CRITERIA POLLUTANTS

Air Quality Trend Analysis Report
(1980-2010)

CENTRAL SOUTHEAST INDIANA

Indiana Department of Environmental Management

Office of Air Quality

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Acronyms/Abbreviation List

AEP .... American Electric Power

CAA .... Clean Air Act

CAIR .... Clean Air Interstate Rule

CO .... carbon monoxide

CSAPR .... Cross-State Air Pollution Rule

D.C. .... District of Columbia

EGUs .... electric generating units

FR .... Federal Register

I .... interstate

IAC .... Indiana Administrative Code

IDEM .... Indiana Department of Environmental Management

MWe .... megawatt electrical

NAAQS .... National Ambient Air Quality Standard

NEI .... National Emissions Inventory

NO_2 .... nitrogen dioxide

NO_x .... nitrogen oxides

NSR .... New Source Review

$PM_{2.5}$ .... particulate matter less than or equal to 2.5 µg/m^3 or fine particles

PM_{10} .... particulate matter less than or equal to 10 µg/m^3 or particulate matter

ppb .... parts per billion

ppm .... parts per million

RACT .... Reasonably Available Control Technology

SIP .... State Implementation Plan

SO_2 .... sulfur dioxide

SUVs .... sport utility vehicles

TSP .... total suspended particulate

U.S. EPA .... United States Environmental Protection Agency

$\mu g/m^3$ .... micrograms per cubic meter

VOC .... volatile organic compound

VMT .... vehicle miles traveled

Introduction

The Central Southeast Indiana area is composed of nine counties. The counties represented in the area shown in Figure 1 are: Bartholomew, Brown, Dearborn, Decatur, Franklin, Jackson, Jennings, Lawrence, and Ripley. Three major interstates pass through the Central Southeast Indiana area. They are interstate (I)-65 through Bartholomew and Jackson counties; I-74 through Decatur, Dearborn, Franklin, and Ripley counties; and a small section of I-275 (which loops around Cincinnati, Ohio) through Dearborn County.

There is currently 1 criteria pollutant monitor in Central Southeast Indiana collecting data for ozone. The map in Figure 1 reflects only the monitor that is currently in operation. Monitoring data for the years 2000 through 2010 for Central Southeast Indiana are included in the tables for each regulated criteria pollutant, if available. Monitoring data prior to the year 2000 are available upon request. Trend graphs of historical data for the years 1980 through 2010 are also provided.

The largest emission sources within the Central Southeast Indiana area include American Electric Power (AEP) –Tanner's Creek Generating Station and Lehigh Cement Company. Emission trend graphs and pie charts are included for the precursors for each regulated criteria pollutant. Emission information by county is available upon request.

Figure 1: Map of Central Southeast Indiana Counties and Monitors

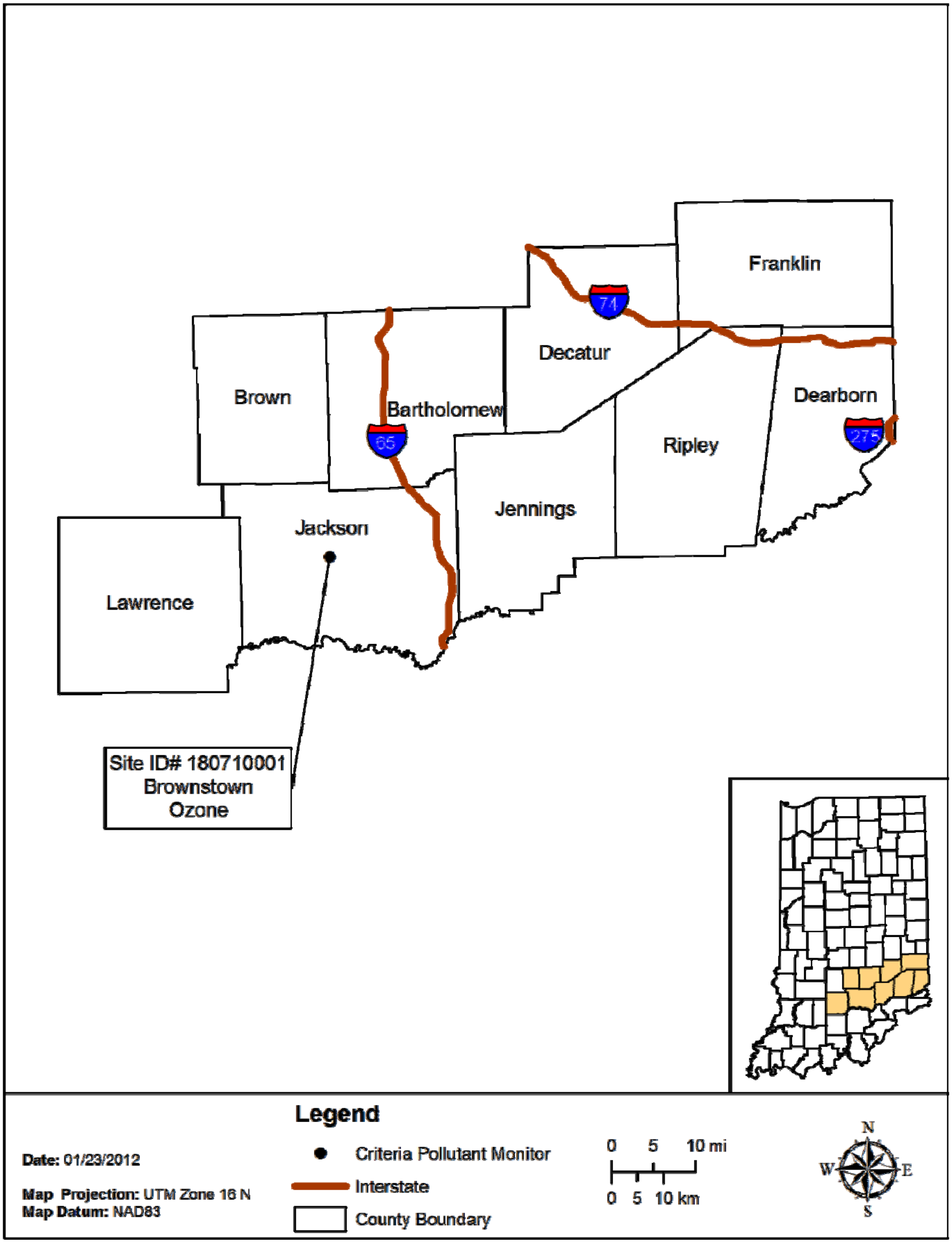


Table 1: Central Southeast Indiana County Population Information

COUNTY	COUNTY SEAT	LARGEST CITY	2010 NUMBER OF HOUSE-HOLDS	1980 POPU-LATION	1990 POPU-LATION	2000 POPU-LATION	2010 POPU-LATION	POPULATION PERCENT DIFFERENCE BETWEEN 1980 AND 2010
BARTHOLOMEW	COLUMBUS	COLUMBUS	33,098	65,088	63,657	71,435	76,794	18%
BROWN	NASHVILLE	NASHVILLE	8,285	12,377	14,080	14,957	15,242	23%
DEARBORN	LAWRENCEBURG	LAWRENCEBURG	20,171	34,291	38,835	46,109	50,047	46%
DECATUR	GREENSBURG	GREENSBURG	11,209	23,841	23,645	24,555	25,740	8%
FRANKLIN	BROOKVILLE	BROOKVILLE	9,538	19,612	19,580	22,151	23,087	18%
JACKSON	BROWNSTOWN	SEYMOUR	18,202	36,523	37,730	41,335	42,376	16%
JENNINGS	VERNON	NORTH VERNON	12,069	22,854	23,661	27,554	28,525	25%
LAWRENCE	BEDFORD	BEDFORD	21,074	42,472	42,836	45,922	46,134	9%
RIPLEY	VERSAILLES	BATESVILLE	11,952	24,398	24,616	26,523	28,818	18%

Table 1 shows that Dearborn County has had the highest percent growth in population between 1980 and 2010, increasing by 46%. The population for every county in the Central Southeast Indiana area had an increase in population from 1980 compared to 2010. Changes in population size, age, and distribution affect environmental issues ranging from basic needs such as food and water to atmospheric changes such as an increase in emissions from vehicle miles traveled (VMT), area sources, and the demand for electricity. Generally, increases in population result in higher area source and mobile emissions. Examples of area sources that increase with higher population include household paints, lawnmowers, and consumer solvents. In addition, higher population figures indicate a secondary effect on increasing VMT if the change in population occurs away from the employment centers.

