REQUEST FOR REDESIGNATION AND MAINTENANCE PLAN FOR OZONE ATTAINMENT IN THE 8-HOUR OZONE BASIC NONATTAINMENT AREA

Greene County, Indiana

Developed By:
The Indiana Department of Environmental Management

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REQUEST FOR REDESIGNATION AND MAINTENANCE PLAN FOR OZONE ATTAINMENT IN THE 8-HOUR OZONE BASIC NONATTAINMENT AREA

GREENE COUNTY, INDIANA

1.0 INTRODUCTION

This document is intended to support Indiana's request that Greene County, Indiana, be redesignated from nonattainment to attainment of the 8-hour ozone standard. This county has recorded three (3) years of complete, quality assured ambient air quality monitoring data for the years 2002 – 2004 demonstrating attainment with the 8-hour ozone standard.

Section 107 of the Clean Air Act (CAA) establishes specific requirements to be met in order for an area to be considered for redesignation including:

(a) A determination that the area has attained the 8-hour ozone standard.
(b) An approved State Implementation Plan (SIP) for the area under Section 110(k).
(c) A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and other federal requirements.
(d) A fully approved maintenance plan under Section 175(A).
(e) A determination that all Section 110 and Part D requirements have been met.

This document addresses each of those requirements. It also provides additional information to support continued compliance with the 8-hour ozone standard.

1.1 Background

The Clean Air Act Amendments of 1990 (CAAA) required areas failing to meet the National Ambient Air Quality Standard (NAAQS) for ozone to develop SIPs to expeditiously attain and maintain the standard. In 1997 the United States Environmental Protection Agency (U.S. EPA) revised the air quality standards for ozone replacing the 1979 1-hour standard with an 8-hour ozone standard set at 0.08 parts per million (ppm). The standard was challenged legally and upheld by the U.S. Supreme Court in February of 2001. The U.S. EPA designated areas that attain or do not attain the 8-hour ozone standard on April 15, 2004, effective June 15, 2004.

At the time of the 1990 CAAA, there were no monitors in Greene County. Since that time, a monitoring network has been developed that includes a site in Greene County. On April 15, 2004, U.S. EPA designated Greene County Basic nonattainment and subject to the new 8-hour ozone requirements, including development of a plan to reduce volatile organic compound (VOC) and oxides of nitrogen (NO_x) emissions and a demonstration that the area will meet the 8-hour ozone standard for ozone by June 15, 2009.

Greene County has never previously been subject to nonattainment area rulemakings.

1.2 Geographical Description

Greene County is located in southwestern Indiana and includes the Towns of Bloomfield, Jasonville, Linton and Worthington. Sullivan County is to the west of Greene, Clay and Owen Counties are to the north, Daviess, Knox and Martin Counties are to the south, and Monroe and Lawrence Counties are to the east of Greene County. This area is shown in Figure 3.1.

1.3 Status of Air Quality

Ozone monitoring data for the most recent three (3) years, 2002 through 2004, demonstrates that air quality has met the NAAQS for ozone in this Basic nonattainment area. This fact, accompanied by the decreases in emission levels discussed in Section 4.0, justifies a redesignation to attainment for the subject area based on Section 107(d) (3) (E) of the CAAA.

2.0 REQUIREMENTS FOR REDESIGNATION

2.1 General

Section 110 and Part D of the CAAA lists the requirements that must be met by nonattainment areas prior to consideration for redesignation to attainment. In addition, U.S. EPA has published detailed guidance in a document entitled "*Procedures for Processing Requests to Redesignate Areas to Attainment"*, issued September 4, 1992, to Regional Air Directors. This document is hereafter referred to as "Redesignation Guidance". This Request for Redesignation and Maintenance Plan is based on the Redesignation Guidance, supplemented with additional guidance received from staff of the Criteria Pollutant Section of U.S. EPA Region V.

The subsections below refer in greater detail to the requirements listed in Section 1.0 of this document. Each subsection describes how the requirement has been met. The pertinent sections of the CAAA are referenced where appropriate.

2.2 Ozone Monitoring 107(d)(3)(E)(i)

1) A demonstration that the NAAQS for ozone, as published in 40 CFR 50.4, have been attained. Ozone monitoring data must show that violations of the ambient standard are no longer occurring.

2) Ambient monitoring data quality assured in accordance with 40 CFR 58.10, recorded in the U.S. EPA Air Quality System (AQS) data base, and is available for public view.

3) A showing that the three (3) year average of the fourth highest values, based on data from all monitoring sites in the area or its affected downwind environs, is

below 85 parts per billion (ppb). This showing must rely on three (3) complete, consecutive calendar years of quality assured data.

4) A commitment that, once redesignated, the State will continue to operate an appropriate monitoring network to verify the maintenance of the attainment status.

2.3 Emission Inventory 107(d)(3)(E)(iii)

1) A comprehensive emission inventory of the precursors of ozone completed for the base year.

2) A projection of the emission inventory for a year at least 10 years following redesignation.

3) A demonstration that the projected level of emissions is sufficient to maintain the ozone standard.

4) A demonstration that improvement in air quality between the year violations occurred and attainment was achieved is based on permanent and enforceable emission reductions and not on temporary adverse economic conditions or unusually favorable meteorology.

5) Provisions for future annual updates of the inventory to enable tracking of the emission levels including an annual emission statement from major sources.

2.4 Modeling Demonstration

While no modeling is required for redesignating ozone nonattainment areas, Indiana Department of Environmental Management (IDEM) has relied upon it extensively to determine necessary controls for this area.

2.5 Controls and Regulations 107(d)(3)(E)(ii) & 107(d)(3)(E)(v)

1) A U.S. EPA-approved SIP control strategy that includes Reasonably Available Control Technology (RACT) requirements for existing stationary sources covered by Control Technology Guidelines (CTG) and non-CTG RACT for all major sources.

2) Evidence that control measures required in past ozone SIP revisions have been fully implemented.

3) Acceptable provisions to provide for new source review.

4) Assurances that existing controls will remain in effect after redesignation, unless the State demonstrates through photochemical modeling that the standard can be maintained without one (1) or more controls.

5) If appropriate, a commitment to adopt a requirement that all transportation plans conform with, and are consistent with, the SIP.

2.6 Corrective Actions for Potential Future Violations of the Standard

1) A commitment to submit a revised plan eight (8) years after redesignation.

2) A commitment to expeditiously enact and implement additional contingency control measures in response to exceeding specified predetermined levels (triggers) or in the event that future violations of the ambient standard occurs.

3) A list of potential contingency measures that would be implemented in such an event.

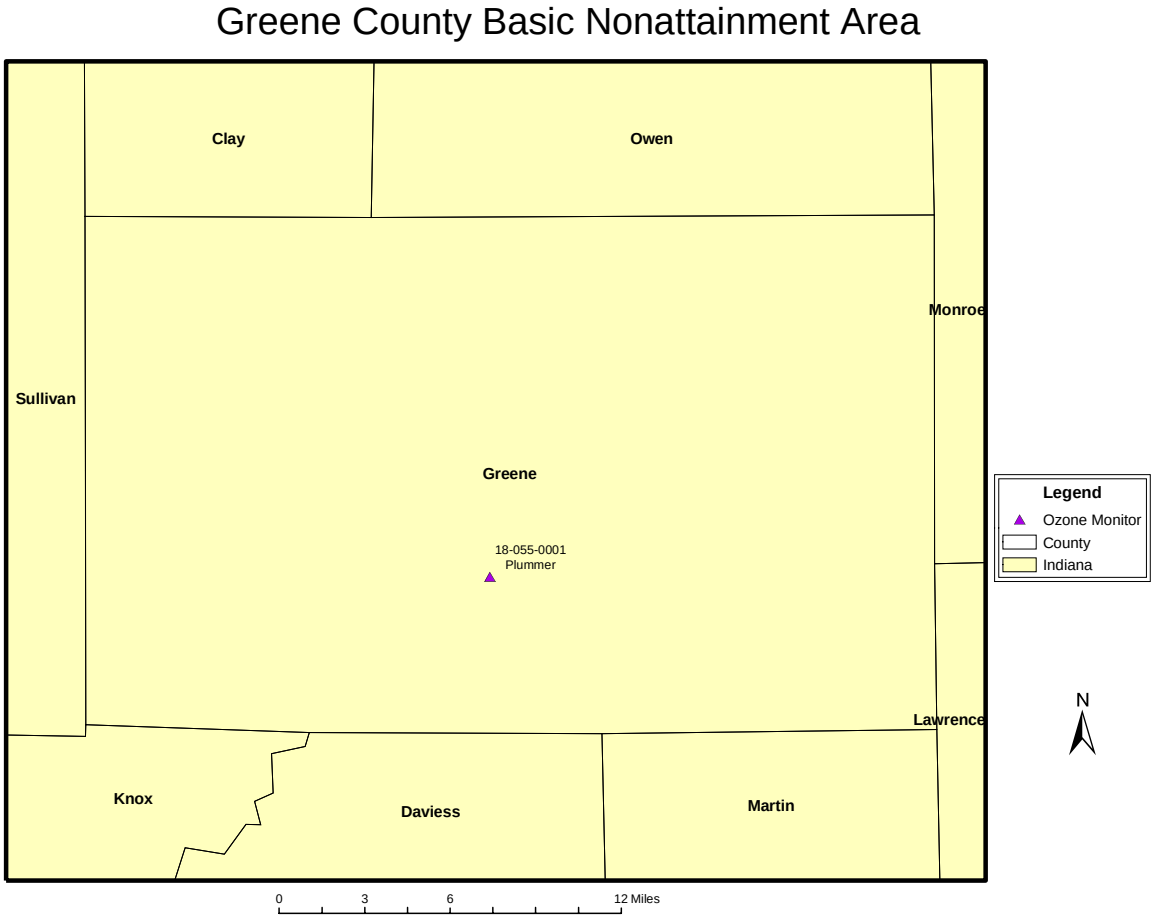
4) A list of VOC and NO_x sources potentially subject to future controls.

