 | 8.17 | 0.33 | 7.55 | 0.57 | 0.49 | 17.10 |
| Rome-Coosa HS 2008 | 6.45 | 0.22 | 5.85 | 0.45 | 0.50 | 13.46 |
| Rome-Coosa ES 2009 | 3.96 | 0.22 | 5.21 | 0.65 | 0.50 | 10.54 |
| Average | 6.2 | 0.3 | 6.2 | 0.6 | 0.5 | 13.7 |
| Percent of Total | 45.2 | 1.9 | 45.3 | 4.0 | 3.6 | 100.0 |

Georgia EPD used a conservative approach that assumes that the full ambient concentration of organic particulate matter plus miscellaneous inorganic particulate matter will vary in accordance with changes in total nonattainment area emissions of direct PM_{2.5}. This analysis thus assumes that the direct PM_{2.5} component of ambient PM_{2.5} will increase by the 5.0 percent projected increase in direct PM_{2.5} emissions. This approach was used by U.S. EPA in its evaluation and approval of the annual PM_{2.5} redesignation request for the Evansville, Indiana, nonattainment area (see 76 FR 29695 and 76 FR 59527).

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

In the Floyd County analysis, the baseline concentration is conservatively assumed to be 15.0 µg/m³. Direct PM_{2.5} is estimated to contribute 49.3 percent, or 7.4 µg/m³, of the 15.0 µg/m³. Georgia EPD's assessment assumes that the projected increase in direct PM_{2.5} emissions will cause a corresponding 5.0 percent increase in ambient concentrations of PM_{2.5}, which would suggest an increase in the ambient concentration of the direct PM_{2.5} component by 0.37 µg/m³.

However, Georgia EPD believes that this potential increase will be fully offset by a greater decrease in sulfate and nitrate concentrations. The precise decrease in sulfate and nitrate concentrations is a complicated result of emissions reductions not just in Floyd County, but also in many other parts of the Eastern United States. Nevertheless, modeling conducted by EPA for the Cross State Air Pollution Rule (CSAPR) estimated that future Floyd County concentrations with the final CSAPR in place would be 3.0 µg/m³ below the standard (2014 Remedy Average case*). In addition, the emissions reductions that have already occurred have brought measured Floyd County concentrations to 13.3 µg/m³ (as shown in Table 2-2). Therefore, the 0.37 µg/m³ increase in the components associated with direct PM_{2.5} would not be expected to yield concentrations above the standard. That is, GA EPD believes that maintenance of the annual PM_{2.5} standard is demonstrated despite the small projected increase in direct PM_{2.5} emissions.

* Air Quality Modeling Final Transport Rule Technical Support Document, docket item EPA-HQ-OAR-2009-0491-4140

3.1.4 Emissions Decreases

An emissions surplus represents the degree of improvement (reduction) in 2023 emissions compared to the attainment year (2007) emissions. The surpluses are shown in Table 3-18 for each pollutant. A positive surplus reflects an emissions decrease from the attainment year to 2023. The negative surplus for PM_{2.5} reflects a projected increase in emissions. A portions of the NO_x surplus will be allotted to the Motor Vehicle Emissions Budget as a safely margin (see Section 4).

Table 3-18. Emissions Decrease

| Pollutant | Surplus Emissions* 2007 to 2023 (tons) |
|----------------------|---|
| | |
| SO ₂ | 44,883 |
| NO _x ** | 5,139 |
| PM _{2.5} ** | -152 |

* Surplus = (2007 emissions level) – (2023 emissions level)

** These quantities do not reflect allotment to Motor Vehicle Emissions Budget

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

3.1.5 Verification of Continued Attainment

Items 5.c and 5.d of the September 4, 1992, EPA guidance memo outline requirements for verification of continued attainment. Verification of continued attainment is accomplished through operation of the ambient PM_{2.5} monitoring network and through periodic updates of the area's emissions inventory.