Table 2: Central Southeast Indiana Vehicle Miles Traveled (VMT) Information

COUNTY	2010 NUMBER OF ROADWAY MILES	2009 NUMBER OF REGISTERED VEHICLES	Back Casted 1980 DAILY VMT	2010 DAILY VMT	PERCENT DIFFERENCE BEWTEEN 1980 AND 2010 DAILY VMT
BARTHOLOMEW	1,088	84,140	1,783,118	2,837,000	59%
BROWN	474	20,103	405,472	349,000	-14%
DEARBORN	710	56,922	738,557	1,935,000	162%
DECATUR	825	28,747	969,148	990,000	2%
FRANKLIN	758	28,176	611,261	601,000	-2%
JACKSON	1,040	47,878	1,103,302	1,804,000	64%
JENNINGS	778	32,531	529,315	851,000	61%
LAWRENCE	929	51,162	1,019,912	1,221,000	20%
RIPLEY	943	34,444	599,801	1,040,000	73%

Table 2 illustrates that Dearborn County had the highest increase in daily VMT since 1980. The daily VMT for 7 of the 9 counties in the Central Southeast Indiana area have increased over time. Daily VMT data are only available as far back as 1992; prior to that year data were not collected in a comparable manner. However, the annual change between 1992 and 2010 was applied for the years 1980 to 1992 to approximate the VMT for 1980. The United States Environmental Protection Agency (U.S. EPA) estimates that motor vehicle exhaust is a major source of emissions of carbon monoxide (CO), fine particles ($PM_{2.5}$), and ozone precursors (volatile organic compounds (VOCs) and nitrogen oxides (NO_x)). Generally, increases in VMT result in subsequent increases in emissions of CO, VOCs, and NO_x from mobile sources. These increases in VMT also result in increased evaporative emissions from more gasoline and diesel consumption. Each of these factors may be somewhat offset by fleet turn-over where newer, cleaner vehicles replace older, more polluting ones.

Table 3: 2009 Central Southeast Indiana Commuting Patterns

COUNTY	NUMBER WHO LIVE AND WORK IN THE COUNTY	NUMBER WHO LIVE IN COUNTY BUT WORK OUTSIDE THE COUNTY	NUMBER OF PEOPLE WHO LIVE IN ANOTHER COUNTY OR STATE BUT WORK IN COUNTY	TOP COUNTY OR STATE SENDING WORKERS INTO COUNTY	NUMBER OF PEOPLE FROM TOP COUNTY OR STATE SENDING WORKERS INTO COUNTY	TOP COUNTY OR STATE RECEIVING WORKERS FROM COUNTY	NUMBER OF PEOPLE FROM TOP COUNTY OR STATE RECEIVING WORKERS FROM COUNTY
BARTHOLOMEW	46,056	4,218	10,980	JENNINGS	2,324	MARION	953
BROWN	6,602	3,769	954	MONROE	202	BARTHOLOMEW	1,107
DEARBORN	20,936	13,290	3,280	RIPLEY	1,062	STATE OF OHIO	7,656
DECATUR	14,665	2,281	3,867	RIPLEY	967	BARTHOLOMEW	680
FRANKLIN	9,220	6,594	1,521	RIPLEY	403	STATE OF OHIO	2,506
JACKSON	24,260	3,987	4,240	JENNINGS	1,329	BARTHOLOMEW	2,193
JENNINGS	12,798	4,866	1,608	JACKSON	387	BARTHOLOMEW	2,324
LAWRENCE	23,949	6,458	2,350	ORANGE	552	MONROE	3,669
RIPLEY	13,914	5,018	3,808	FRANKLIN	1,617	DEARBORN	1,062

Information in Table 3 from 2009 demonstrates that the largest workforce in Central Southeast Indiana is found in Bartholomew County. Commuting patterns in Central Southeast Indiana center on the City of Columbus in Bartholomew County and also flow towards Cincinnati, Ohio, which is adjacent to Dearborn County, Indiana. Since Bartholomew County has the highest population and the highest commuting pattern into the county, and since Dearborn County has the highest commuting pattern flowing out of the county, emissions within Bartholomew and Dearborn counties are expected to be higher than other counties in the Central Southeast Indiana area. The Central Southeast area commuting patterns reflect that of many urban areas around the country. The largest employment county is Bartholomew County and many of those workers commute from the outlying counties. This type of commuting pattern results in longer trips from the place of residence to the employer. Longer commutes result in increased emissions.

Improvements in Air Quality

Indiana's air quality has improved significantly over the last 30 years. The majority of air quality improvements in Central Southeast Indiana have stemmed from the national and regional controls outlined below. These programs have been or are being implemented and have reduced monitored ambient air quality values in Central Southeast Indiana and across the state.

National Controls

Acid Rain Program

Congress created the Acid Rain Program under Title IV of the 1990 CAA. The overall goal of the program is to achieve significant environmental and public health benefits through reduction in emissions of SO_2 and NO_x, the primary causes of acid rain. To achieve this goal at the lowest cost to the public, this program employs both traditional and innovative, market-based approaches to controlling air pollution. Specifically, the program seeks to limit, or "cap," SO_2 emissions from power plants at 8.95 million tons annually starting in 2010, authorizes those plants to trade SO_2 allowances, and while not establishing a NO_x trading program, reduces NO_x emission rates. In addition, the program encourages energy efficiency and pollution prevention.

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 duty trucks, including sport utility vehicles (SUVs). This rule required automakers to produce cleaner cars, and refineries to make cleaner, lower sulfur gasoline. This rule was phased in between 2004 and 2009 and resulted in a 77% decrease in NO_x emissions from passenger cars, an 86% decrease from smaller SUVs, light duty trucks, and minivans, and a 65% decrease from larger SUVs, vans, and heavier duty trucks. This rule also resulted in a 12% decrease in VOC emissions from passenger cars, an 18% decrease from smaller SUVs, light duty trucks, and minivans, and a 15% decrease from larger SUVs, vans, and heavier duty trucks.

Heavy-Duty Diesel Engines

In July 2000, U.S. EPA issued a final rule for Highway Heavy-Duty Engines, a program that includes low-sulfur diesel fuel standards. This rule applies to heavy-duty gasoline and diesel trucks and buses. This rule was phased in from 2004 through 2007 and resulted in a 40% decrease in NO_x emissions from diesel trucks and buses.

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 engine standards for nonroad engines took effect in 2008 and resulted in a 90% decrease in SO_2 emissions from nonroad diesel engines. Sulfur levels were also reduced in nonroad diesel fuel by 99.5% from approximately 3,000 ppm to 15 ppm.

Nonroad Spark-Ignition Engines and Recreational Engine Standards

This standard, effective in July 2003, regulates NO_x, VOCs, and CO for groups of previously unregulated nonroad engines. This standard applies to all new engines sold in the United States and imported after the standards went into effect. The standard applies to large spark-ignition engines (forklifts and airport ground service equipment), recreational vehicles (off-highway motorcycles and all terrain vehicles), and recreational marine diesel engines. When all of the nonroad spark-ignition engines and recreational engine standards are fully implemented, an overall 72% reduction in VOC, 80% reduction in NO_x, and 56% reduction in CO emissions are expected by 2020.

Regional Controls

Nitrogen Oxides Rule

On October 27, 1998, U.S. EPA established the NO_x SIP Call, which required 22 states to adopt rules that would result in significant emission reductions from large electric generating units (EGUs)[1], industrial boilers, and cement kilns in the eastern United

[1] An EGU is a fossil fuel fired stationary boiler, combustion turbine, or combined cycle system that sells any amount of electricity produced.

States (63 FR 57356). The Indiana rule was adopted in 2001 at 326 Indiana Administrative Code (IAC) 10-1. Beginning in 2004, this rule accounted for a reduction of approximately 31% of all NO_x emissions statewide compared to previous uncontrolled years.

Twenty-one other states also adopted these rules. The result is that significant reductions have occurred within Indiana and regionally due to the number of affected units within the region. The historical trend charts show that air quality has improved due to the decreased emissions resulting from this program.

On April 21, 2004, U.S. EPA published Phase II of the NO_x SIP Call that established a budget for large (emissions of greater than one ton per day) stationary internal combustion engines (69 FR 21604). In Indiana, the rule decreased NO_x emissions statewide from natural gas compressor stations by 4,263 tons during May through September. The Indiana Phase II NO_x SIP Call rule became effective in 2006, and implementation began in 2007 (326 IAC 10-4).

Clean Air Interstate Rule (CAIR)

On May 12, 2005, U.S. EPA published the following regulation: "Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (CAIR); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call; Final Rule" (70 FR 25162). This rule established the requirement for states to adopt rules limiting the emissions of NO_x and SO_2 and provided a model rule for the states to use in developing their rules in order to meet federal requirements. The purpose of CAIR was to reduce interstate transport of $PM_{2.5}$, SO_2 and ozone precursors (NO_x).

CAIR applied to any stationary, fossil fuel-fired boiler or stationary, fossil fuel-fired combustion turbine, or a generator with a nameplate capacity of more than 25 megawatt electrical (MWe) producing electricity for sale. This rule provided annual state caps for NO_x and SO_2 in two phases, with Phase I caps for NO_x and SO_2 starting in 2009 and 2010, respectively. Phase II caps were to become effective in 2015. U.S. EPA allowed limits to be met through a cap and trade program if a state chose to participate in the program.