3.0 OZONE MONITORING

3.1 Ozone Monitoring Network

There is one (1) monitor measuring ozone concentrations in this nonattainment area. This monitor is currently operated by the City of Indianapolis, Office of Environmental Services (OES). A listing of the four (4) highest readings from 2002 through 2004 is shown in Table 3.1 and was retrieved from the U.S. EPA's Air Quality System (AQS). The location of the monitoring site for this nonattainment area is shown on Figure 3.1.

Figure 3.1



3.2 Ambient Ozone Monitoring Data

The following information is taken from U.S. EPA's "Guideline on Data Handling Conventions for the 8-hour Ozone National Ambient Air Quality Standard (NAAQS),"U.S. EPA-454/R-98-017, December 1998.

Three (3) complete years of ozone monitoring data are required to demonstrate attainment at a monitoring site. The 8-hour primary and secondary ozone ambient air quality standards are met at an ambient air quality monitoring site when the three (3) year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.08 ppm (i.e. the site is said to be in attainment). Three (3) significant digits must be carried in the computations. Because the third decimal digit, in ppm, is rounded, 0.084 ppm is the largest concentration that is less than, or equal to 0.08 ppm. Therefore, for the purposes of this request, the 8-hour standard is considered to be 0.085 ppm. Values below 0.085 ppm meet the standard, values equal to, or greater than, 0.085 ppm exceed the standard. These data handling procedures are applied on an individual basis at each monitor in the area. An area is in compliance with the

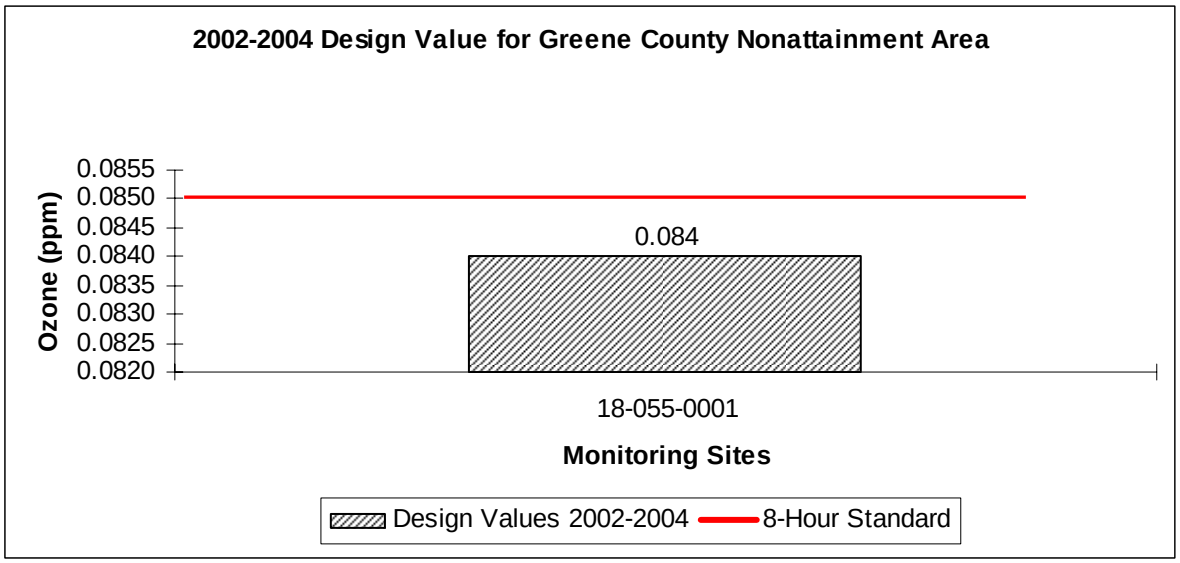
8-hour ozone NAAQS if, and only if, this monitoring site meets the NAAQS. An individual site's three (3) year average of the annual fourth highest daily maximum 8-hour average ozone concentration is also called the design value. Table 3.1 shows the monitoring data for the most recent years, 2002-2004, at the monitoring site.

Table 3.1 Monitoring Data for Greene County 2002–2004

					1ST	2ND	3RD	4TH	2002-2004
SITE ID	COUNTY	ADDRESS	YEAR	%OBS	8-HR (ppm)	8-HR (ppm)	8-HR (ppm)	8-HR (ppm)	AVERAGE (ppm)
18-055-0001	Greene	2500 S 275 W, Plummer	2002	100	0.097	0.095	0.095	0.093	
18-055-0001	Greene	2500 S 275 W, Plummer	2003	100	0.097	0.092	0.092	0.088	
18-055-0001	Greene	2500 S 275 W, Plummer	2004	100	0.076	0.075	0.075	0.073	**0.084**

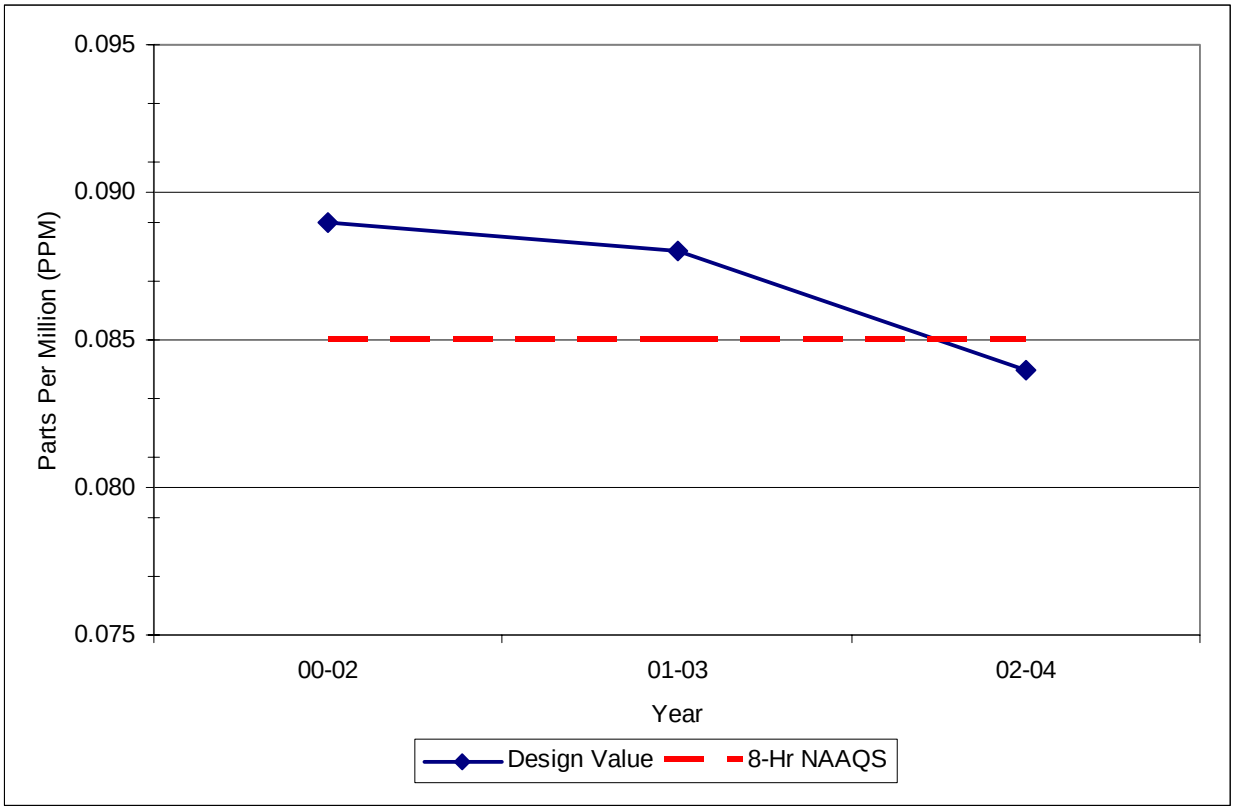
The graph below visually demonstrates the design value for this nonattainment area.

Graph 3.1 2002-2004 Design Value for Greene County Nonattainment Area



The design value calculated for the Greene County nonattainment area demonstrates that the NAAQS for ozone has been attained.

Graph 3.2 Trends in Greene County, Indiana 8-hour Design Values, 2000 - 2004



The above graph shows the trend in design values for the region over the past several years. A comprehensive list of the site's design values is in Appendix A. The area's design value has trended downward, as emissions have declined due to such factors as the Acid Rain program, and cleaner automobiles and fuels on both regional and local scales. U.S. EPA's rule to control nitrogen oxides from specific source categories (40 CFR Parts 51, 72, 75 and 96, published on October 17, 1998 and referred to as the "NO_x SIP Call") has significantly reduced emissions from large electric generating units (EGUs), industrial boilers, and cement kilns. Indiana's NO_x Rule was adopted on June 6, 2001 (326 IAC 10-3 and 10-4). An analysis of meteorological conditions and monitoring values is in Section 7.0 and supports the conclusion that attainment of the standard as of 2004 is not the result of unusually favorable meteorological conditions. It is expected that this downward trend will continue as the above programs continue and the U.S. EPA Clean Air Interstate Rule is implemented.

3.3 Quality Assurance

IDEM has quality assured all data shown in Appendix A in accordance with 40 CFR 58.10 and the Indiana Quality Assurance Manual. IDEM has recorded the data in the Air Quality System (AQS) database and, thus, they are available to the public.

