

**Commonwealth of Pennsylvania
Department of Environmental Protection**



**FINAL
STATE IMPLEMENTATION PLAN REVISION:
MAINTENANCE PLAN
CLEARFIELD-INDIANA 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 U.S. 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 Clearfield and Indiana Counties as a nonattainment area (Clearfield-Indiana Area) for the eight-hour ozone standard based on data from 2001-2003.

On June 14, 2007, the Pennsylvania Department of Environmental Protection (the Department), following a 30-day public comment period, submitted a request to EPA to redesignate the Clearfield-Indiana Area 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 the Clearfield-Indiana Area was deemed complete by operation of law on December 14, 2007 (six months from submittal).

The design value for the Clearfield-Indiana Area has been below the ozone standard since 2005. As stated in the request for redesignation, the Clearfield-Indiana Area 2006 design value (based on data from 2004, 2005 and 2006) was 77 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. This State Implementation Plan (SIP) revision encompasses two significant changes to the Clearfield-Indiana Area Maintenance Plan as submitted to EPA June 14, 2007. First, the Department, subsequent to its original submission of the maintenance plan, 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 projected to 2009 and 2018;
- summary tables of projected emissions which include stationary point sources projections for 2009 and 2018; and
- the portions of Appendix 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 SIP revision to EPA for the Clearfield-Indiana Area that 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 Clearfield-Indiana Nonattainment Area Maintenance Plan was scheduled for Wednesday, April 23, 2008. Notice of the hearing will be published in the *Pennsylvania Bulletin* March 22, 2008. No request for a public hearing was received so the hearing was cancelled.

STATIONARY POINT SOURCE EMISSIONS

Background. “Stationary sources”, “point” sources”, or “stationary point sources” 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 NO_x emissions in the Clearfield-Indiana Area.

The June 14, 2007 SIP revision 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 the Clearfield-Indiana Area did not meet the ozone standard. The June 14, 2007 submission also included an emissions inventory for 2004. Emissions for 2004 represent the emissions measured in the Clearfield-Indiana Area during the period when the Clearfield-Indiana Area demonstrated that it attained the ozone standard.

The table below summarizing NO_x emissions, as established in the June 14, 2007 SIP revision, is presented for information purposes only and shows that emissions decreased from 2002 to 2004.

Table 1
2002 and 2004 NO_x EMISSIONS
TONS PER SUMMER DAY

	2002	2004
Stationary Point Sources ¹	144.2	129.3
Stationary Area Sources	1.0	1.0
Highway Vehicles	25.1	22.2
Nonroad Engines/Vehicles	4.5	4.2
TOTAL	174.8	156.7
Due to rounding, totals on chart may be different from adding values in columns.		

¹ This does not include any emission reduction credits described in the Technical Appendix A of the 2007 SIP revision.

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

The methodology for projecting most categories of stationary point sources in the June 14, 2007 SIP revision can be found in Section 2.A.1 on page 9 and in Appendix E of the June 14, 2007 SIP revision.

The Clearfield-Indiana Area has four EGUs affected by the Clean Air Interstate Rule (CAIR): Reliant Energy Shawville Station, Reliant Energy Seward Station, Homer City Generating Station, and Conemaugh Power Plant. For the results of the federal CAIR regulation at these 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 Clearfield-Indiana Maintenance 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 utilized 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 June 14, 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 process² that utilized EPA's Integrated Planning Model (IPM) to predict future 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 June 14, 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 2005a³, 2005b⁴) 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.

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

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

4 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)

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, maintenance requirements. The revised projection comprises the Department's best estimate of how the CAIR-affected sources in Clearfield and Indiana Counties 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 page 10 of the June 14, 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	129.3	89.2	79.1
Stationary Area Sources	1.0	1.1	1.1
Highway Vehicles	22.2	16.3	7.6
Nonroad Engines/Vehicles	4.2	3.5	2.4
TOTAL	156.7	110.1	90.2
Due to rounding, totals on chart may be different from adding values in columns.			

Changes in reference to methodology. The description of CAIR found on page 11 of the June 14, 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 June 14, 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 by EPA. See 71 FR 25328 (April, 28, 2006). As

discussed in Section A-1, the Department has projected EGU future emissions in the Clearfield-Indiana Area by using EPA’s IPM model results.

MOTOR VEHICLE EMISSION BUDGETS

The second significant change in this SIP revision is the separation of the motor vehicle emission budget (MVEB) for the Clearfield-Indiana Area into separate MVEBs for Indiana County and Clearfield County. The Department has been requested by the Pennsylvania Department of Transportation to provide separate motor vehicle emission budgets (MVEBs) for Clearfield County and Indiana County. MVEBs for the entire two-county area were established in the maintenance plan submitted June 14, 2007. The total of Clearfield County and Indiana County MVEBs combined is equal to the MVEBs in the June 14, 2007 SIP revision.