In response to U.S. EPA's rulemaking, Indiana adopted a state rule in 2006 based on the model federal rule (326 IAC 24-1). Indiana's rule included annual and seasonal NO_x trading programs, and an annual SO_2 trading program. This rule required compliance effective January 1, 2009.

SO_2 emissions from power plants in the 28 eastern states and the District of Columbia (D.C.) covered by CAIR were to be cut by 4.3 million tons from 2003 levels by 2010 and by 5.4 million tons from 2003 levels by 2015. NO_x emissions were to be cut by 1.7 million tons by 2009 and reduced by an additional 1.3 million tons by 2015. The D.C. Circuit court's vacatur of CAIR in July 2008 and subsequent remand without vacatur of CAIR in December 2008, directed U.S. EPA to revise or replace CAIR in order to address the deficiencies identified by the court. As of May 2012, CAIR remains in effect.

Cross-State Air Pollution Rule (CSAPR)

On August 8, 2011, U.S. EPA published a final rule that helps states reduce air pollution and meet CAA standards. The Cross-State Air Pollution Rule (CSAPR) replaces U.S. EPA's 2005 CAIR, and responds to the court's concerns (76 FR 48208).

CSAPR requires 27 states in the eastern half of the United States to significantly reduce power plant emissions that cross state lines and contribute to ground-level ozone and fine particle pollution in other states.

On December 30, 2011, the U.S. Court of Appeals for the D.C. Circuit stayed CSAPR prior to implementation pending resolution of a challenge to the rule. The court ordered U.S. EPA to continue the administration of CAIR pending resolution of the current appeal. This required U.S. EPA to reinstate 2012 CAIR allowances which had been removed from the allowance tracking system as part of the transition to CSPAR. The federal rule is on hold pending resolution of the litigation.

Reasonably Available Control Technology (RACT) and other State VOC Rules

As required by Section 172 of the CAA, Indiana has promulgated several rules requiring Reasonably Available Control Technology (RACT) for emissions of VOCs since the mid 1990's. In addition, other statewide rules for controlling VOCs have also been promulgated. The Indiana rules are found in 326 IAC 8. The following is a listing of statewide rules that assist with the reduction of VOCs in Central Southeast Indiana:

326 IAC 8-1-6	Best Available Control Technology 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
326 IAC 8-8.1	Municipal Solid Waste Landfills
326 IAC 8-10	Automobile Refinishing
326 IAC 8-14	Architectural and Industrial Maintenance Coatings
326 IAC 8-15	Standards for Consumer and Commercial Products

New Source Review (NSR) Provisions

Indiana has a longstanding and fully implemented NSR program. This is addressed in 326 IAC 2. The rule includes provisions for the Prevention of Significant Deterioration permitting program in 326 IAC 2-2, and emission offset requirements for nonattainment areas in 326 IAC 2-3 for new and modified sources.

State Emission Reduction Initiatives

Outdoor Hydronic Heater Rule

Rule 326 IAC 4-3, effective May 18, 2011, regulates the use of outdoor hydronic heaters (also referred to as outdoor wood boilers or outdoor wood furnaces) designed to burn wood or other approved renewable solid fuels and establishes a particulate emission limit for new units. The rule also includes a fuel use restriction, stack height requirements, and a limited summertime operating ban for existing units.

Reinforced Plastic Composites Fabricating and Boat Manufacturing Industries Rule

Rules 326 IAC 20-48, effective August 23, 2004 and 326 IAC 20-56, effective April 1, 2006, regulate styrene emissions from the boat manufacturing and fiberglass reinforced plastic industries. The state rules implement the federal NESHAP for each of these source categories with additional requirements that were carried over from the Indiana state styrene rule (326 IAC 20-25) adopted in 2000 and now repealed.

Central Southeast Indiana Emission Inventory Data

Emission trend graphs and pie charts for each criteria pollutant are included in this report. Emission trend graphs and pie charts for any precursors that lead to the formation of a criteria pollutant are also included. Indiana's emissions inventory data are available for 1980 through 2009 for CO, $PM_{2.5}$, NO_x, particulate matter (PM_{10}), SO_2, and VOC. These emission estimates are reflective of U.S. EPA methodologies found in the National Emissions Inventory (NEI) Air Pollutant Emissions Trends Data. Some of the fluctuations found in the trends inventory are due to U.S. EPA not incorporating state reported data until after the submission of the 1996 Periodic Emission Inventory[1]. Further, U.S. EPA acknowledges that changes over time may be attributable to changes in how inventories were compiled[2].

The emissions have been broken down into contributions from the following individual source categories: point sources (including electric generating units (EGUs)), area sources, onroad sources, and nonroad sources. There are three EGU facilities in the Central Southeast Indiana area, one of which is a top ten emitter in the area. Emissions data for each county in Central Southeast Indiana are available upon request.

Point Sources

Point sources include major and minor sources, including EGUs that report emissions through Indiana's emission reporting program. Examples include steel mills, manufacturing plants, surface coating operations, and industrial and commercial boilers.

Area Sources

Area sources are a collection of similar emission units within a geographic area that collectively represent individual sources that are small and numerous and have not been inventoried as a specific point, mobile, or biogenic source. Some of these sources include activities such as dry cleaning, vehicle refueling, and solvent usage.

Onroad Sources

Onroad sources include cars and light and heavy duty trucks.

[1] http://www.epa.gov/ttn/chief/trends/trends98/trends98.pdf
[2] http://www.epa.gov/air/airtrends/2007/report/particlepollution.pdf

Nonroad Sources

Nonroad sources typically include construction equipment, recreational boating, outdoor power equipment, recreational vehicles, farm machinery, lawn care equipment, and logging equipment.

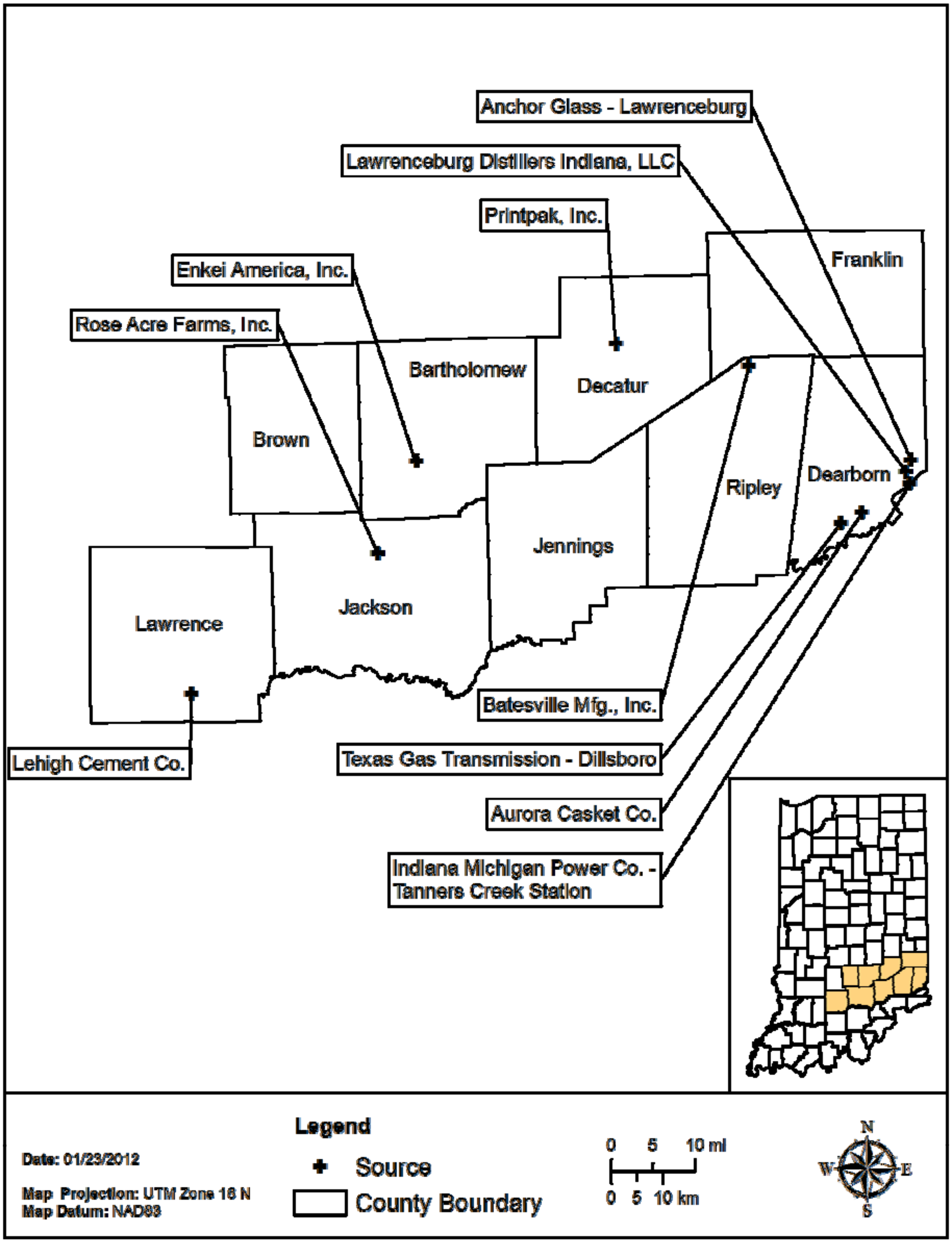
Top Ten Emission Sources

Table 4 represents the top ten sources in tons per year of emissions for the Central Southeast Indiana area. The top source on this list that has the largest impact on emissions in the Central Southeast Indiana area is an EGU, but with the regional controls explained previously, the emissions from the EGU have been reduced over time and will continue to be reduced. Other large facilities in the Central Southeast Indiana area include a cement manufacturing facility, a distillery, and a natural gas pipeline facility. PrintPack, Inc. in Decatur County has recently closed for business. Air quality in the Central Southeast Indiana area is partially influenced by the emissions from these top ten point sources, but as new control measures are adopted, these emissions will continue to decrease. Figure 2 shows the location of these sources within the Central Southeast Indiana area.