3.4 Continued Monitoring

Indiana commits to continue monitoring ozone levels at the site indicated in Table 3.1 and Appendix A. IDEM will consult with U.S. EPA Region V staff prior to making changes to the existing monitoring network, should changes be necessary in the future. IDEM will continue to quality assure the monitoring data to meet the requirements of 40 CFR 58. Connection to a central station and updates to the IDEM website[1] will provide real time availability of the data and knowledge of any exceedances. IDEM will enter all data into AQS on a timely basis in accordance with federal guidelines.

4.0 EMISSION INVENTORY

Greene County is a predominantly rural county with low population density and an extremely modest emissions inventory. Greene County is affected by overwhelming transport and heavily impacted by upwind power plant emissions. Therefore, regional emission reductions affect ozone levels in Greene County far more so than emission reductions within the county itself. Graphs 4.2 and 4.3 demonstrate the most relevant regional reduction in NO_x that is attributable to the lowered ozone concentrations in Greene County. Because of the significance of regional emissions reductions, Section 4.0 summarizes both regional and local emissions information.

U.S. EPA's Redesignation Guidance requires the submittal of a comprehensive inventory of ozone precursor emissions (VOC and NO_x) representative of the year when the area achieves attainment of the ozone air quality standard. Indiana must also demonstrate that the improvement in air quality between the year that violations occurred and the year that attainment was achieved is based on permanent and enforceable emission reductions. Other emissions inventory related requirements include a projection of the emission inventory to a year at least ten (10) years following redesignation, a demonstration that the projected level of emissions is sufficient to maintain the ozone standard, and a commitment to provide future updates of the inventory to enable tracking of emission levels during the ten (10) year maintenance period.

The following subsections address each of these requirements.

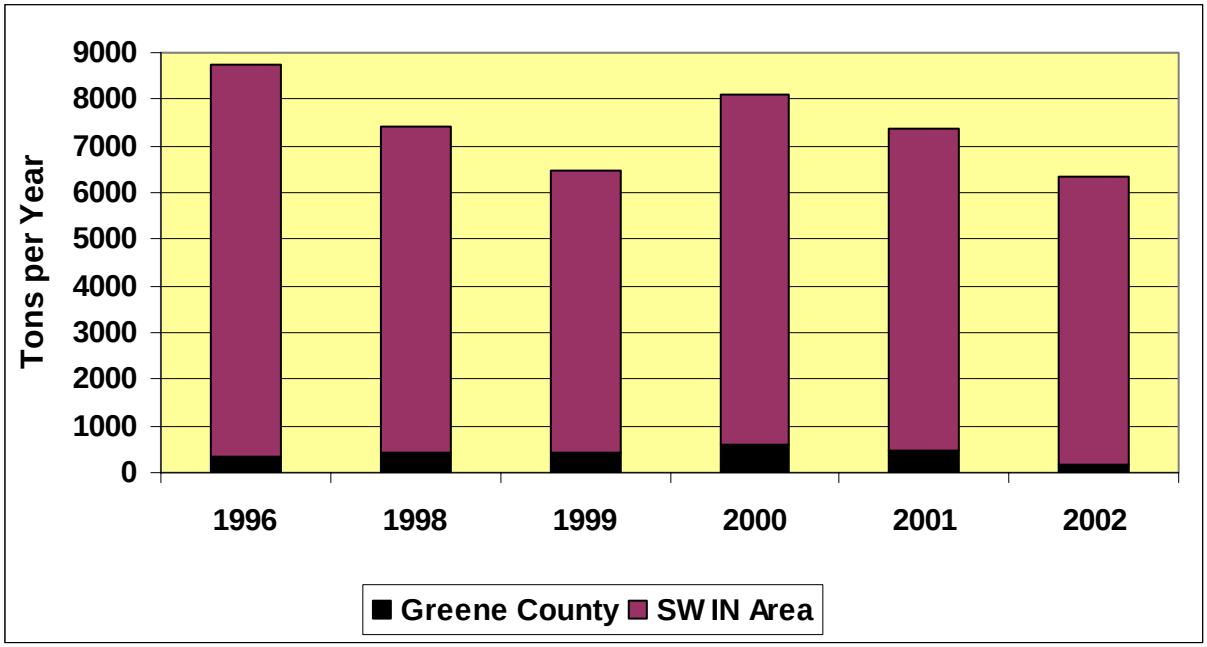
4.1 Emission Trends

Graphs 4.1 and 4.2 below show the trend in point source emissions of VOC and NO_x respectively that correspond to the years of monitored values used in this report. To better illustrate emissions that impact ozone formation at the Greene County monitoring site, these graphs include the Greene County nonattainment area emissions and the emissions from an additional eight (8) surrounding counties (Daviess, Dubois, Gibson, Knox, Martin, Pike, Vanderburgh, and Warrick) in the southwest portion of Indiana. The point source data are taken from Indiana's annual emissions reporting program. Data later than 2002 are not available for all sources.

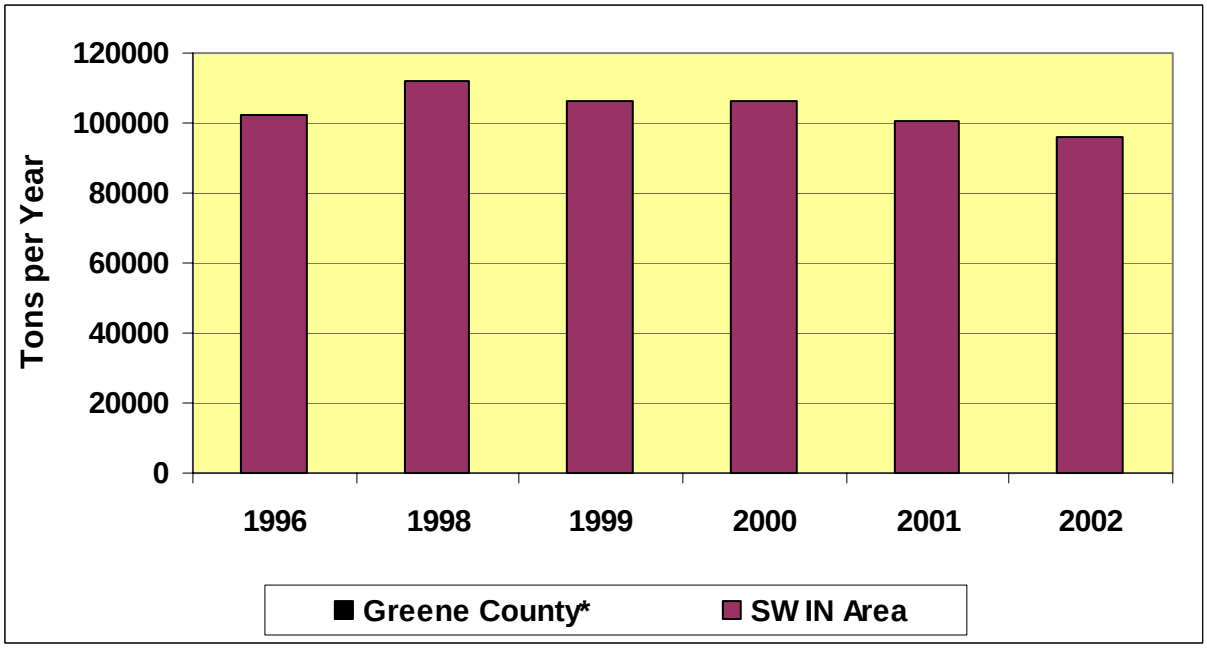
1 www.in.gov/idem/

Greene County is predominantly a rural county and is strongly impacted by regional transport of ozone. Ozone precursor emissions in Greene County are less likely to impact attainment and maintenance of the 8-hour ozone standard than upwind precursor emissions.

Graph 4.1 Greene County and Southwest Indiana VOC Point Source Emissions 1996-2002



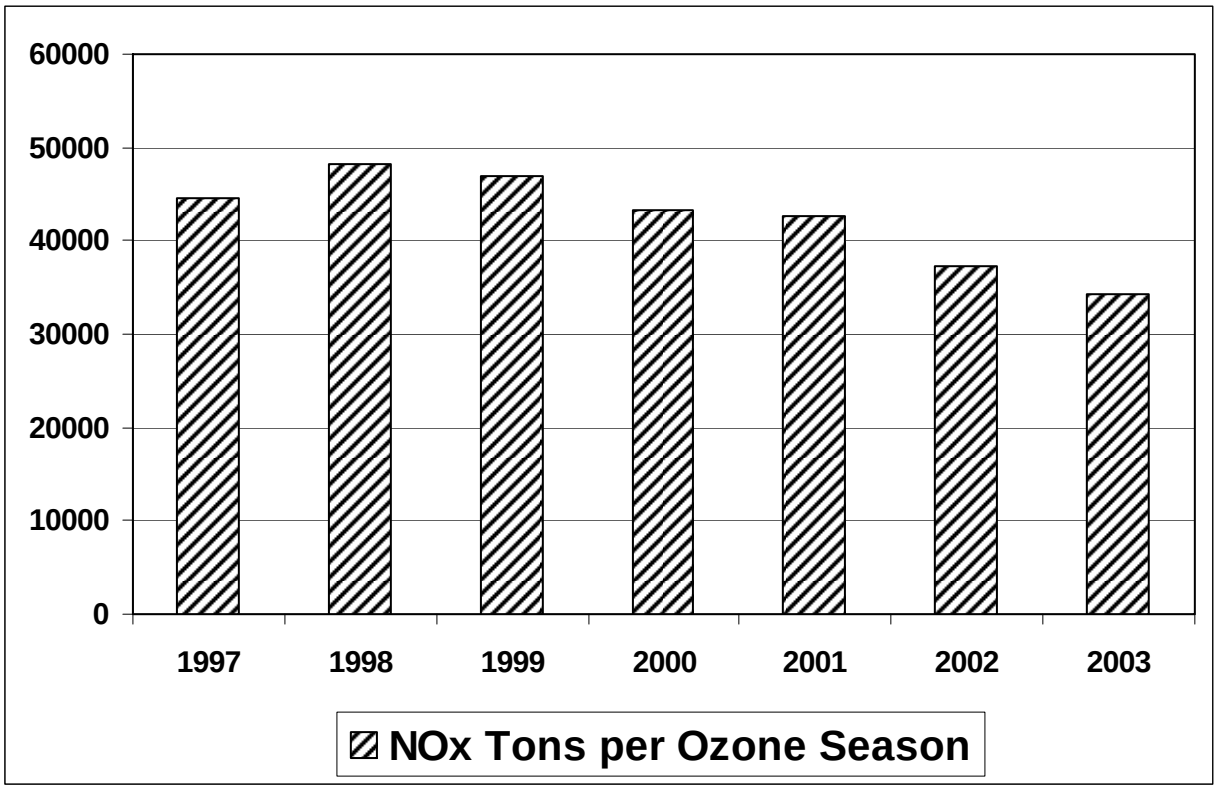
Graph 4.2 Greene County and Southwest Indiana NO_x Point Source Emissions 1996–2002



* Note: Greene County's total annual NO_x emissions from point sources for the years 1996 through 2002 average less than 81 tons per year and are thereby not viewable in Graph 4.2 based on the appropriate scale.