The location and operation of EPD's FRM monitor in Floyd County are described in Section 2.1 of this plan. During the maintenance period, EPD will continue to operate a federal reference monitor in Floyd County per the requirements of 40 CFR Part 58. The Consolidated Emissions Reporting Rule (CERR) was promulgated by EPA on June 10, 2002. The CERR was replaced by the Annual Emissions Reporting Requirements (AERR) rule on December 17, 2008. The most recent triennial inventory for Georgia was compiled for 2008. The larger point sources of air pollution will continue to submit data on their emissions on an annual basis as required by the AERR. Emissions from the rest of the point sources, the nonpoint source portion and the onroad and nonroad mobile sources continue to be quantified on a 3-year cycle. The inventory will be updated and maintained on a 3-year cycle. As required by the AERR, the next overall emissions inventory will be compiled for 2011.

3.2 Contingency Provisions

Section 175A(d) of the Clean Air Act requires that the maintenance plan include provisions for contingency measures that would promptly be implemented to correct a violation of the standard, should this occur, after redesignation of an area as an attainment area. The measures may include rules or other measures that are not yet effective, but EPD agrees to adopt and implement, as expeditiously as practicable, when required by this plan. The minimum requirement for contingency provisions is the implementation of all measures that were contained in the SIP for the area (i.e., the nonattainment plan) before the redesignation. In addition, EPA guidance (John Calcagni memo dated September 4, 1992) specifies the following pertaining to contingency provisions in the maintenance plan:

- identification of additional measures that would be considered for implementation should a violation occur;
- identification of triggers for the implementation of additional contingency measures; and
- a schedule and procedure for adoption and implementation of additional measures (with time limit).

3.2.1 Contingency Measure Triggers

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 annual PM_{2.5} 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 Floyd County PM_{2.5} maintenance area. Contingency measures are intended to provide further emission reductions in the event that violations of the 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

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

violations of the standard occur within the maintenance area after redesignation to attainment. Contingency measures as described below would be adopted and implemented within 24 months of a contingency trigger unless EPD has demonstrated that technical or economic feasibility warranted a period longer than 24 months.

EPD will use actual ambient monitoring and emissions inventory data as the indicators to determine whether contingency measures would be implemented. In accordance with 40 CFR Part 58, ambient monitoring data that indicates a violation of the annual PM_{2.5} 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 NAAQS be violated, or if emissions in the Floyd County maintenance area increase significantly above current levels.

Tier I. A Tier 1 trigger is activated when any one of the following conditions occurs:

- the previous calendar year's annual average PM_{2.5} concentration exceeds the standard by 1.5 ug/m³ or more;
- the annual average PM_{2.5} concentration in each of the previous two consecutive calendar years exceeds the standard by 0.5 ug/m³ or more;
- the total maintenance area SO₂ emissions in the most recent NEI exceeds the corresponding attainment-year inventory by more than 10.0 percent; and
- the total maintenance area PM_{2.5} emissions in the most recent NEI exceeds the corresponding attainment-year inventory by more than 30.0 percent.

EPD will conduct an evaluation 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 adopt and implement any required measures in accordance with Section 3.2.2.

The PM_{2.5} trigger concentrations described above apply to the PM_{2.5} federal reference monitor in the maintenance area. EPD will evaluate a Tier I condition, if it occurs, as expeditiously as practicable to determine the cause(s) of the ambient PM_{2.5} or emissions inventory increase and to determine if a Tier II condition (see below) is likely to occur.

Tier II. A Tier II trigger is activated when any violation of the annual PM_{2.5} NAAQS at any FRM ambient monitoring station in the Floyd County maintenance area is recorded, based on quality-assured monitoring data. In this event, EPD will conduct a comprehensive study to determine the cause(s) of the ambient PM_{2.5} increase and to determine if the increase is likely to continue and will implement any required measures as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of selected measures.