Table 4: Central Southeast Indiana Top Ten Sources Data (Tons per Year)

INVENTORY YEAR	COUNTY	FACILITY NAME	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC	TOTAL
2010	DEARBORN	AEP -TANNER'S CREEK GENERATING STATION	493.2	4,793.5	226.8	93.2	25,510.4	94.9	31,212.0
2010	LAWRENCE	LEHIGH CEMENT COMPANY LLC	359.5	1,527.4	281.0	101.3	719.6	52.0	3,040.6
2010	DEARBORN	LAWRENCEBURG DISTILLERS INDIANA, LLC	17.8	663.6	51.6	6.6	948.9	1,046.6	2,735.0
2010	DEARBORN	TEXAS GAS TRANSMISSION - DILLSBORO	351.3	290.9	3.7	3.6	0.1	14.8	664.3
2010	DEARBORN	ANCHOR GLASS -	9.5	294.1	62.6	60.0	161.3	9.5	596.9
2010	DECATUR	PRINTPACK INC. (GR)	3.0	3.6	0.3	0.3	0.0	552.0	559.1
2010	DEARBORN	AURORA CASKET CO INC	2.9	3.5	2.1	1.8	0.0	496.5	506.9
2010	BARTHOLOMEW	ENKEI AMERICA, INC.	13.9	64.9	16.7	3.0	71.3	115.1	285.0
2008	JACKSON	ROSE ACRE FARMS, INC.	54.5	44.5	15.2	15.4	2.3	151.7	283.5
2010	RIPLEY	BATESVILLE MFG, INC. COMBO	0.0	0.0	5.8	5.8	0.0	266.8	278.3

Figure 2: Map of Central Southeast Indiana Top Ten Point Sources



Air Quality Trends

An area meets the standard when the monitoring values for a regulated criteria pollutant meet the applicable National Ambient Air Quality Standard (NAAQS). All counties in the Central Southeast Indiana area meet the NAAQS. Current monitoring data for Central Southeast Indiana are only available for 8-hour ozone. A detailed explanation of ozone will be made in the pollutant specific section of this report. New 1-hour NAAQS were introduced in 2010 for NO_2 and SO_2. The 1-hour NO_2 monitoring data across the state are well below the new 1-hour NO_2 NAAQS. There are no monitors in the Northeast Indiana area that measure NO_2 or SO_2.

Air Monitoring and Emissions Data

There is currently one active ambient air quality monitor in the Central Southeast Indiana. This site is located in Jackson County. Monitoring data for the years 2000 through 2010 for Central Southeast Indiana are included in the tables in this report for each criteria pollutant, if available. Monitoring data prior to the year 2000 are available upon request. A historical trend graph of all available data for the years 1980 through 2010 is also provided. The data were obtained from the U.S. EPA's Air Quality System.

Emission trend graphs and pie charts for the criteria pollutants and precursors that lead to the formation of a criteria pollutant are outlined in this report. Indiana's emission inventory data are available for 1980 through 2009 for CO, $PM_{2.5}$, NO_x, PM_{10}, SO_2, and VOC. The data were obtained from the U.S. EPA's National Emissions Inventory (NEI). An appendix is attached that includes county-specific emissions data for each county from 1980 through 2009.

Carbon Monoxide (CO)

There are no monitoring sites within the Central Southeast Indiana area that measure CO levels. U.S. EPA's NEI contains emissions information for CO which is used for Graph 1 and Chart 1. Graph 1 illustrates the emissions trend for CO in Central Southeast Indiana and Chart 1 shows how the average emissions are distributed among the different source categories. CO emissions in the Central Southeast Indiana area have been trending downward over time. If monitoring data for CO were available in the Central Southeast Indiana area, it is expected that monitor values would be trending downward as well.

Graph 1: Central Southeast Indiana CO Emissions

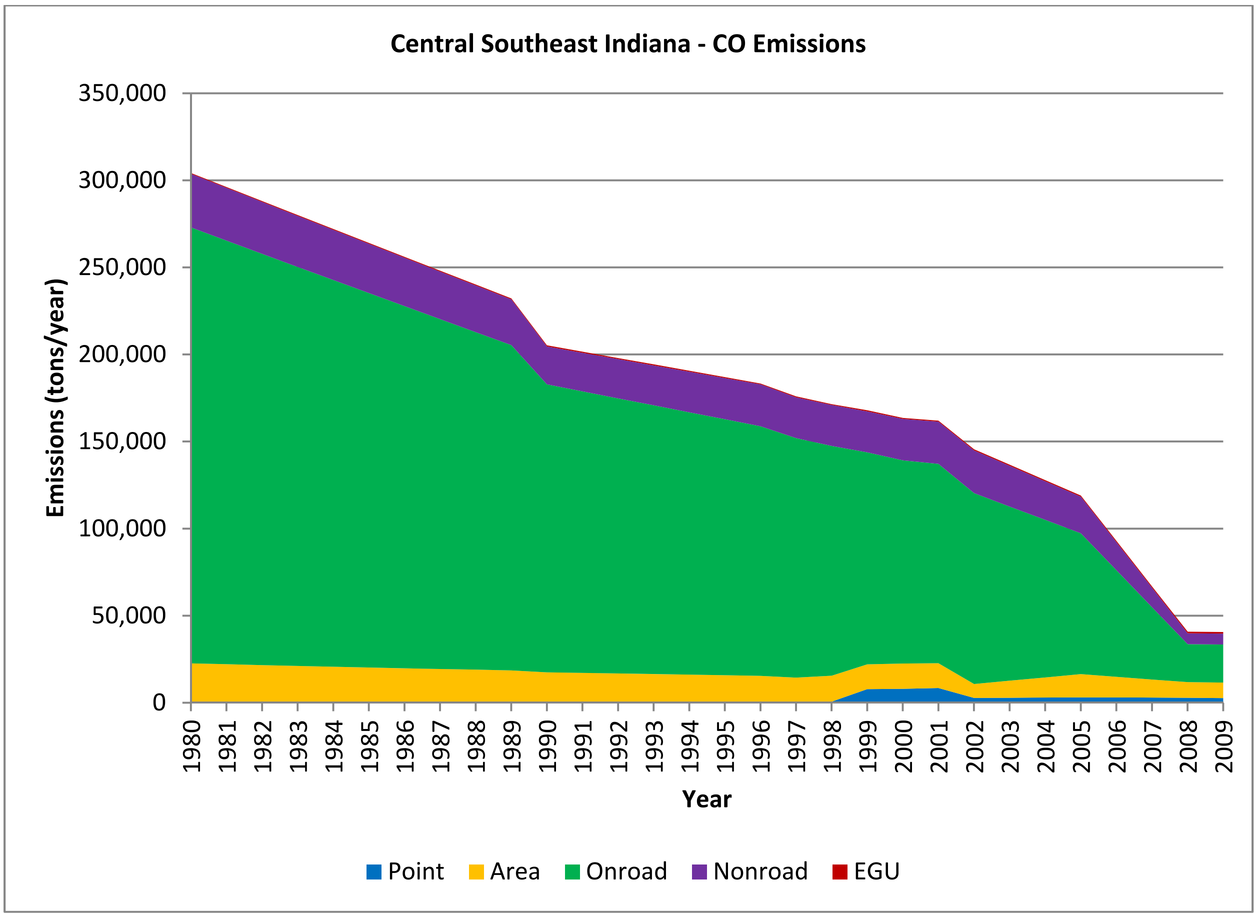
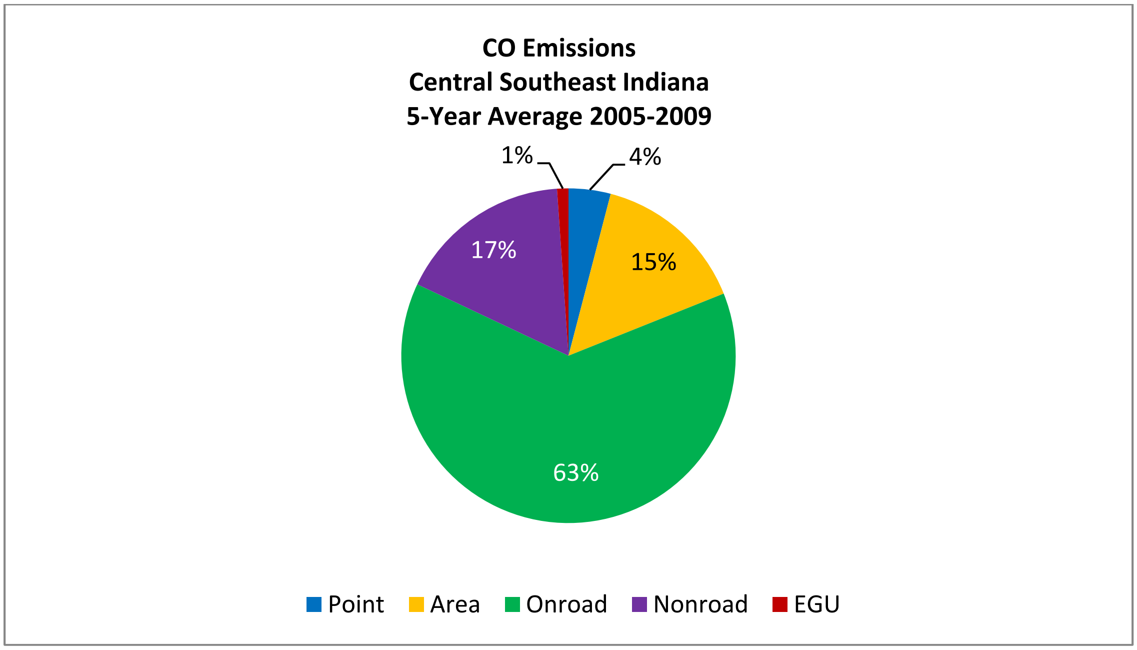


