

**Commonwealth of Pennsylvania
Department of Environmental Protection**



**FINAL
STATE IMPLEMENTATION PLAN REVISION:
MAINTENANCE PLAN
GREENE COUNTY EIGHT-HOUR OZONE
NONATTAINMENT AREA**

MAY 2008

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INTRODUCTION AND OVERVIEW

Maintaining concentrations of ground-level ozone below the health-based ambient air quality standard is important because ozone is a serious human health threat, and also can cause damage to important food crops, forests, and wildlife. Ozone is not emitted directly to the atmosphere, but is formed by photochemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) in the presence of sunlight. The long, hot, humid days of summer are particularly conducive to ozone formation, so ozone levels are of concern primarily during the months of May through September. The primary sources of man-made VOCs and NO_x, the ozone precursors, are the evaporation of fuels and solvents (gasoline and consumer products), combustion of fuels (motor vehicles, power plants and non-road engines), and industrial processes.

The United States Environmental Protection Agency (EPA) has established the maximum limit for ozone pollution allowed in the ambient air. EPA's National Ambient Air Quality Standard (NAAQS) for ozone is 0.08 parts per million (ppm) averaged over eight hours. In 2004, EPA designated Greene County as nonattainment for the eight-hour ozone standard based on data from 2001-2003.

On January 25, 2007, the Pennsylvania Department of Environmental Protection (the Department), following a 30-day public comment period, submitted a request to redesignate Greene County as attainment for ozone along with a plan which ensures the area will maintain the ozone standard for at least 10 years after redesignation. Section 107(d)(3)(E) of the Clean Air Act (CAA) requires that a maintenance plan be fully approved by the EPA according to the criteria in Section 110 of the CAA before an area can be redesignated as attainment. The maintenance plan for Greene County was deemed complete by operation of law on June 25, 2007 (six months from submittal).

The design value for Greene County has been below the ozone standard since 2004. As stated in the request for redesignation, Greene County's 2005 design value (based on data from 2003, 2004 and 2005) was 81 parts per billion (ppb). Following EPA criteria, a design value below 85 ppb is considered to be attainment. Concentrations are expected to remain below this level over the next decade.

Purpose of this SIP revision. Subsequent to its January 25, 2007 SIP revision submission, the Department re-examined its methodology for projecting stationary point source emissions to future years because the original methodology overpredicted future emissions of NO_x from electric generating units (EGUs). Therefore, the Department proposes to submit a revised maintenance plan to EPA as a SIP revision under Section 110 of the CAA. The Department is only accepting public comment on the portions of the maintenance plan which the Department is revising. Those portions are:

- discussion of the methodology by which stationary point source emissions were and are now projected to 2009 and 2018;

- summary tables of projected emissions, which include stationary point source emission projections for 2009 and 2018; and
- the portions of Appendices A-2 and A-3, Emissions for Stationary Point Sources, that project stationary point source emissions to 2009 and 2018.

Following public comment on this document, the Department will submit a revised maintenance plan to EPA for Greene County, which incorporates the changes.

Requirements for a public comment process are set forth in Section 110(a)(2) of the CAA and 40 CFR Section 51.102(d). A public hearing on the changes to the Greene County Maintenance Plan was scheduled for Wednesday, April 9, 2008. The hearing date had to be postponed; notice of the revised hearing, scheduled for Wednesday, April 30, 2008, was published in the *Pennsylvania Bulletin* March 29, 2008. No requests for a public hearing were received so the hearing was cancelled.

STATIONARY POINT SOURCE EMISSIONS

Background. The term “stationary source”, “point source” or “stationary point source” refers to a source for which the Department collects individual emissions-related information. Generally, these sources are major stationary sources, but in some cases they are smaller stationary sources. As can be seen from the charts below, stationary point sources contribute most of the NOx emissions in Greene County.

The January 25, 2007 submission included an emissions inventory for the base year 2002 for ozone precursors, developed in accordance with EPA guidance. Emission numbers for this base year represent the emissions present when Greene County did not meet the ozone standard. The January 25, 2007 submission also included an emissions inventory for 2004. Emissions for 2004 represent the emissions measured in Greene County during the period when Greene County demonstrated that it attained the ozone standard.

The table below from the January 25, 2007 SIP revision summarizing NOx emissions is presented for information purposes only and shows that emissions decreased from 2002 to 2004.

Table 1
2002 and 2004 NOx EMISSIONS
TONS PER SUMMER DAY

	2002	2004
Stationary Point Sources	64.0	53.7
Stationary Area Sources	0.2	0.2
Highway Vehicles	4.1	3.6
Nonroad Engines/Vehicles	4.7	4.5
TOTAL	72.9	62.0

Due to rounding, totals on chart may be different than totals from adding values in columns.

Change in stationary point source growth projection methodologies for 2009 and 2018.