Graph 4.3 below shows the trends in regional NO_x emissions from three Electric Generating Units (EGUs) that are located upwind of the Greene County area, the facilities are IPL-Petersburg (Pike County), Cinergy-Gibson (Gibson County), and AEP-Rockport (Warrick County). Other upwind EGUs are likely to impact the Greene County monitor as well. This graph reflects NO_x emissions below the levels in graph 4.1 because graph 4.1 reflects emissions from every point source in the Southwestern Indiana area and graph 4.3 only reflects emissions from the three above-referenced EGUs. While ozone and its precursors are transported into this region from outside the area, this information does provide some indication of the impact from Indiana sources near the nonattainment area. Ozone concentrations at monitors in Delaware and Vigo counties indicate that NO_x emissions are decreasing beyond Southwestern Indiana.

Graph 4.3 NO_x Emission Trends from Three Electric Generating Units Located Upwind of Greene County



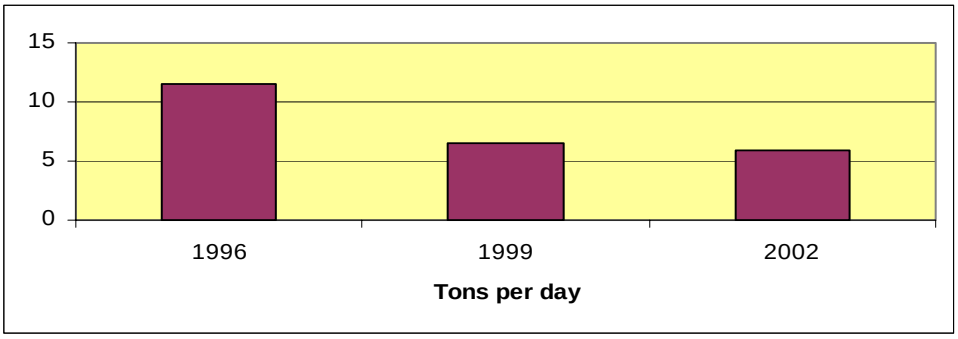
NO_x emissions are decreasing substantially in response to national programs affecting all EGUs, including the Acid Rain program and the NO_x SIP Call. Other sectors of the inventory also impact ozone formation, but large regional sources such as EGUs have a substantial impact on the formation of ozone. This area has the highest concentration of EGUs in Indiana. There are no power plants located in Greene County.

These data for graph 4.3 were taken from U.S. EPA's Clean Air Markets database[2]. Data are available sooner for these units than other point sources in the inventory because of the NO_x SIP Call budget and trading requirements. Information from 2003 is significant because some EGUs started operation of their NO_x SIP Call controls in order to generate Early Reduction Credits for their future year NO_x budgets. The first season of the NO_x SIP Call budget period began May 31, 2004.

As part of the NO_x SIP Call, the states were required to adopt into their rules a budget for all large EGUs. Indiana's budget is adopted at 326 IAC 10-4. The budget represents a state-wide cap on NO_x emissions. Although each unit is allocated emissions based upon historic heat input, utilities can meet this budget by over-controlling certain units or purchasing credits from the market to account for overages at other units. To summarize, NO_x emissions have substantially decreased over the years represented on these graphs. These emissions, capped by the state rule, should remain at least this low through the maintenance period covered by this request but are not guaranteed to stay this low since EGUs can purchase allowances from out of state. The state cap for the NO_x SIP Call will stay in place through 2008, at which time the Clean Air Interstate Rule (CAIR) program will supersede it. CAIR, issued in March 2005 and to be implemented in late 2006, will reduce regional EGU NO_x emissions by approximately another fifteen percent (15%) in 2015.

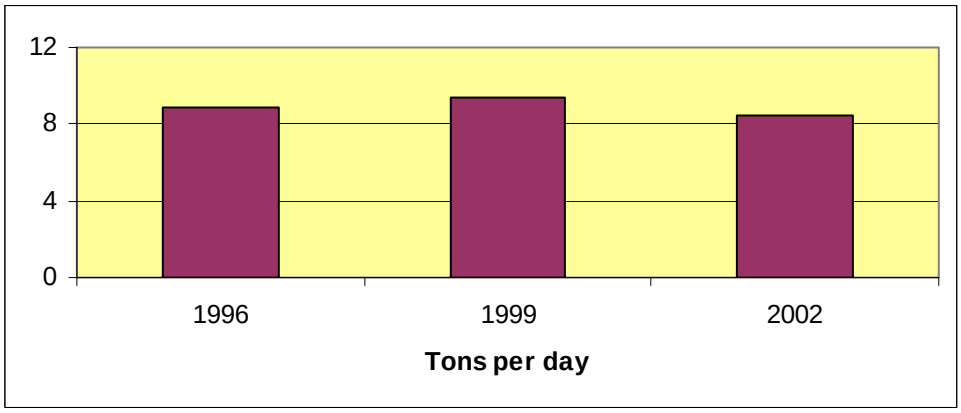
Graphs 4.4 and 4.5 below show the trends for the total emissions for all anthropogenic source categories in these years, which is a downward trend from 1996 to 2002. These emission decreases correspond to the trend in ozone concentrations monitored from 2001-2004 discussed in Section 3.0. Appendix B contains detailed information on these emissions.

Graph 4.4 NO_x Emissions Trends, 1996 - 2002, All Sources in Greene County



2 http://www.epa.gov/airmarkets

Graph 4.5 VOC Emissions Trends, 1996 - 2002, All Sources in Greene County



4.2 Emission Inventories

IDEM prepared a comprehensive inventory for Greene County, including area, mobile, and point sources for precursors of ozone (volatile organic compounds and nitrogen oxides) for base year 2002.

- Area source emissions for the 1996 and 1999 inventories were generated by U.S. EPA and are part of the National Emissions Inventory (NEI). The 2002 area sources were taken from the Indiana 2002 periodic inventory submitted to U.S. EPA. These estimates were made from the U.S. Department of Commerce Bureau of Economic Analysis (BEA) growth factors, with some updated local information.
- Mobile source emissions for 1996 and 1999 were generated by U.S. EPA and are part of the National Emissions Inventory (NEI). The 2002 mobile source emissions were calculated from MOBILE6 produced emission factors.
- Point source information for 1996 and 1999 was compiled from IDEM's 1996 and 1999 annual emissions statement database. Point source information for the 2002 analysis was compiled from IDEM's 2002 annual emissions statement database and the 2002 U.S. EPA Air Markets acid rain database[3] .
- Biogenic emissions are not included in these summaries.
- Nonroad emissions for 1996 and 1999 were generated by U.S. EPA and are part of the National Emissions Inventory (NEI). The 2002 emissions were generated by IDEM utilizing the new nonroad estimation model provided by U.S. EPA. To address concerns about the accuracy of some of the categories in U.S. EPA's Nonroad emissions model, the Lake Michigan Air Directors' Consortium (LADCO) (Midwest Regional Planning Organization), contracted with two (2) companies to review the base data and make recommendations. Emissions were estimated for commercial marine vessels and railroads. Recreational motorboat population and spatial surrogates (used to assign emissions to each county) were significantly updated. The populations for the construction equipment category was reviewed and updated based upon surveys completed in the Midwest and the temporal

3 http://www.epa.gov/airmarkets/acidrain

allocation for agricultural sources was also updated. One of the contractors also estimated emissions for two (2) nonroad categories not included in U.S. EPA's Nonroad model.

Appendix B contains detailed information for the 2002 emissions in Greene County as well as eight (8) surrounding Southwestern Indiana counties.

4.3 Emission Projections

In consultation with the U.S. EPA, IDEM selected the year 2015 as the maintenance year for this redesignation request. This document contains projected emissions inventories for 2010 and 2015.