Chart 1: Central Southeast Indiana CO Emissions



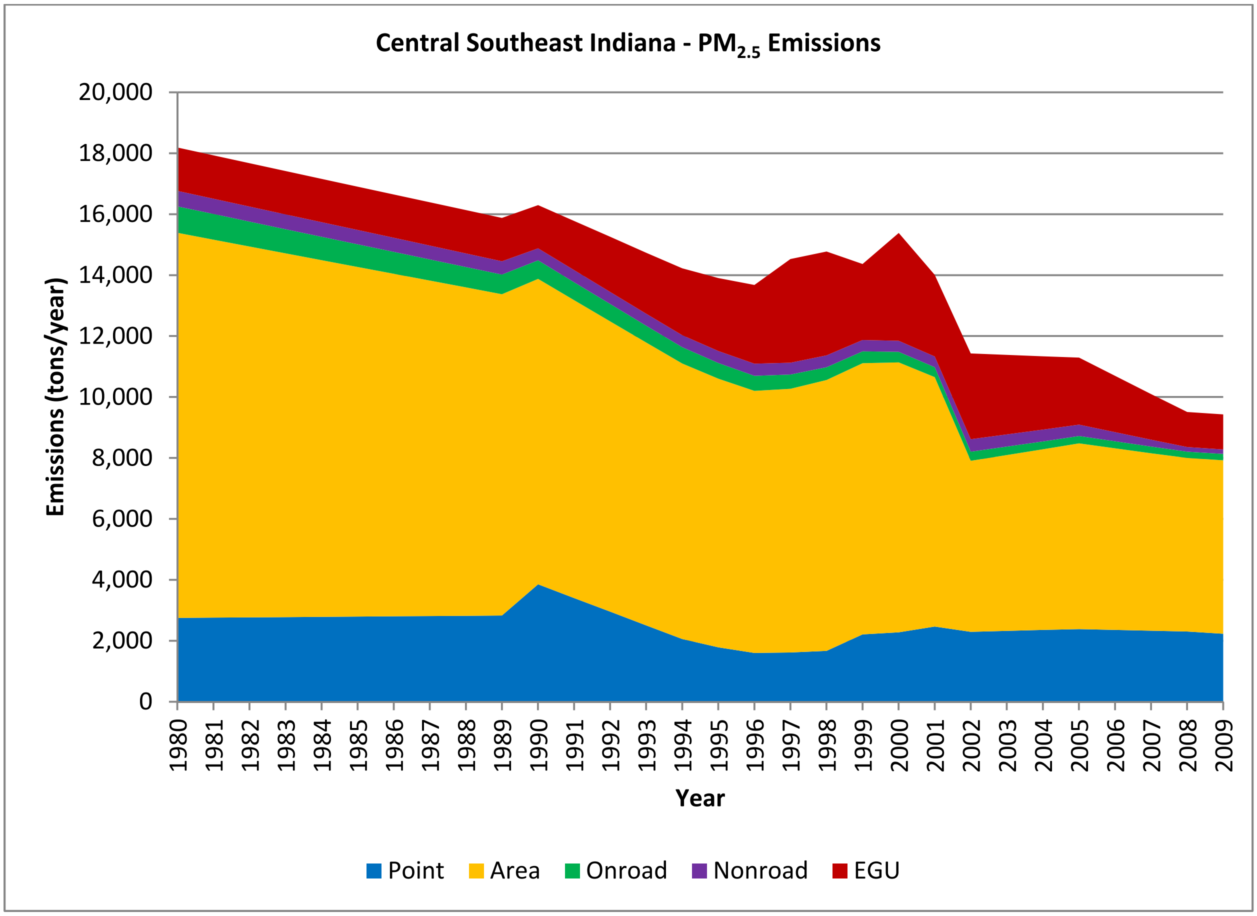
National controls have led to a decrease in CO emissions in the Central Southeast Indiana area over time. As Graph 1 illustrates, CO emissions have decreased by 87% within the Central Southeast Indiana area since 1980. This trend is true throughout Indiana and the upper Midwest. CO is a component of motor vehicle exhaust, which the U.S. EPA estimates to be the primary source of CO emissions. Levels of CO have generally declined since the mid-1980s, primarily due to stricter emission standards for onroad and nonroad engines.

For information on CO standards, sources, health effects, and programs to reduce CO, please see www.epa.gov/airqualilty/carbonmonoxide.

Fine Particles ($PM_{2.5}$)

There are no monitoring sites within the Central Southeast Indiana area that measure $PM_{2.5}$ levels. Fine particulates are emitted directly into the air from combustion sources such as coal-fired power plants, motor vehicles, and open burning. In addition, fine particulate matter is formed in the air via chemical reactions. Gas pollutants, such as ammonia, SO_2, and NO_x, change chemically in the air to become either liquid or solid fine particulate matter. U.S. EPA's NEI contains emissions information for $PM_{2.5}$, SO_2, and NO_x, and is used for Graphs 2, 3, and 4 and Charts 2, 3, and 4. Graphs 2, 3, and 4 illustrate the emissions trend for $PM_{2.5}$ and its precursors (SO_2 and NO_x) in Central Southeast Indiana. Charts 2, 3, and 4 show how the average emissions are distributed among the different source categories. $PM_{2.5}$ precursor emissions in the Central Southeast Indiana area have been trending downward over time. If monitoring data for $PM_{2.5}$ were available in the Central Southeast Indiana area, it is expected that monitor values would be trending downward as well.