3.2.2 Schedule and Procedure for Adoption and Implementation of Contingency Measures

EPD will, in the event of 1) a Tier II trigger condition or 2) a Tier I condition in which EPD has determined that a Tier II condition is likely to occur, conduct a comprehensive study to determine whether or not contingency measures are required for the maintenance of the PM_{2.5} standard. Since Floyd County may be influenced by emissions from outside the maintenance area, the study will attempt to determine whether the trigger condition is due to local emissions, emissions from elsewhere, or a combination of the previous. The comprehensive analysis, based on quality-assured ambient data, will examine:

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

- the severity of the trigger condition;
- the meteorological conditions (in the case of an ambient concentration trigger) associated with the trigger condition;
- potential contributing local emissions sources;
- potential contributing emissions resulting from regional or long-range transport;
- the geographic applicability of possible contingency measures;
- emission trends, including implementation timelines of potential control measures;
- timelines of “on-the-books” (adopted) measures that are not yet fully implemented [e.g., Georgia Rule (sss) and Rule (uuu) SO₂ controls]; and
- current and recently-identified control technologies.

The comprehensive study will be completed and submitted to EPA as expeditiously as practicable but no later than nine months after the Tier I or Tier II trigger is activated. If EPD determines, through the comprehensive study, that contingency measures are required for maintenance of the standard, the appropriate corrective measures will be adopted and implemented within 18 to 24 months after the Tier I or II trigger occurs. These control measures, which will continue to produce substantial reductions in fine particulate matter and its precursors in excess of what is relied upon in this maintenance plan, include the Georgia Multipollutant Rule, which is described in Section 2.3.2.1 of this maintenance plan, as well as diesel engine retrofit, replacement, and repowering programs and truck stop electrification programs which are currently being implemented by Georgia EPD.

If the study determines that additional measures are required, rules will be adopted no later than 18 months following the date on which the Tier I or Tier II trigger is activated. Selection of measures will take into consideration the ease of implementation as well as technical and economic feasibility. If it is determined that adoption and implementation of a rule will take longer than 24 months following the trigger date, EPD will submit for EPA’s approval a revised schedule for the development and adoption of contingency measures.

3.2.3 Contingency Measures

If the analysis required above determines emissions from the local area are contributing to the trigger condition, EPD will evaluate those measures as specified in Section 172 of the CAA for control options as well as other available measures. If a new measure/control is already promulgated and scheduled to be implemented at the federal or state level, and that measure/control is determined to be adequate, additional local controls may be unnecessary. 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. Currently all such measures are in effect for the Atlanta NAA; however, an evaluation of those measures, such as RACT, can be performed to determine those measures are adequate or up-to-date. In addition to those identified in Section 3.2.2, contingency measure(s) will be selected from the following types of measures or from any other measure deemed appropriate and effective at the time the selection is made:

- Reasonably Available Control Measures (RACM) for sources of SO₂ and PM_{2.5};
- Reasonably Available Control Technology (RACT) for point sources of SO₂ and PM_{2.5};
- Expansion of RACM/RACT to area(s) of transport within the State;
- Mobile source measures; and
- Additional SO₂ and/or PM_{2.5} reduction measures yet to be identified.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

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.

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 issuance of notices, an opportunity for public hearing, and other measures required by Georgia law.

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

4.0 Motor Vehicle Emissions Budget

The transportation conformity rule (40CFR93.100 - 40CFR93.129) ensures that projects and plans funded by the Federal Highway Administration and the Federal Transit Administration conform to air quality SIPs and maintenance plans. In the case of a NAAQS maintenance plan, the rule requires a motor vehicle emissions budget (MVEB) to be established for the last year of the plan's maintenance period. The rule, at 40CFR93.124(a), describes a motor vehicle emissions budget as "...the implementation plan's estimate of future [motor vehicle] emissions." Such budgets establish caps on motor vehicle emissions; projected emissions from transportation plans and programs must be equal to or less than these caps for a positive conformity determination to be made. Transportation conformity determinations are required for non-exempt federally-funded highway and transit projects before they are funded and approved and for transportation plans and transportation improvement programs.