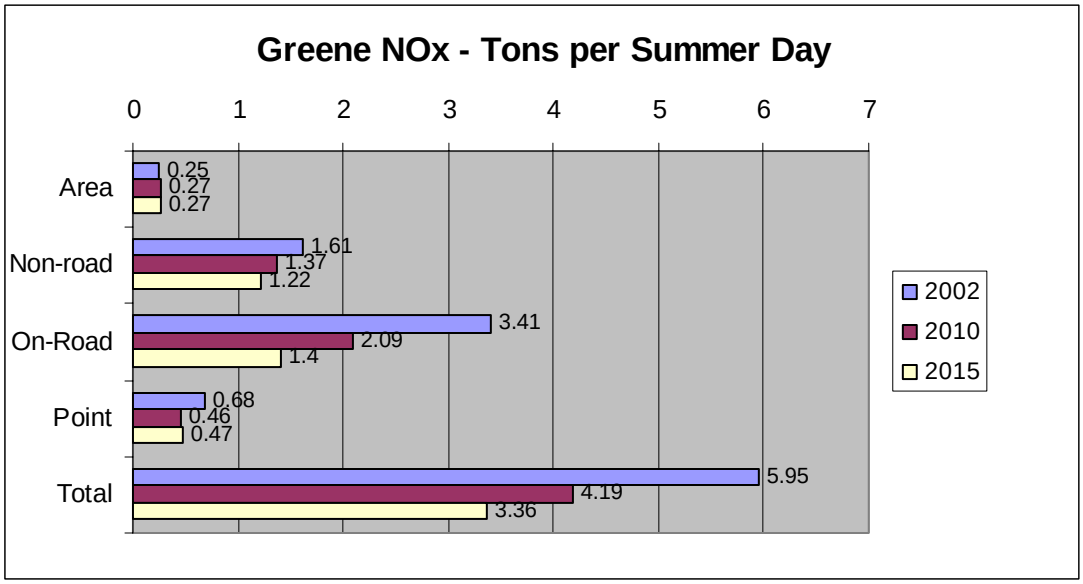
IDEM performed emission projections for Greene County using the following approaches:

- Mobile source emission projections are based on the U.S. EPA MOBILE6 model. The analysis is described in more detail in Section 5.0. All projections were made in accordance with "Procedures for Preparing Emissions Projections"; U.S. EPA-45/4-91-019.
- Emissions inventories are required to be projected to future dates to assess the influence growth and future controls will have. The Midwest Regional Planning Organization has developed growth and control files for Point, Area, and Nonroad categories. These files were used to develop the future year emissions estimates used in this document. This was done so that the inventories used for redesignation are consistent with modeling performed in the future.

The detailed inventory information for Greene County as well as the eight (8) surrounding Southwestern Indiana counties for 2010 and 2015 is in Appendix C.

Emission trends are an important gauge for continued compliance of the ozone standard. Therefore, IDEM performed an initial comparison of the inventories for the base year and maintenance year inventories for Greene County which is summarized below. Graphs 4.6 and 4.7 visually compare the 2002 estimated emissions with the 2010 and 2015 projected emission for Greene County. Mobile Source emission inventories are described in Section 5.0.

Graph 4.6 Comparison of 2002 Estimated and 2010 and 2015 Projected VOC Emissions in Greene County.



Graph 4.7 Comparison of 2002 Estimated and 2010 and 2015 Projected NO_x Emissions in Greene County

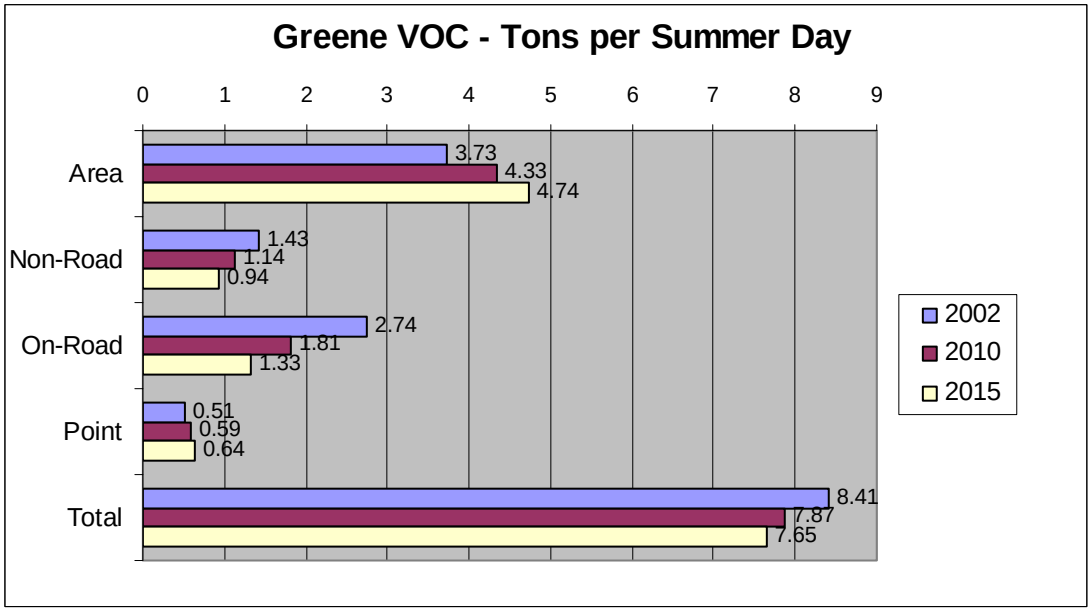


TABLE 4.1 Comparison of 2002 Estimated and 2015 Projected Emission Estimates in Tons per Summer Day, Greene County, All Sources.

	2002	2015	Change
VOC	8.41	7.65	-0.76 (9.0% decrease)
NO_x	5.95	3.36	-2.59 (43.5% decrease)

VOC emissions in the non-attainment area are projected to decrease by nine percent 9.0%. Area source emissions, and, to a lesser extent, point sources, show an increase due to expectations that population will grow considerably in this area. However, cleaner vehicles and fuels that will be in place in 2010 and 2015 result in an overall drop in VOC emissions.

NO_x emissions show a large decrease, forty-three point five percent (43.5%). In 2002, mobile sources comprised over 70% of the inventory. Decreases in the mobile inventory are attributed to U.S. EPA rules covering Tier II Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements[4], Highway Heavy-Duty Engine Rule[5] and Non-Road Diesel Engine Rule[6]. Also, due to the implementation of the NOx SIP Call across the eastern United States, NOx and ozone levels entering this area will also be decreased. The Clean Air Interstate Rule (CAIR), issued in March 2005 and to be implemented in late 2006, will reduce regional EGU NOx emissions by approximately another fifteen percent (15%) in 2015. Since CAIR is a regional cap and trade program, it cannot be predicted at this time what effect this will have on EGU units located in Southwestern Indiana, and so potential reductions are not included in Graph 4.6 or Table 4.1. There are no EGU units located in Greene County.

4.4 Demonstration of Maintenance

Ambient air quality data indicate that air quality met the NAAQS for ozone in 2004. U.S. EPA's Redesignation Guidance (Page 9) states, "A state may generally demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory, or by modeling to show that the future mix of sources and emissions rates will not cause a violation of the NAAQS**."** Ozone concentrations in Greene County will be substantially reduced due to the implementation of the NO_x SIP Call in the upwind Southwestern Indiana region. The NO_x SIP rule will result in major reductions of EGU emissions (see Section 6.3). Therefore, air quality should meet the ozone NAAQS through the projected year 2015. Section 7.0 further discusses the implications of these emissions trends and provides an analysis to support these conclusions.

4 http://www.epa.gov/fedrgstr/EPA-AIR/2000/February/Day-10/a19a.htm
5 http://www.epa.gov/fedrgstr/EPA-AIR/1997/October/Day-21/a27494.htm
6 http://www.epa.gov/fedrgstr/EPA-AIR/1998/October/Day-23/a24836.htm

In Indiana, major point sources in all counties are required to submit air emissions information once every three (3) years or annually, if VOC potential to emit is greater than two hundred fifty (250) tons or NO_x greater than two thousand five hundred (2500) tons, in accordance with the Emission Statement Rule, 326 IAC 2-6. IDEM prepares a new periodic inventory for all ozone precursor emission sectors every three (3) years. These ozone precursor inventories will be prepared for 2005, 2008, and 2011, as necessary, to comply with the inventory reporting requirements established in the CAAA. Emissions information will be compared to the 2002 base year and the 2015 projected maintenance year inventories to assess emission trends, as necessary, to assure continued compliance with the ozone standard.

4.5 Permanent and Enforceable Emissions Reductions

Permanent and enforceable reductions of volatile organic compounds and oxides of nitrogen have contributed to the attainment of the 8-hour ozone standard. Some of these reductions were due to the application of RACT rules and some were due to the application of tighter federal standards on new vehicles. Also, Title IV of the Clean Air Act and the NO_x SIP Call required the reduction of oxides of nitrogen from utility sources. Section 6.0 identifies these reductions along with an explanation of their status.

4.6 Provisions for Future Updates

As required by Section 175A(b) of the CAAA, Indiana commits to submit to the Administrator, eight (8) years after redesignation, an additional revision of this SIP. The revision will contain Indiana's plan for maintaining the national primary ozone air quality standard for ten (10) years beyond the first ten (10) year period after redesignation.

5.0 TRANSPORTATION CONFORMITY BUDGETS

The following is a summary of the detailed mobile input and output calculation files located in Appendix D.

5.1 On-Road Emission Estimations

Nonattainment areas most commonly incorporate urban areas. Urban area transportation planning is the responsibility of an urban area planning agency referred to as a Metropolitan Planning Organization (MPO). MPOs commonly maintain a Travel Demand Forecasting Model (TDFM) that provides computer simulation of current and projected traffic. As a general rule, the TDFM is used to calculate travel statistics and emissions for future years. Greene County, however, is a rural county and is not in the jurisdiction of an MPO. Commonly, if there is no model to use for traffic forecasting, Highway Performance Monitoring System (HMPS) data is used in its place. This is a national program that requires state Departments of Transportation (DOTs) to collect traffic counts throughout the state on a regular basis under a certain regulated method. HPMS data collected and provided by the Indiana Department of Transportation (INDOT) on a by-county basis was used for this analysis.