Graph 2: Central Southeast Indiana $PM_{2.5}$ Emissions



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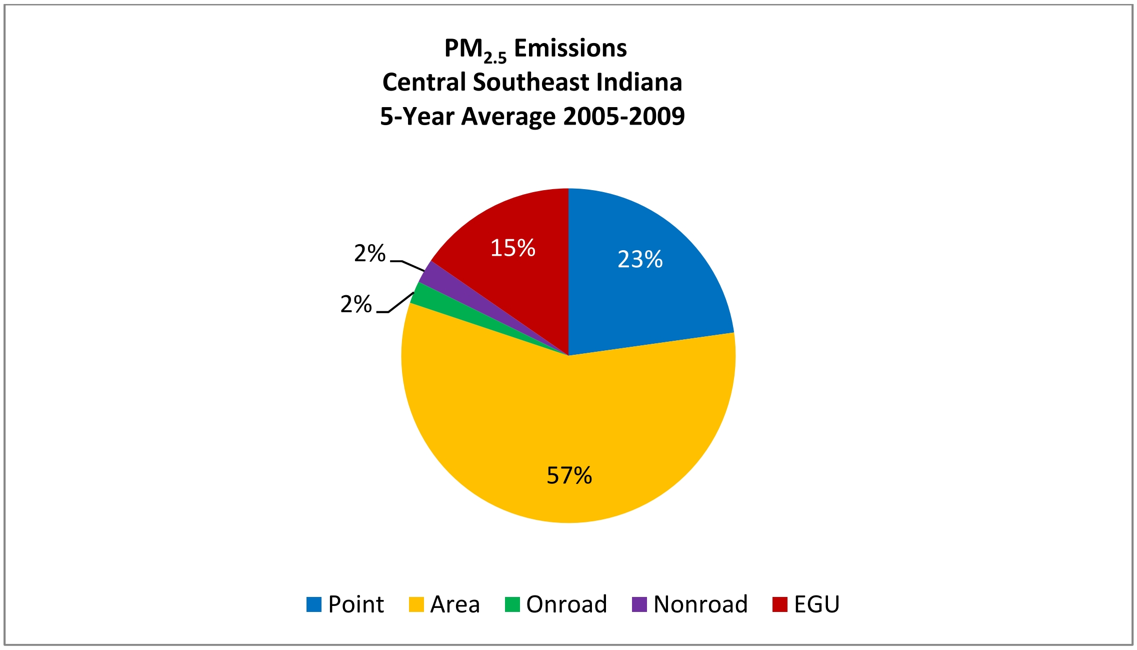
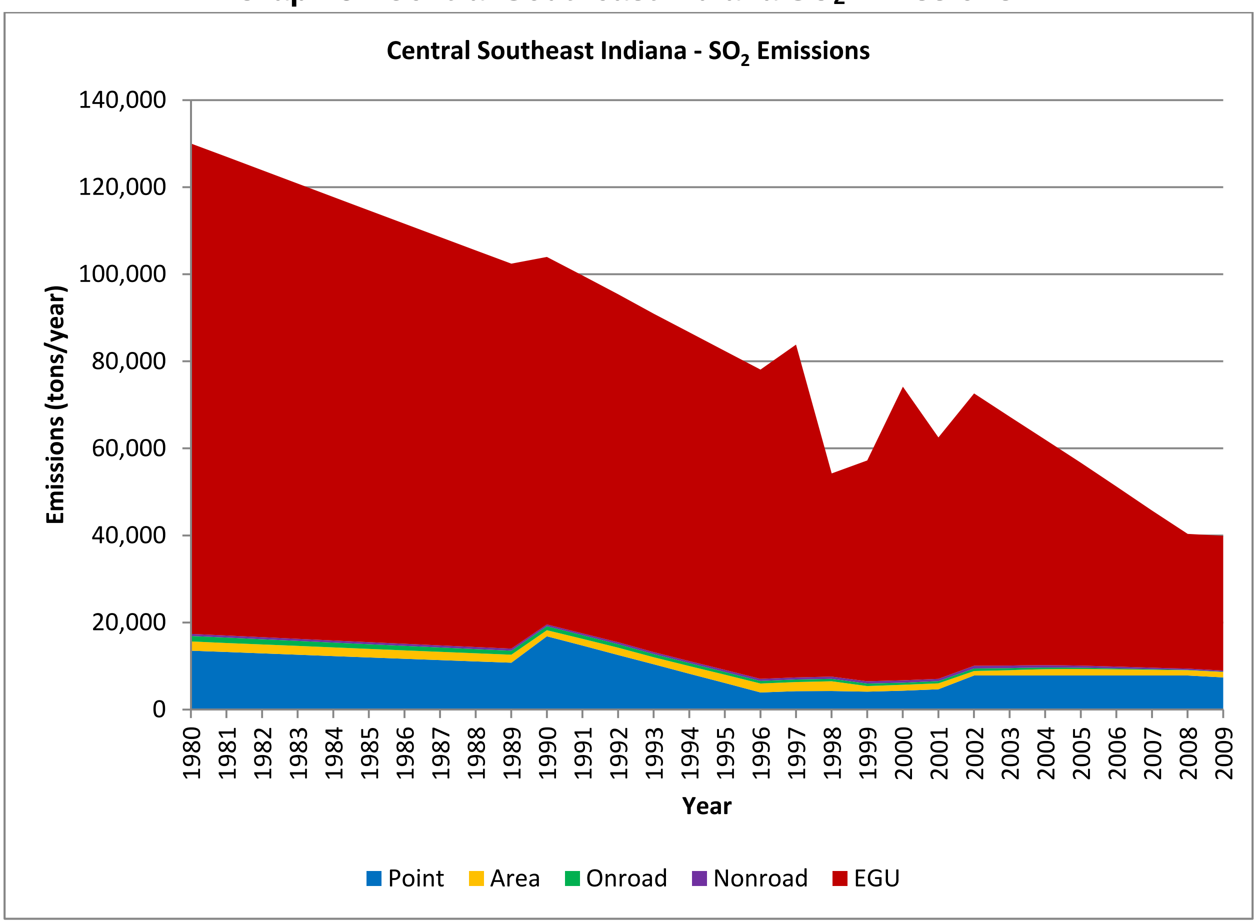


Graph 3: Central Southeast Indiana SO_2 Emissions



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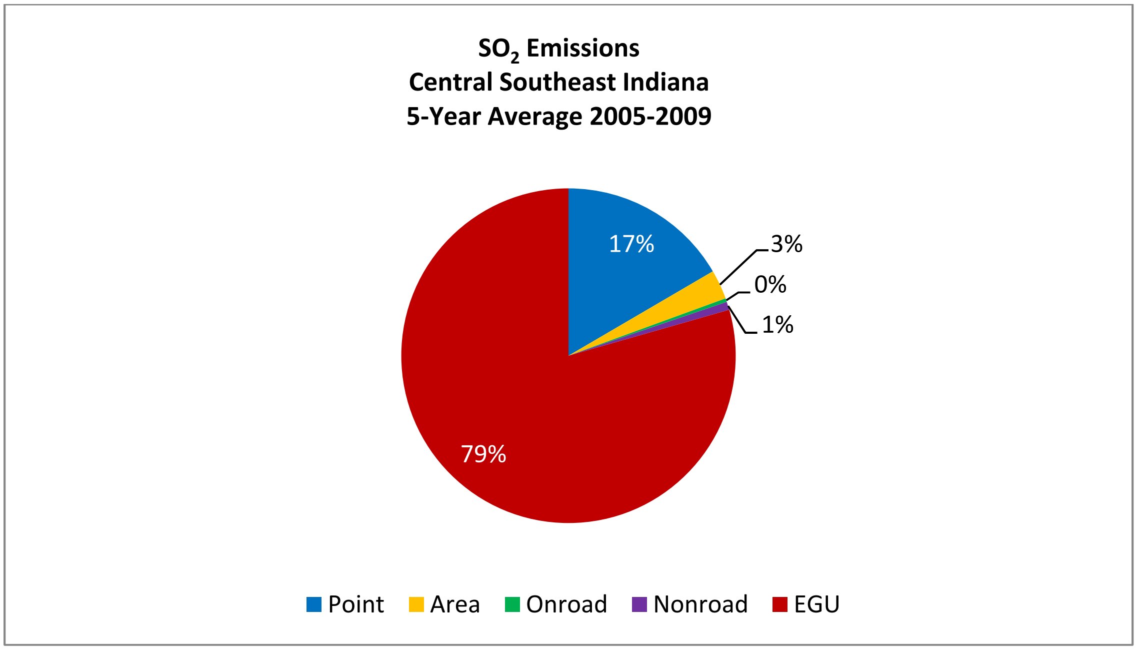