The methodology used for projecting most categories of stationary point sources in the January 25, 2007 SIP revision can be found in Section 2-A-1 on page 9 of that submittal. For the results of the federal Clean Air Interstate Rule (CAIR) at Allegheny Energy's Hatfields Ferry units, the Department used growth factors from EPA's Economic Growth Analysis System (EGAS) because the same methodology was used to project emissions from other stationary sources in the Greene County plan. The Department has re-examined its methodology and is now proposing to use the projections that were developed by the Ozone Transport Commission in a collaborative SIP inventory development process that utilizes EPA's Integrated Planning Model (IPM) to predict future EGU emission controls attributable to the federal CAIR requirements.

This proposed SIP revision will delete the last paragraph in Section 2.A.1, Stationary Point Sources, on page 9 of the January 25, 2007 SIP revision, and replace it with the following:

Projections for CAIR-affected units would be those developed by the Ozone Transport Commission in a collaborative SIP inventory development process¹ that utilized EPA's Integrated Planning Model (IPM) to predict future EGU emission controls attributable to the federal CAIR requirements.

According to EPA, IPM is a multi-regional, dynamic, deterministic linear programming model of the United States electric power sector. It provides forecasts of least-cost capacity expansion, electricity dispatch, and emission control strategies for meeting energy demand and environmental, transmission, dispatch, and reliability constraints. More information on IPM can be found at: www.epa.gov/airmarkets/progsregs/epa-ipm/index.html.

As for the emissions from the EGU sector, the Ozone Transport Commission utilized the IPM to develop the state and unit-level emissions set forth in this proposed SIP revision. Details for non-EGU sectors can be found in the January 25, 2007 SIP revision submission in Appendix E: Emission Projections for 2009, 2012, and 2018 in the MANE-VU Region. Details for the EGU sector can be found in the ICF Resources Final Report on using the IPM (ICF 2005a², 2005b³) for the EGU sector. These inventories are identified as 2009 "on the way" (2009OTW) inventories, since they reflect all emission control measures that were promulgated or were expected to become effective on or before 2009.

The use of the Ozone Transport Commission collaborative projections is consistent with CAIR, under which reductions are required to occur on a 22-state regional average basis. The stationary source may comply with these requirements with emission reductions or retirement of allowances. EPA has indicated that states may rely on CAIR (under the Federal Implementation Plan or a state CAIR) to meet reasonable further progress, attainment or, in this case,

1 http://www.otcair.org/projects_details.asp?FID=101&fview=modeling#

2 IPM documentation for VISTAS IPM run – email and other communications. Gopal Sistla (ICF 2005a)

3 Future Year Electricity Generating Sector Emission Inventory Development Using the Integrated Planning Model (IPM®) in Support of Fine Particulate Mass and Visibility Modeling in the VISTAS and Midwest RPO Regions (Final Report) (ICF 2005b)

maintenance requirements. The revised projection comprises the Department's best estimate of how the CAIR-affected sources in Greene County meet the CAIR requirements.

Changes in emissions. Table 2 shows that emissions throughout the maintenance period are less than the attainment year, 2004. Detailed information on stationary point source emissions is included in the Appendices to this document.

Using the new methodology described above, the Department proposes to revise Table 2-2 found on pages 10 and 11 of the January 25, 2007 SIP revision to read as follows:

Table 2
NO_x Emissions Summary: 2004, 2009 and 2018
(tons per summer day)

MAJOR SOURCE CATEGORY	2004	2009	2018
Stationary Point Sources ¹	53.7	21.0	23.0
Stationary Area Sources	0.2	0.2	0.2
Highway Vehicles ²	3.6	2.6	1.3
Nonroad Engines/Vehicles	4.5	4.1	3.6
TOTAL (may not add due to rounding)	62.0	27.9	28.1

Change in reference to methodology. The description of the CAIR found on page 11 of the January 25, 2007 SIP revision, in Section 2. C., Permanent and Enforceable Control Measures for Maintenance, is proposed to be changed only to the extent that it describes the methodology the Department used to project EGU emissions. The following section will replace the Section 2.C.1 CAIR paragraph in the January 25, 2007 SIP revision submittal:

Clean Air Interstate Rule (CAIR) -- The federal CAIR regulations (70 FR 25162, May 12, 2005) will transition from the NO_x SIP Call electric generating unit regulations in 2009 and continue to ensure that large electric generation facilities upwind of the area will maintain background emissions at or below 2002 levels while any new facilities locating within the area will be required to obtain both offsets and allowances that will ensure ambient equivalence with regard to ozone production potential. Pennsylvania and other nearby states are required to adopt a regulation implementing the requirements of the CAIR or an equivalent program. On April 28, 2006, EPA promulgated Federal Implementation Plans (FIPs) to reduce the interstate transport of NO_x and sulfur dioxides that contribute significantly to nonattainment and maintenance of the 8-hour ozone and PM_{2.5} NAAQS. The electric generating units (EGUs) in the CAIR-covered States will be regulated under the FIPs until revisions to SIPs for the implementation of the CAIR requirements are approved

1 Does not include banked emissions, as indicated in Appendix A of the January 25, 2007 SIP revision.

2 Includes transportation conformity safety margin, as described in Section E of the January 25, 2007 SIP revision.

by EPA. See 71 FR 25328 (April, 28, 2006). As discussed in Section A-1, the Department has projected Hatfield's future emissions by using EPA's IPM model results.