4.1 Pollutants

For Floyd County, MVEBs will be set for direct PM_{2.5} and NO_x only. 40 CFR Parts 93.119(f)(7) through (10) identify the PM_{2.5} pollutants which must be analyzed for transportation conformity purposes. These parts of the rule are listed below:

§119(f)(7) - PM_{2.5} in PM_{2.5} areas;

§119(f)(8) - Reentrained road dust in PM_{2.5} areas only if the EPA [Environmental Protection Agency] Regional Administrator or the director of the State air agency has made a finding that emissions from reentrained road dust within the area are a significant contributor to the PM_{2.5} nonattainment problem and has so notified the MPO and DOT [Department of Transportation];

§119(f)(9) - NO_x [nitrogen oxides] in PM_{2.5} areas, unless the EPA Regional Administrator and the director of the State air agency have made a finding that emissions of NO_x from within the area are not a significant contributor to the PM_{2.5} nonattainment problem and has so notified the MPO and DOT; and

§119(f)(10) - VOC, SO₂ and/or ammonia in PM_{2.5} areas if the EPA Regional Administrator or the director of the State air agency has made a finding that any of such precursor emissions from within the area are a significant contributor to the PM_{2.5} nonattainment problem and has so notified the MPO and DOT.

Primary, or direct, PM_{2.5} emissions must be considered for all transportation conformity regional emissions analyses. For Floyd County, NO_x must also be considered since EPA has not approved Georgia EPD's finding that NO_x is not a significant contributor to the PM_{2.5} nonattainment problem in Floyd County. None of the other pollutants identified (re-entrained road dust, VOC, and ammonia) above have been determined by EPA or Georgia EPD to be significant contributors to PM nonattainment in Floyd County. SO₂ from coal combustion is significant but levels of SO₂ emissions from mobile sources are very low and, therefore, not significant for transportation conformity purposes.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

4.2 Methodology

In preparation of this Floyd County PM_{2.5} Maintenance Plan, EPD worked closely with the Georgia Department of Transportation (GDOT) and the Floyd-Rome Urban Transportation Study (FRUTS) to develop the estimates of mobile source emissions for the Floyd County nonattainment area. FRUTS is the metropolitan planning organization (MPO) for Rome/Floyd County. Mobile source inventories for 2023 were developed using the latest available planning assumptions, the most recent travel demand model, EPA's latest motor vehicle emission factor model, and vehicle population and age distributions developed from registration data obtained from R.L. Polk & Company. The methodology used to calculate the highway mobile source emissions on which the 2023 MVEBs are based is discussed below.

Emissions from motor vehicles were estimated as a sum of products of vehicle activity measures and vehicle emissions factors. Vehicle activity measures (e.g. vehicle miles traveled, or VMT) are determined from a county-specific travel demand model. Vehicle emissions factors are determined from a motor vehicle emissions model. See Appendices C, C-3, and C-4 for more details on the development of the travel demand model and the determination of emissions factors.

The MOVES2010a motor vehicle emission model was used to calculate 2023 emission factors with all currently known 2023 mobile source control rules in place. The MOVES model was run in Inventory Mode. The emission factors reflect all federal controls, e.g., the Federal Motor Vehicle Control Program, including Tier 1 and (beginning with 2006 models) Tier 2 tailpipe standards, and the National Low Emission Vehicle program. MOVES2010a produces three sets of emission factors per run:

- rate per distance;
- rate per vehicle; and
- rate per profile.

Of these three types of emission factors, the first is multiplied by VMT and the second two by vehicle population. Note that rate-per-profile emissions (i.e., vapor venting) are not applicable to PM_{2.5} modeling.