Graph 4: Central Southeast Indiana NO_x Emissions

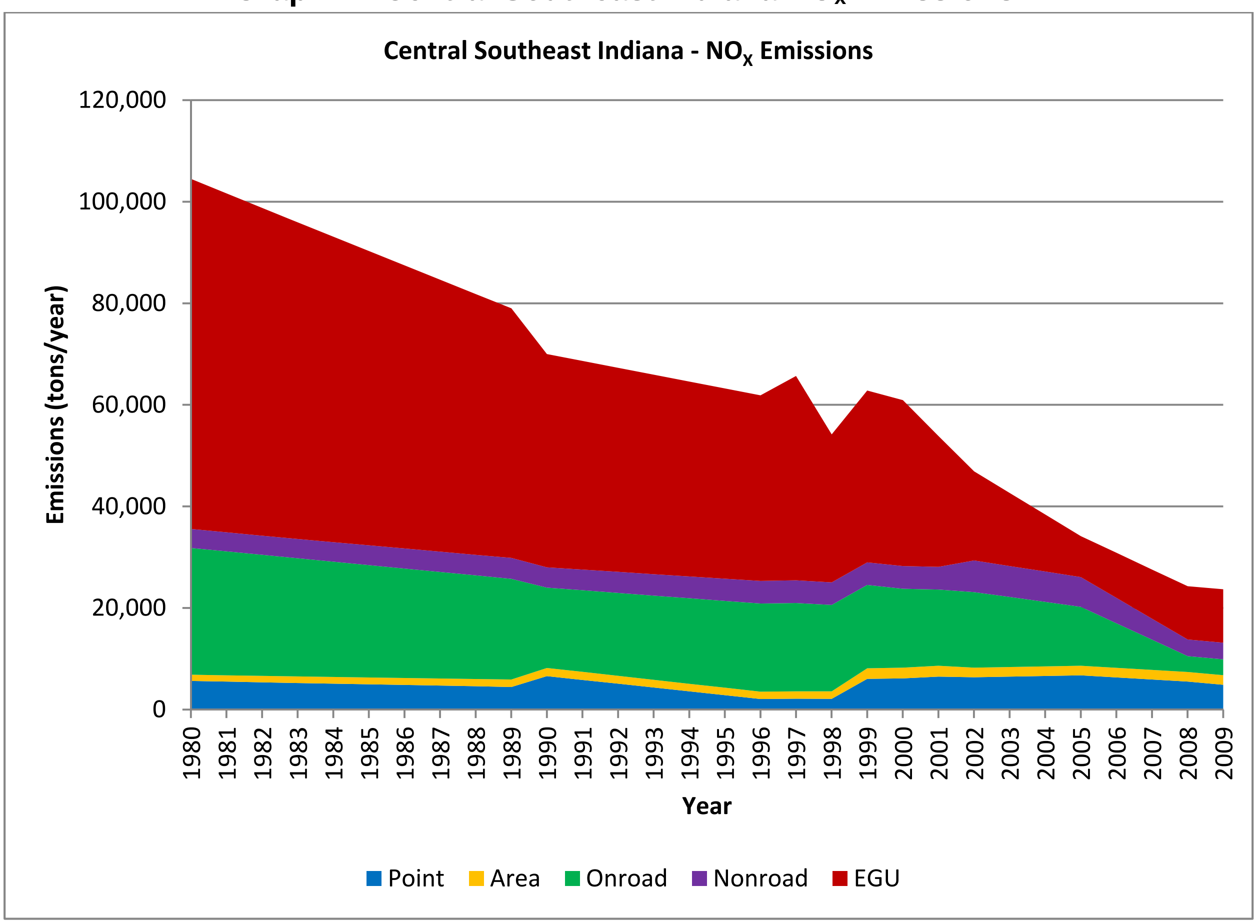
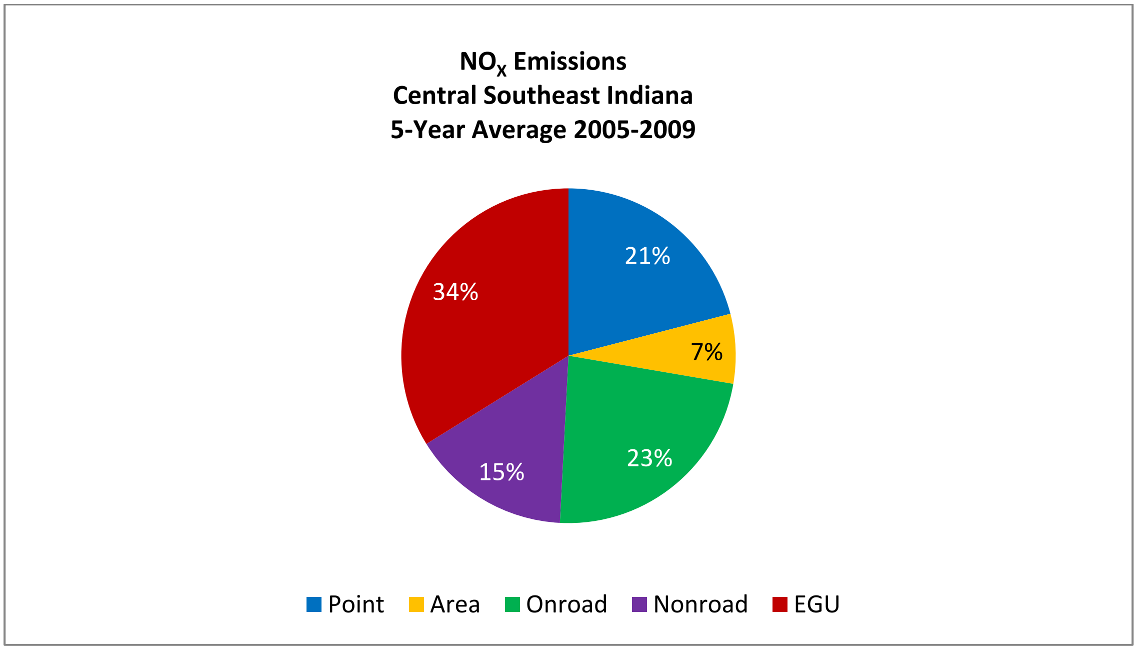


Chart 4: Central Southeast Indiana NO_x Emissions



National controls, such as engine and fuel standards, as well as regional controls, such as the NO_x SIP Call, have led to a decrease in $PM_{2.5}$ values over time. As Graphs 2, 3, and 4 illustrate, $PM_{2.5}$, SO_2, and NO_x emissions have decreased by 48%, 69%, and 77% respectively, within the Central Southeast Indiana area since 1980. This trend is true for the key precursors of $PM_{2.5}$ throughout Indiana and the upper Midwest.

Nationally, average SO_2 concentrations have decreased by more than 70% since 1980 due to the implementation of the Acid Rain Program. Reductions in Indiana for SO_2 are primarily attributable to the implementation of the Acid Rain Program, as well as federal engine and fuel standards for onroad and nonroad vehicles and equipment. Further reductions in NO_x emissions in Central Southeast Indiana are expected in future years due to the installation of pollution control devices at the AEP-Tanner's Creek Generating Station in Dearborn County. The pollution control devices were installed because of a consent decree in early 2010 and are expected to achieve a 30% reduction of NO_x emissions from the electric generating unit.

For information on $PM_{2.5}$ standards, sources, health effects, and programs to reduce $PM_{2.5}$, please see www.epa.gov/air/particlepollution.

Nitrogen Dioxide (NO_2)

There are no monitoring sites within the Central Southeast Indiana area that measure NO_2 levels. U.S. EPA's NEI contains emissions information for NO_x and is used for Graph 5 and Chart 5. NO_x emissions data are used as a surrogate for NO_2 in conjunction with the NO_2 NAAQS. Graph 5 illustrates the emissions trend for NO_x in Central Southeast Indiana and Chart 5 shows how the average emissions are distributed among the different source categories. NO_x emissions in the Central Southeast Indiana area have been trending downward over time. If monitoring data for NO_2 were available in the Central Southeast Indiana area, it is expected that monitor values would be trending downward as well.