5.2 Overview

Broadly described, MOBILE6 is used to determine "emission factors", which are the average emissions per mile (grams/mile) for different road facility types. MOBILE6 describes road facility types as Freeway, Arterial, Local or Ramp. Vehicle speeds also affect the emission factor values. Other factors also affect the emission factors such as air temperature, humidity, age of the vehicle fleet and the types of vehicles on the roads. These data are estimated using the best available information to create emission factors for the appropriate ozone precursors, NO_x and VOC. After emission factors are determined, the emission factor(s) must be multiplied by the vehicle miles traveled (VMT) to ultimately determine the quantity of vehicle emissions. This VMT information comes, in this case, from HPMS data. HPMS data is provided for 13 different roadway facility types.

IDEM analyzed these separately for each HPMS facility type. That is, for each HPMS facility type, the daily vehicle miles traveled (VMT), vehicle fleet type and average speed were determined. These data were the input files used by MOBILE6 to create emission factors for each facility type. The products of the VMT data and emission factors are the total daily emissions. The sum of all 13 facility types provides the total emissions for the county.

5.3 Emission Estimations

Table 5.1 contains the results of the emissions analysis for the appropriate years.

Table 5.1 - Emission Estimations for On-Road Mobile Sources

	2002	2010	2015	2015 Margin of Safety
VMT (miles/day)	1,292,263	1,580,904	1,763,636	
VOC (tons/day)	2.74	1.81	1.33	10%
NOx (tons/day)	3.41	2.09	1.40	10%

5.4 Motor Vehicle Emission Budget

Table 5.2 contains the motor vehicle emissions budget for the Greene County ozone nonattainment area for the year 2015.

Table 5.2 – Mobile Vehicle Emission Budgets

2015	tons/day
VOC	1.46
NOx	1.54

The mobile vehicle emission budget includes the emission estimates calculated for 2015, and a margin of safety. Margins of safety are used to accommodate the wide array of assumptions that are factored into the calculation process. Since assumptions (model inputs, land use, census data, population characteristics) change over time, it is necessary to have a margin of safety that will accommodate the impact of refined assumptions in the conformity process. This budget results in the 2015 total emissions, for both VOC and NO_x. This budget is still below the base year emissions shown in Graphs 4.6 and 4.7.

All methodologies, latest planning assumptions and the safety margins were determined through the interagency consultation process described in 40 CFR 93.105 and 326 IAC 19-2-1.

6.0 CONTROL MEASURES AND REGULATIONS

This section provides specific information on the control measures implemented in Greene County, including CAAA requirements and additional state or local measures implemented beyond CAAA requirements.

6.1 Reasonably Available Control Technology (RACT)

As required by Section 172 of the CAAA, Indiana in the mid-1990s promulgated rules requiring RACT for emissions of VOCs. There were no specific rules required by the CAA, such as RACT for existing sources, for this county beyond state-wide rules. State-wide RACT rules have applied to new sources locating in Indiana since that time. The Indiana rules are found in 326 IAC 8. The following is a listing of applicable rules:

326 IAC 8-1-6 BACT for non-specific sources
326 IAC 8-2 Surface Coating Emission Limitations
326 IAC 8-3 Organic Solvent Degreasing Operations
326 IAC 8-4 Petroleum Sources
326 IAC 8-5 Miscellaneous Operation
326 IAC 8-6 Organic Solvent Emission Limitations

6.2 Implementation of Past SIP Revisions

This nonattainment area was not required to develop an Attainment Demonstration SIP for the one-hour NAAQS. Similarly, since the area was only recently designated nonattainment for ozone and the area has now attained the standard, no Attainment Demonstration SIP has been required to bring the area into attainment for the 8-hour ozone NAAQS. Therefore, this requirement does not apply. Emissions of VOCs are regulated by applicable state-wide provisions of 326 IAC 8.

6.3 Nitrogen Oxides (NO_x) Rule

The U.S. EPA NO_x SIP Call required twenty-two (22) states to pass rules that would result in significant emission reductions from large EGUs, industrial boilers, and cement kilns in the eastern United States. Indiana adopted this rule in 2001. Beginning in 2004, for Indiana this rule will account for a reduction of approximately thirty-one percent (31%) of all NO_x emissions state-wide provisions of 326 IAC 8.

The other states have also adopted these rules. The result is that significant reductions will continue to occur upwind and within the Greene County nonattainment area because of the number of large electric utilities located in southern Indiana, Illinois, Kentucky, and Tennessee. U.S. EPA and IDEM performed modeling that indicates this area will attain the 8-hour ozone standard with the implementation of the NO_x SIP Call. Controls for EGUs formally commenced May 31, 2004. From Graph 4.3, "NO_x Emissions Trends from Three Electric Generating Units Located Upwind of Greene County," it can be seen that emissions covered by this program have been generally trending downward since 1998 with larger reduction occurring in 2002 and 2003. Table 6.1, compiled from data taken from the U.S. EPA Clean Air Markets website, quantifies the gradual NO_x reductions that have occurred in Indiana as a result of Title IV of the Clean Air Act Amendments and the beginning of the NO_x SIP Call Rule.

Further, U.S. EPA has recently published Phase II of the NO_x SIP Call, which establishes a budget for large (greater than 1 ton per day emissions) stationary internal combustion engines. This rule will decrease emissions state-wide from natural gas compressor stations by four thousand two hundred and sixty-three (4,263) tons during the ozone season. Indiana is on track to finalize this rule in mid-2005. Implementation of this rule will be in 2007.

TABLE 6.1 Trends in EGU Ozone Season NO_x Emissions State-Wide in Indiana

Year	NO_x Emissions (tons/ozone season)	NO_x Emission Rate (lbs/MMBtu)
1997	152,834	0.557
1998	159,931	0.540
1999	149,827	0.502
2000	133,881	0.476
2001	136,121	0.481
2002	114,082	0.409
2003	99,967	0.342
Cap 2004-2009	43,654	0.150

6.4 Measures Beyond Clean Air Act Requirements

Reductions in ozone precursor emissions have occurred, or are anticipated to occur, as a result of federal control programs. These additional control measures include:

Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards

In February 2000, U.S. EPA finalized a federal rule to significantly reduce emissions from cars and light trucks, including sport utility vehicles (SUVs). Under this proposal, automakers will be required to sell cleaner cars, and refineries will be required to make cleaner, lower sulfur gasoline. This rule will apply nationwide. The federal rules will phase in between 2004 and 2009. U.S. EPA has estimated that NO_x emission reductions will be approximately seventy-seven percent (77%) for passenger cars, eighty-six percent (86%) for smaller SUVs, light trucks, and minivans, and sixty-five to ninety-five percent (65-95%) reductions for larger SUVs, vans, and heavier trucks. VOC emission reductions will be approximately twelve percent (12%) for passenger cars, eighteen percent (18%) for smaller SUVs, light trucks, and minivans, and fifteen percent (15%) for larger SUVs, vans, and heavier trucks.

Heavy-Duty Diesel Engines

In July 2000, U.S. EPA issued a final rule for Highway Heavy Duty Engines, a program which includes low-sulfur diesel fuel standards, which will be phased in from 2004 through 2007. This rule applies to heavy-duty gasoline and diesel trucks and buses. This rule will result in a forty percent (40%) reduction in NO_x from diesel trucks and buses, a large sector of the mobile sources NO_x inventory.

Clean Air Nonroad Diesel Rule

In May 2004, U.S. EPA issued the Clean Air Nonroad Diesel Rule. This rule applies to diesel engines used in industries such as construction, agriculture, and mining. It also contains a cleaner fuel standard, similar to the highway diesel program. The new standards will cut emissions from nonroad diesel engines by over ninety percent (90%). Nonroad diesel equipment, as described in this rule, currently accounts for forty-seven (47%) percent of diesel particulate matter (PM) and twenty-five percent (25%) of nitrogen oxides (NO_x) from mobile sources nationwide. Sulfur levels will be reduced in nonroad diesel fuel by ninety-nine percent (99%) from current levels, from approximately three-thousand (3,000) parts per million (ppm) now to (fifteen) 15 ppm in 2010. New engine standards take effect, based on engine horsepower, starting in 2008.

Together, these rules will substantially reduce local and regional sources of ozone precursors. The modeling analyses discussed in Section 7.0 include these rules and show the ozone concentrations expected to result from the implementation of these rules.

6.5 Controls to Remain in Effect

Indiana commits to maintaining the aforementioned control measures following redesignation. Indiana hereby commits that any changes to its rules or emission limits applicable to VOC and/or NO_x sources, as required for maintenance of the ozone standard in Greene County, will be submitted to U.S. EPA for approval as a SIP revision.

Indiana, through IDEM's Office of Air Quality and Office of Enforcement, has the legal authority and necessary resources to actively enforce any violations of its rules or permit provisions. After redesignation, Indiana intends to continue enforcing all rules that relate to the emission of ozone precursors in Greene County.

6.6 New Source Review Provisions

Indiana has a longstanding and fully implemented New Source Review (NSR) program. This program is addressed in rule 326 IAC 2. The rule includes provisions for the Prevention of Significant Deterioration (PSD) permitting program in 326 IAC 2-2. Indiana's PSD program was conditionally approved on March 3, 2003 (68 FR 9892) and received final approval on May 20, 2004 (69 FR 29071) by U.S. EPA as part of the SIP.

Any facility that is not listed in the 2002 emission inventory, or for the closing of which credit was taken in demonstrating attainment, will not be allowed to construct, reopen, modify, or reconstruct without meeting all applicable permit rule requirement. The review process will be identical to that used for new sources. Once the area is redesignated, OAQ will implement NSR through the PSD program, which requires an air quality analysis to evaluate whether the new source will threaten the NAAQS.

7.0 MODELING

7.1 Summary of Modeling Results for National Emission Control Strategies in Final Rulemakings

Although U.S. EPA's redesignation guidance does not require modeling for ozone nonattainment areas seeking redesignation, extensive modeling has been performed covering the Southwest Indiana region to determine the effect of national emission control strategies on ozone levels. The modeling analyses determined that Greene County is significantly impacted by ozone, and ozone precursor transport and regional NO_x reductions would be necessary to attain the 8-hour standard in this area.