The FRUTS travel demand model is developed and maintained by GDOT. Inputs to the model are socioeconomic data and the highway network that consists of roadway segments (links) and intersections (nodes). Outputs include vehicle activity, number of trips, vehicle population, and other data. The use of a county-specific travel demand model for transportation conformity calculations is consistent with the transportation conformity rule at 40CFR93.122(b) and (d), which requires a network-based travel model emissions estimation methodology if the use of such procedures has been the previous practice of the MPO. The use of such a methodology has been the previous practice of FRUTS.

Section 93.105(b) of the Transportation Conformity Rule and Sections 106(g) and 106(h) of Georgia's transportation conformity SIP require interagency consultation for SIP development. Accordingly, a detailed listing of the procedures and planning assumptions used for the regional emissions analysis supporting development of the MVEB was presented to the Rome/Floyd interagency consultation committee for review on September 15, 2011. The assumptions used to develop Rome's conforming Long Range Transportation Plan and Transportation Improvement Program were also used to develop the network and emissions for this maintenance plan MVEB.

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

4.3 Motor Vehicle Emissions Budgets and Safety Margins

The projected 2023 on-road motor vehicle emissions for direct PM_{2.5} and NO_x are 31.8 and 847.0 tons, respectively. A budget for SO₂ is not required. On-road emissions of SO₂ are considered to be “*de-minimis*” (70FR 24283), and, therefore, no budget is necessary. The on-road mobile emissions, emissions budgets, and safety margins are presented in Table 4-1. A safety margin is necessary to accommodate the variabilities or worst-case scenarios that can occur due to future planning assumptions.

The worst-case daily motor vehicle emissions projection for PM_{2.5} is 19.5 percent above the projected 2023 on-road emissions. In a worst-case scenario, the needed annual safety margin for the MVEB would be 6.2 tons resulting in an overall MVEB of 38.0 tons per year.

The worst-case daily motor vehicle emissions projection for NO_x is 17.4 percent above the projected 2023 on-road emissions. In a worst-case scenario, the needed annual safety margin for the MVEB would be 147.4 tons resulting in an overall MVEB of 994.4 tons per year.

Table 4-1. 2023 Motor Vehicle Emissions, Emissions Budgets, and Safety Margins

| Pollutant | Projected 2023 On-Road Emissions (tons) | Safety Margin Allotted to MVEB (%) | Safety Margin Allotted to MVEB (tons) | MVEB with Safety Margin (tons) |
|-------------------|--|---|--|---------------------------------------|
| PM _{2.5} | 31.8 | 19.5 | 6.2 | 38.0 |
| NO _x | 847.0 | 17.4 | 147.4 | 994.4 |

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

5.0 Conclusion

Section 107(d) of the CAA 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 as required by CAA Section 175A.

Table 5-1. Summary of Projected SO₂ Emissions – Total of All Sectors (tons)

| Source | 2007 attainment (tons) | 2014 (tons) | 2017 (tons) | 2020 (tons) | 2023 (tons) |
|---------------------------|---------------------------------------|------------------------|------------------------|------------------------|------------------------|
| Point - total | 51,275 | 19,666 | 6,119 | 6,242 | 6,366 |
| Area - total | 758 | 784 | 794 | 807 | 819 |
| Non-road total | 29 | 9 | 1 | 1 | 1 |
| Onroad | 14 | 12 | 11 | 9 | 8 |
| Total | 52,077 | 20,471 | 6,925 | 7,060 | 7,194 |

**Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan**

Table 5-2. Summary of Projected NO_x Emissions – Total of All Sectors (tons)

| Source | <i>2007 attainment (tons)</i> | 2014 (tons) | 2017 (tons) | 2020 (tons) | 2023 (tons) |
|---------------------------------|---------------------------------------|------------------------|------------------------|------------------------|------------------------|
| Point - total | 10,165 | 8,267 | 7,453 | 7,660 | 7,866 |
| Nonpoint - total | 936 | 1,026 | 1,066 | 1,104 | 1,144 |
| Non-road - total | 996 | 728 | 613 | 546 | 479 |
| Onroad | 3,378 | 2271 | 1796 | 1322 | 847 |
| Onroad Safety Margin | | | | | 147.4 |
| Total | 15,475 | 12,292 | 10,928 | 10,632 | 10,483 |