Background. Section 176 of the federal Clean Air Act (CAA) provides a mechanism by which federally funded or approved highway and transit plans, programs, and projects are determined not to produce new air quality violations, worsen existing violations, or delay timely attainment of national air quality standards. Regulations issued by EPA to implement transportation conformity provide that motor vehicle emission “budgets” establish caps of these emissions that cannot be exceeded by the predicted transportation system emissions in the future (40 CFR Part 93). Transportation agencies in Pennsylvania are responsible for making timely transportation conformity determinations.

The maintenance plan for the Clearfield-Indiana Area was deemed complete by operation of law on December 14, 2007 (six months from submittal). The Department’s revision included the following:

1. A request that the Clearfield-Indiana ozone nonattainment area be redesignated as attainment for the 8-hour ozone ambient air quality standard (NAAQS),
2. A 2002 base year inventory for the area, and
3. A maintenance plan for the area that provides for continued attainment of the 8-hour ozone NAAQS for at least 10 years after redesignation.

Metropolitan Planning Organizations (MPOs) and the Pennsylvania Department of Transportation (PennDOT), in conjunction with state Rural Planning Organizations (RPOs), share transportation conformity determination responsibility across the Commonwealth. The Clearfield-Indiana Area contains one MPO and one RPO. Table 3 lists the MPO or RPO name and the county included in that agency’s responsibility.

**Table 3
Clearfield-Indiana Area MPO/RPO County Coverage**

MPO/RPO	County
North Central PA Regional Planning and Development Commission - RPO	Clearfield County
Southwestern Pennsylvania Commission - MPO	Indiana County

Given the multi-jurisdictional nature of the area, PennDOT has requested separate budgets to allow the planning organizations to move their transportation conformity determinations through the approval processes separately. This SIP revision will establish two sub-area budgets for the Clearfield-Indiana Area corresponding to the MPO/RPO structure of the area. The total of the two sub-area budgets is the same as the EPA-approved MVEB for the two counties as a whole.

Section 93.124(d) of the transportation conformity regulations (40 CFR § 93.124(d)) allow a SIP to establish motor vehicle budgets for each MPO/RPO if a nonattainment area includes more than one MPO/RPO. Furthermore, recognizing the complexity of areas with multi-MPO jurisdictions, the U.S. Department of Transportation Federal Highways Administration (FHWA) allows States to develop separate sub-area transportation conformity budgets for each MPO or some other subset of the area (such as by county).⁵ For the Clearfield-Indiana Area, PennDOT performs the emissions modeling and analysis required for transportation conformity determinations for the RPOs, and works closely with MPOs to prepare conformity determinations. All transportation conformity processes in the Commonwealth are coordinated through a robust interagency consultation process, of which the Department, PennDOT, U.S. EPA, FHWA and the MPO are members.

When a SIP establishes separate transportation conformity budgets for individual MPOs and RPOs, all of the MPOs and RPOs in that nonattainment or maintenance area must be in conformity in order for any MPO or RPO within that State's portion of the nonattainment or maintenance area to make a conformity determination. In other words, if conformity lapses for one MPO or RPO with a separate sub-area budget, the other MPOs and RPOs within that State's portion of the nonattainment or maintenance area will not lapse immediately, but they will be unable to make new conformity determinations until the first MPO once again determines conformity. Separating budgets in this SIP revision will allow conformity to be determined separately. Increases in emissions in one sub-area cannot be offset by decreases in emissions in another sub-area.

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 Clearfield-Indiana Nonattainment Area Maintenance Plan was scheduled for Wednesday, April 23, 2008. Notice of the hearing will be published in the *Pennsylvania Bulletin* March 22, 2008. No request for a public hearing was received so the hearing was cancelled.

Sub-area Motor Vehicle Emission Budgets. This SIP revision will establish sub-area budgets for highway emissions in order to ensure that transportation emissions do not impede clean air goals in the next decade and beyond. The information in Table 4, once EPA approves this SIP revision for purposes of conformity, will establish transportation conformity sub-area MVEBs for the Clearfield-Indiana Area. The information in Table 4-1 and Table 4-2 will replace the MVEBs in Table 2-3 of the June 14, 2007 SIP revision.

⁵ U.S. DOT, Federal Highways Administration, "Transportation Conformity in Complex Areas"
<http://www.fhwa.dot.gov/environment/conformity/complex/group2.htm>

Table 4-1
Clearfield County
Motor Vehicle Emission Budgets in Tons/Summer Day (tons per day)

		2009		2018	
		VOC	NOx	VOC	NOx
PREDICTED	tpd	3.87	11.11	2.37	4.76
MARGIN	tpd	0.24	0.33	0.34	0.38
BUDGET	tpd	4.11	11.44	2.71	5.14

Table 4-2
Indiana County
Motor Vehicle Emission Budgets in Tons/Summer Day (tons per day)

		2009		2018	
		VOC	NOx	VOC	NOx
PREDICTED	tpd	2.82	4.49	1.58	1.99
MARGIN	tpd	0.24	0.36	0.34	0.41
BUDGET	tpd	3.06	4.85	1.92	2.40