U.S. EPA Modeling Analysis for HDE Final Rulemaking

U.S. EPA conducted modeling for Tier II vehicles and low-sulfur fuels. This analysis was performed in 2000 to support final rulemaking for the Heavy Duty Engine (HDE) and Vehicle Standards and Highway Diesel Fuel Rule and its expected impact on ozone levels. "Technical Support Document for the Heavy Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements: Air Quality Modeling Analyses" (U.S. EPA420-R-00-028) was referenced for support of this ozone redesignation for Greene County. Base year emissions from 1996 were modeled for three (3) ozone episodes: June 12-24, 1995; July 5-15, 1995; and August 7-21, 1995. Results of this modeling show that ozone impacts from these fuel emission control measures, as well as the proposed NO_x SIP call, would be substantial in Greene County. Relative reduction factors (RRF) were calculated for each of the monitors in operation and having a complete three (3) year design value for 1996. Monitors without a complete three (3) year design value, such as Greene County, were not evaluated in the modeling. However, for a conservative approach, the highest RRF calculated throughout the state (0.9246 at the Valparaiso monitor in Porter County) was used for the Plummer monitor. The RRF was applied to the most current three (3) year (2001-2003) design value at the Plummer ozone monitor in Greene County. The resulting future year design value was calculated as shown below in Table 7.1. The modeled future year design value for the ozone monitor in Greene County shows it will attain the 8-hour ozone NAAQS.

Table 7.1 Modeling Results from U.S. EPA Heavy Duty Diesel

Monitor ID	Monitor Name	County	Design Value (ppb)	Modeled Relative Reduction Factor (RRFs)	Future Design Value (ppb)
			2001-2003	2007 Base	2007
180550001	Plummer	Greene	88	0.9246 [a]	81.4

[a] Indicates the maximum calculated RRF throughout the state (modeled at Valparaiso).

LADCO Modeling Analysis for 8-Hour Ozone Standard Assessment

The Lake Michigan Air Directors Consortium (LADCO), which is the Midwest Regional Planning Organization, performed modeling to evaluate the effect of the NO_x SIP call and Tier II / Low Sulfur Rule for future-year 2007 ozone in the Lake Michigan area. This modeling was originally designed to assess the 1-hour ozone standard. Further analysis was conducted and documented in the LADCO's White Paper "8-hour Ozone Assessment", dated May 2, 2001. Base year design values used were the average of the design values for the three (3) three (3) year periods (1994-1996, 1995-1997, 1996-1998). Base year emissions were taken from 1996 and four (4) ozone episodes were evaluated: June 22-28, 1991; July 14-21, 1991; June 13-25, 1995; and July 7-18, 1995.

While modeling results were not calculated for Greene County, the average decrease in ozone from the base case modeling run with modeling runs that applied emission controls required by the Clean Air Act, NO_x SIP Call and Tier II / Low-Sulfur requirements was nine (9) ppb. This average is for nonattainment areas in northwest, north-central, central, southwest and southern Indiana. Monitors located in or near urban areas showed a slightly lower average ozone decrease of eight (8) ppb while upwind monitors or monitors located in rural areas showed an average ozone decrease of eleven (11) ppb. Southern Indiana averaged higher ozone decreases as compared to Central and Northern Indiana due to the number of power plants located near the Ohio River. Therefore, anticipated ozone decreases from LADCO's modeling analysis would be approximately eight to ten (8-10) ppb in the Greene County area. These anticipated ozone decrease in each of the 2001 – 2003 design value of eighty-eight (88) ppb would bring the future year 2007 design value below the 8-hour ozone NAAQS.

7.2 Summary of Modeling Results to Support Recent Rulemakings

U.S. EPA Modeling for Clean Air Interstate Rules (CAIR), 2005

On March 10, 2005, the U.S. EPA promulgated the Clean Air Interstate Rules (CAIR). NO_x emissions will be cut from 4.5 million tons in 2003 to a cap of 1.5 million tons by 2009 and 1.3 million tons in 2015 in twenty-eight (28) eastern states and the District of Columbia.

U.S. EPA performed modeling to support the associated emission reductions. The modeling was based on 1999 – 2003 design values. Future year modeling was conducted for Greene County and the future year design values for 2010 and 2015 were evaluated for attainment of the 8-hour ozone NAAQS, as shown in Table 7.2. Results of the CAIR modeling show that Greene County will continue to attain the 8-hour ozone NAAQS in 2010. With further reductions projected in CAIR for 2015, the design value continues to decrease.

Table 7.2 Modeling Results from U.S. EPA for the Clean Air Interstate Rule

County	Design Value (ppb)	Future Design Value (ppb)	Future Design Value (ppb)	Future Design Value (ppb)	Future Design Value (ppb)
	1999-2003	**2010 w/out CAIR**	**2010 with CAIR**	**2015 w/out CAIR**	**2015 with CAIR**
Greene	88.5	76.6	75.3	73.3	70.1

LADCO modeling for Clean Air Interstate Rule

LADCO conducted modeling to determine the associated emission reductions for CAIR. The modeling was based on 2000 – 2004 design values. Future year modeling for 2009 was conducted and the future year design values were determined, as shown below in Table 7.3. Results of the CAIR analysis show Greene County will attain the 8-hour ozone NAAQS.

Table 7.3 Modeling Results from LADCO for the Clean Air Interstate Rule

Monitor ID	Monitor Name	County	Design Value (ppb)	Modeled Relative Reduction Factor (RRFs)	Future Design Value (ppb)
			2000-2004	**2009 Base**	**2009**
1805500011	Plummer	Greene	87	0.881	76.6

7.3 Summary of Existing Modeling Results

U.S. EPA and LADCO modeling for future year design values has consistently shown that existing national emission control measures will bring Greene County into attainment of the 8-hour ozone NAAQS. Proposed rulemakings to be implemented in the next several years will provide even greater assurance that air quality will continue to meet the standard into the future. Modeling support for the NO_x SIP Call, Heavy Duty Engine and Highway Diesel Fuel, and Tier II / Low Sulfur Fuel Rules has shown that future year design values for Greene County will attain the ozone standard with modeled future year design values well below eighty-five (85) ppb. U.S. EPA has modeled base case future years with existing emission controls only and shown that Greene County will attain the 8-hour Ozone NAAQS without proposed additional national emission control strategies. Future national emission control strategies will ensure that the county's attainment will be maintained with an increasing margin of safety over time.

7.4 Temperature Analysis for Greene County

Meteorological conditions are one of the most important factors that influence ozone development and transport. IDEM has conducted an analysis to determine how the temperatures during the ozone conducive months of May, June, July, August and September for the years 1996 through 2004 compare to normal temperatures for the Central Indiana area for the years 1971 through 2000. Complete climatological data are not available for Greene County. Therefore, IDEM used the Indianapolis National Weather Service Office, Indianapolis Climate Data. Normal maximum temperatures by summer months from 1971-2000 for the Indianapolis, Central Indiana area are as follows:

May – 73.5° F
June – 82.1° F
July – 85.6° F
August – 83.7° F
September – 77.4° F
May - September – 80.5° F

IDEM compiled Indianapolis' monthly maximum temperatures were compiled for the previous nine (9) years (1996 – 2004) to determine the average maximum monthly temperatures in Central Indiana. This analysis was made to find how the temperatures during the summer months compared to normal summer month temperatures throughout central, west-central, south-central and east-central Indiana. Overall, the temperatures during the 1998, 1999 and 2002 summer months of May, June, July, August, and September were one percent (1%) to two percent (2%) higher while temperatures during the 1996, 1997, 2000, 2001, 2003 and 2004 summer months were one percent (1%) to three percent (3%) lower than the normal temperatures. Table 7.4 shows the average temperatures in Central Indiana for each of the past nine (9) years and the percent difference from normal for each year.

Table 7.4 Analysis of Maximum Temperatures for Central Indiana
(Percent Change from Maximum Temperature (°F) Normals (1971 – 2000))

	Normal	1996		1997		1998		1999	
	Max	Max	%	Max	%	Max	%	Max	%
May	73.5	70	-5	66.9	-9	76.4	+4	75.1	+2
June	82.1	80.9	-1	77.6	-5	80.3	-2	82.3	0
July	85.6	82.9	-3	86.2	+1	84.0	-2	89.2	+4
August	83.7	84.1	0	80.8	-3	84.5	+1	83.3	0
September	77.4	75.5	-2	77.1	+1	83.0	+7	81.2	+5
AVERAGE	80.5	78.7	-2	77.7	-3	81.6	+1	82.2	+2