Table 5-3. Summary of Projected PM_{2.5} Emissions – Total of All Sectors (tons)

| Source | <i>2007 attainment (tons)</i> | 2014 (tons) | 2017 (tons) | 2020 (tons) | 2023 (tons) |
|---------------------------------|---------------------------------------|------------------------|------------------------|------------------------|------------------------|
| Point - total | 953 | 774 | 697 | 722 | 747 |
| Nonpoint - total | 1,855 | 2,072 | 2,164 | 2,249 | 2,333 |
| Non-road - total | 66 | 48 | 40 | 36 | 31 |
| Onroad | 117 | 80 | 64 | 48 | 32 |
| Onroad Safety Margin | | | | | 6.2 |
| Total | 2,991 | 2,973 | 2,965 | 3,054 | 3,149 |

***Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan***

The supporting documentation to show that the above conditions have been met for Floyd County is contained in this document. Based on the 2007-2009 monitored design value for the Floyd County nonattainment area, EPA has published in the Federal Register its final rule that the nonattainment area has attained the 1997 annual average PM_{2.5} National Ambient Air Quality Standard (NAAQS). The maintenance demonstration in this document shows that, based on comparison of projected emissions to attainment year emissions, emissions are expected to stay at or below levels commensurate with attaining air quality through the year 2023 as illustrated by Tables 5-1, 5-2 and 5-3 above. Analysis was presented to demonstrate that the standard will be maintained despite a small, projected increase in direct PM_{2.5} emissions. This document also contains provisions for contingency measures should emissions levels or ambient concentrations rise unexpectedly. EPA's concurrence that the improvement in Floyd County's air quality is due to permanent and enforceable reductions in emissions, and EPA's approval of this document will satisfy Items 3 and 5 above. Therefore, Georgia EPD requests that the Floyd area be redesignated from nonattainment to attainment with respect to the 1997 annual NAAQS for fine particulate matter. In addition, 2023 MVEBs have been presented for onroad mobile emissions of direct PM_{2.5} and NO_x. These emissions budgets are required by EPA's transportation conformity rule as tools for ensuring conformance of highway and transit plans with air quality SIPs and maintenance plans.

*Floyd County PM_{2.5} Nonattainment Area
Redesignation Request and Maintenance Plan*

6.0 References

State of Georgia, Rules for Air Quality Control, Chapter 391-3-1, Effective September 13, 2011.

US Energy Information Administration, Annual Energy Outlook 2010, April 2010.

USEPA, Air Quality Modeling Final [Cross-state Air Pollution] Rule Technical Support Document, June 2011, Docket ID No. EPA-HQ-OAR-2009-0491-4140.

USEPA, “Approval, and Promulgation of Air Quality Implementation Plans; Indiana; Redesignation of the Evansville Area to Attainment of the Fine Particulate Matter Standard”; proposed rule, 76 FR 29695.

USEPA, “Clean Data Policy for the Fine Particle National Ambient Air Quality Standards,” Memorandum from Stephen Page, December 14, 2004.

USEPA, “Determination of Attaining Data for the 1997 Annual Fine Particulate Standard; Rome, Georgia, Final Rule”; 76 FR 18650 – 18651.

USEPA, “Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals” [a.k.a. “Cross-State Air Pollution Rule”]; final rule, 76 FR 48208.

USEPA, National Emissions Inventory: inventory years 2005, 2007, and 2008.

USEPA, “Procedures for Processing Requests to Redesignate Areas to Attainment,” Memorandum from John Calcagni, September 4, 1992.