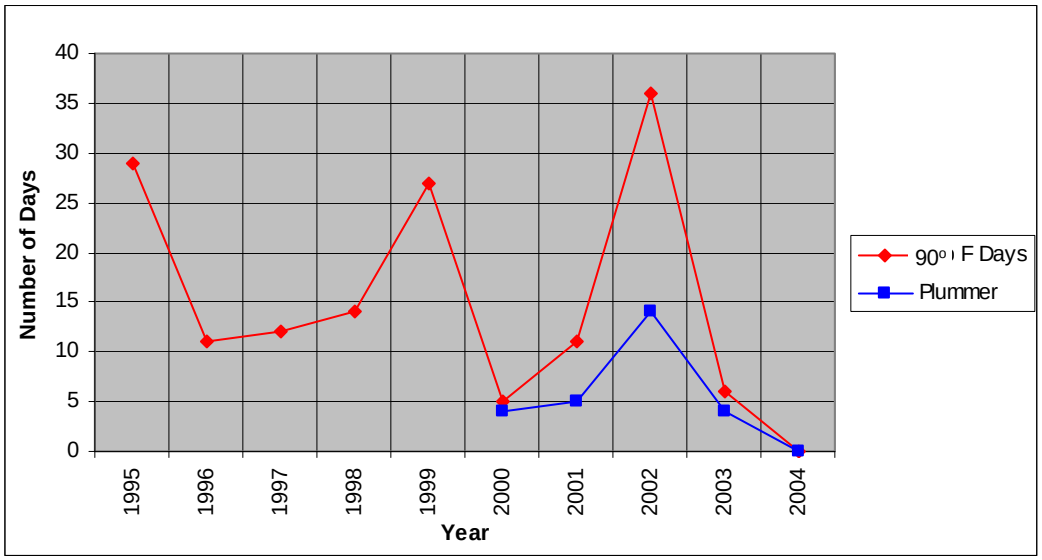
	2000		2001		2002		2003		2004	
	Max	%	Max	%	Max	%	Max	%	Max	%
May	74.9	+2	74.6	+1	70.4	-4	70.3	-4	76.2	+4
June	80.2	-2	79.5	-3	83.6	+2	78.0	-5	81.7	-2
July	82.4	-4	83.9	-2	88.2	+3	83.4	-3	81.6	-5
August	82.6	-1	85.2	+2	86.7	+4	83.9	0	78.9	-6
September	75.5	-2	75.4	-3	82.1	+6	74.2	-4	79.4	+2
AVERAGE	79.1	-2	79.7	-1	82.2	+2	80.0	-3	79.4	-2

The number of days with temperatures of 90° F and higher was calculated and compared to the normal number of days from 1971 through 2000 as well as the number of days with 8-hour ozone exceedances. Table 7.5 shows a table of the comparison of 8-hour ozone exceedances and temperatures while Graph 7.1 shows the correlation graphically.

Table 7.5 Comparison of Days with 90° F and 8-hour Ozone Exceedance Days

Number of Days with Temperatures of 90° F and higher											
	Normal	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
# of 90° F days	**14.9**	**29**	**11**	**12**	**14**	**27**	**5**	**11**	**36**	**6**	**0**
Number of 8-hour Exceedance Days at the Greene County ozone monitor											
Monitor	County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Plummer	Greene	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**4**	**5**	**14**	**4**	**0**

Graph 7.1 Comparison of Days with 90° F and 8-hour Ozone Exceedance Days



As can be seen, a greater number of ozone exceedance days per year correlate with a greater number of 90° F days per year. However, years with a lesser number of 90° F days still yield 8-hour ozone exceedance days.

7.5 Summary of Meteorological Conditions

The analysis of the departure from normal of the maximum temperatures during the summer months show variation of the average maximum temperatures from negative three percent (–3%) to two percent (2%). The analysis shows that ten (10) or more of days with temperatures of 90° F and higher occurred in 1995, 1996, 1997, 1998, 1999, 2001 and 2002. The number of 8-hour ozone exceedance days for those years, especially those with more monitoring data, shows a greater correlation to the number of higher temperature days. However, the years with a lesser number of 90° F days still yielded 8-hour ozone exceedance days. 2002 was a relatively warm year and 2004 was a relatively cool year but there do not appear to be any abnormal temperature swings or other recent summers with excessively warmer or cooler than normal temperatures over the past decade.

In 2002, there were thirty-six (36) occurrences of 90^{o} F and higher days and fourteen (14) occurrences 8-hour ozone exceedance days. In 2003, there were six (6) occurrences 90^{o} F and higher days and four (4) occurrences 8-hour ozone exceedance days. In 2004, there were no 90^{o} F and higher days and no 8-hour ozone exceedances. The lower values correspond to lowered local and regional ozone precursor emissions. U.S. EPA developed the 8-hour ozone standard as a 4th high ozone value averaged over three (3) years to account for these variations in temperature and 8-hour exceedance days.

8.0 CORRECTIVE ACTIONS

8.1 Commitment to Revise Plan

As noted in Section 4.6 above, Indiana hereby commits to review its Maintenance Plan eight (8) years after redesignation, as required by Section 175(A) of the CAAA.

8.2 Commitment for Contingency Measures

Indiana hereby commits to adopt and implement expeditiously necessary corrective actions in the following circumstances:

Warning Level Response

A Warning Level Response shall be prompted whenever an annual (1-year) fourth high monitored value of 88 parts per billion (ppb) occurs in a single ozone season within the maintenance area. A Warning Level Response will consist of a study to determine whether the ozone value indicates a trend toward higher ozone values or whether emissions appear to be increasing. The study will evaluate where the trend if any, is likely to continue and, if so, the control measures necessary to reverse the trend taking into consideration ease and timing for implementation, as well as economic and social considerations. The study, including the applicable recommended next steps shall be completed within twelve (12) months from the close of the most recent ozone season (September 30).

Should it be determined through the Warning Level study that action is necessary to reverse the noted trend, the procedures for control selection and implementation outlined under "Action Level Response" shall be followed.

Action Level Response

An Action Level Response shall be prompted whenever a two (2) year average fourth high monitored value of 85 parts per billion (ppb) occurs within the maintenance area. In the event that the Action Level is triggered and is not found to be due to an exceptional event, malfunction, or noncompliance with a permit condition or rule requirement, IDEM will determine additional control measures needed to assure future attainment of NAAQS for ozone. In this case, measures that can be implemented in a short time will be selected in order to be in place within eighteen (18) months from the close of the ozone season that prompted the Action Level.

Control Measure Selection and Implementation

Adoption of any additional control measures is subject to necessary administrative and legal process. This process will include publication of notices, an opportunity for public hearing, and other measures required by Indiana law for rulemaking by state environmental boards.

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 sufficient to address the upward trend in air quality, additional local measures may be unnecessary. Furthermore, Indiana will submit to U.S. EPA an analysis to demonstrate that the proposed measures are adequate to return the area to attainment.

8.3 List of Contingency Measures

Contingency measures to be considered will be selected from a comprehensive list of measures deemed appropriate and effective at the time the selection is made. Listed below are example measures that may be considered. The selection of measures will be based upon cost-effectiveness, emission reduction potential, economic and social considerations or other factors that IDEM deems appropriate. IDEM will solicit input from all interested and affected persons in the maintenance area prior to selecting appropriate contingency measures. All of the listed contingency measures are potentially effective or proven methods of obtaining significant reductions of ozone precursor emissions. Because it is not possible at this time to determine what control measure will be appropriate at an unspecified time in the future, the list of contingency measures outlined below is not comprehensive. Indiana anticipates that only a few of these measures will be required.

1) Lower-Reid vapor pressure gasoline program.

2) Broader geographic applicability of existing measures.

3) Tighten RACT on existing sources covered by U.S. EPA Control Technique Guidelines issued in response to the 1990 CAAA.

4) Apply RACT to smaller existing sources.

5) A modern vehicle inspection/maintenance program.

6) One or more transportation control measures sufficient to achieve at least a half a percent (0.5%) reduction in actual area wide VOC emissions. Transportation measures will be selected from the following based upon the factors listed above after consultation with affected local governments:

a) Trip reduction programs, including, but not limited to, employer-based transportation management plans, area wide rideshare programs, work schedule changes, and telecommuting.

b) Transit improvements.

c) Traffic flow improvements.

d) Other new or innovative transportation measures not yet in widespread use that affects state and local governments deemed appropriate.

7) Alternative fuel and diesel retrofit programs for fleet vehicle operations.

8) Controls on consumer products consistent with those adopted elsewhere in the United States.

9) Require VOC or NO_x emission offsets for new and modified major sources.

10) Require VOC or NO_x emission offsets for new and modified minor sources.

11) Increase the ratio of emission offsets required for new sources.

12) Require VOC or NO_x controls on new minor sources (less than 100 tons).

No contingency measure shall be implemented without providing the opportunity for full public participation during which the relative costs and benefits of individual measures, at the time they are under consideration, can be fully evaluated.

9.0 PUBLIC PARTICIPATION

Indiana published notification for a public hearing and solicitation for public comment concerning the draft Redesignation Petition and Maintenance Plan in The Indianapolis Star and the Linton Daily Citizen on July 15, 2005.

A public hearing to receive comments on the redesignation request was conducted on August 15, 2005 in the East Shelter House, Humphreys Park, Linton, Indiana. The public comment period closed on August 19, 2005. No comments were received during the public comment period. Appendix E includes a copy of the public notice, certifications of publication, and the transcript from the public hearing.

10.0 CONCLUSIONS

The Greene County basic nonattainment area has attained the NAAQS standard and complied with the applicable provisions of the 1990 Amendments to the Clean Air Act regarding redesignations of basic ozone nonattainment areas. Documentation to that effect is contained herein. IDEM has prepared a State Implementation and Maintenance Plan that meets the requirement of Section 110(a)(1) of the 1990 Clean Air Act.

Indiana has performed an analysis that shows the air quality improvements are due to permanent and enforceable measures. In addition, significant regional NO_x reductions will ensure continued compliance (maintenance) with the standard and that all CAAA requirements necessary for redesignation have been met.

Based on this presentation, the Greene County ozone basic nonattainment area meets the requirements for redesignation under the CAA and U.S. EPA guidance. Furthermore, because this area is subject to significant transport of pollutants, significant regional NO_x reductions will ensure continued compliance (maintenance) with the standards with an increasing margin of safety.

The State of Indiana hereby requests that the Greene County ozone basic nonattainment area be redesignated to attainment simultaneously with U.S. EPA approval of the Indiana State Implementation and Maintenance Plan provisions contained herein.

APPENDIX A

Air Quality System (AQS) and Indiana Department of Environmental Management (IDEM) Monitor Data Values for Greene County

APPENDIX B

Emissions Inventories

APPENDIX C

2010 and 2015 Projected Emission Inventories

APPENDIX D

Mobile Input/Output and Calculation Files, Greene County Indiana

APPENDIX E

Public Participation Process