Graph 5: Central Southeast Indiana NO_x Emissions

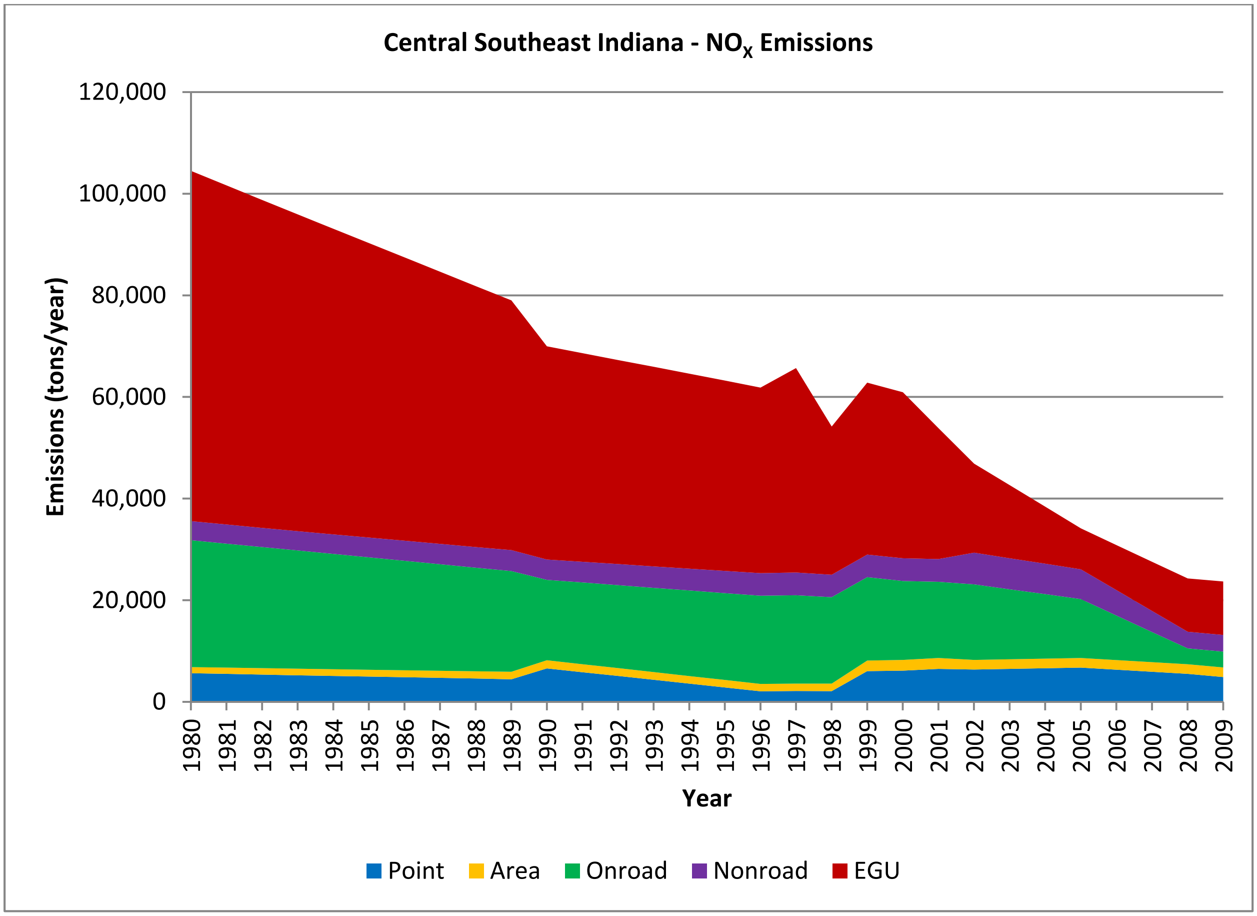
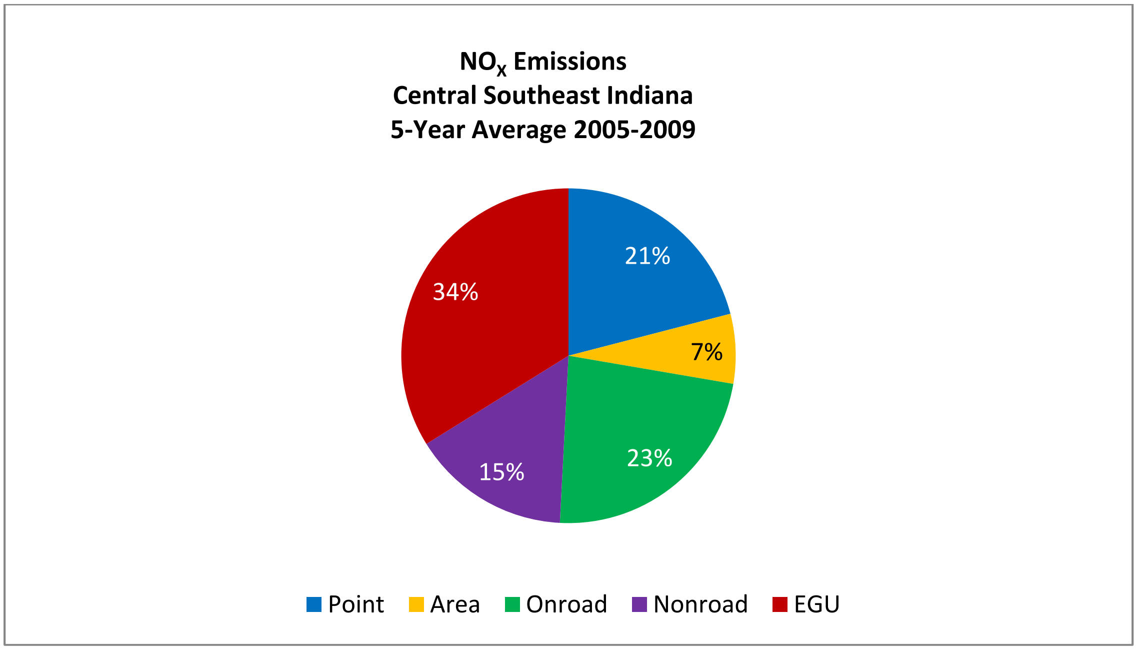


Chart 5: Central Southeast Indiana NO_x Emissions



National and regional controls, such as the Acid Rain Program, engine and fuel standards, and the NO_x SIP Call have led to a decrease in NO_2 values over time. As Graph 5 illustrates, NO_x emissions have decreased by 77% since 1980. This trend is true throughout Indiana and the upper Midwest. According to U.S. EPA, average NO_x concentrations have decreased by more than 40% nationally since 1980. Further reductions in NO_x emissions in Central Southeast Indiana are expected in future years due to the installation of pollution control devices at the AEP –Tanner's Creek Generating Station in Dearborn County. The pollution control devices were installed because of a consent decree in early 2010 and are expected to achieve a significant reduction of NO_x emissions from the facility.

For information on NO_2 standards, sources, health effects, and programs to reduce NO_2, please see www.epa.gov/airquality/nitrogenoxides/.

Ozone

There is one monitoring site within the Central Southeast Indiana area, located in Jackson County that currently measures ozone levels. Primary and secondary ozone 1-hour ozone standards were first established in April 1979 at 0.12 ppm. Based on U.S. EPA's published data guidelines, values above 0.124 ppm were deemed to be in violation of the standard. The trend data in Graph 6 reflect the 4th highest monitored concentration for 1-hour ozone within a given three-year period from the monitoring site located in the Central Southeast Indiana area. These values were used to determine attainment of the primary and secondary 1-hour ozone standards before they were revoked in June 2005.

In July 1997, U.S. EPA established the primary and secondary 8-hour ozone standards at 0.08 ppm. Based on the U.S. EPA's published data handling guidelines, values above 0.084 ppm were deemed to be in violation of the standard. U.S. EPA lowered the primary and secondary 8-hour ozone standards to 0.075 ppm in March 2008. Attainment of the primary and secondary 8-hour ozone standards is determined by evaluating the design value of the 4th highest 8-hour ozone concentration measured at each monitor within an area over each year, which must not exceed 0.075 ppm. An exceedance of the standards occurs when an 8-hour ozone value is equal to or greater than 0.075 ppm. A violation of the standards occurs when the design value of the three-year average of the 4th highest 8-hour ozone value is equal to or greater than 0.076 ppm. A monitor can exceed the standards without being in violation.

The trend data in Graph 7 reflect the 4th high and the highest 4th high concentration for 8-hour ozone from the monitor in the Central Southeast Indiana area for each year. The design value of the three-year average of the 4th highest 8-hour ozone values is used for comparison to the 8-hour ozone standard; therefore, the one-year values in Graph 7 are not a true comparison to the primary and secondary 8-hour ozone standards. The values in Graph 8 reflect the design value of the three-year average of the 4th highest 8-hour ozone values from the monitor for each year.

The data in Tables 5 and 6 are from the monitoring site that measured 1-hour ozone from 2000 to 2010. Monitoring data in Table 5 show the four highest annual concentrations for 1-hour ozone for the years 2000 to 2010. Monitoring data in Table 6 show the 4th highest concentration for 1-hour ozone in a three year period for the years 2000 to 2010. The data in Tables 7 and 8 is from the monitoring site that measured 8-hour ozone from 2000 to 2010. Monitoring data in Table 7 show the 4th highest concentration for 8-hour ozone in a three-year period for the years 2000 through 2010. Monitoring data in Table 8 show the design value of the three average of the 4th highest

8-hour ozone values for the years 2000 through 2010, which are compared to the primary and secondary 8-hour ozone standards at 0.08 ppm.

Table 5: Central Southeast Indiana 1-Hour Ozone Annual 4th High Value Monitoring Data Summary

County	Site #	Site Name	1-Hour Ozone Value (ppm)											
			1st High 2000	**2nd High 2000**	**3rd High 2000**	**4th High 2000**	**1st High 2001**	**2nd High 2001**	**3rd High 2001**	**4th High 2001**	**1st High 2002**	**2nd High 2002**	**3rd High 2002**	**4th High 2002**
Jackson	180710001	Brownstown	0.104	0.100	0.097	0.090	0.103	0.099	0.093	0.092	0.102	0.100	0.099	0.099
			1st High 2003	**2nd High 2003**	**3rd High 2003**	**4th High 2003**	**1st High 2004**	**2nd High 2004**	**3rd High 2004**	**4th High 2004**	**1st High 2005**	**2nd High 2005**	**3rd High 2005**	**4th High 2005**
Jackson	180710001	Brownstown	0.101	0.096	0.095	0.094	0.084	0.078	0.078	0.075	0.092	0.089	0.088	0.088
			1st High 2006	**2nd High 2006**	**3rd High 2006**	**4th High 2006**	**1st High 2007**	**2nd High 2007**	**3rd High 2007**	**4th High 2007**	**1st High 2008**	**2nd High 2008**	**3rd High 2008**	**4th High 2008**
Jackson	180710001	Brownstown	0.087	0.082	0.082	0.081	0.095	0.094	0.088	0.086	0.094	0.077	0.077	0.076
			1st High 2009	**2nd High 2009**	**3rd High 2009**	**4th High 2009**	**1st High 2010**	**2nd High 2010**	**3rd High 2010**	**4th High 2010**				
Jackson	180710001	Brownstown	0.087	0.072	0.072	0.071	0.081	0.081	0.078	0.077				

Graph 6: Central Southeast Indiana 1-Hour Ozone 4th Highest Value in Three-Year Period

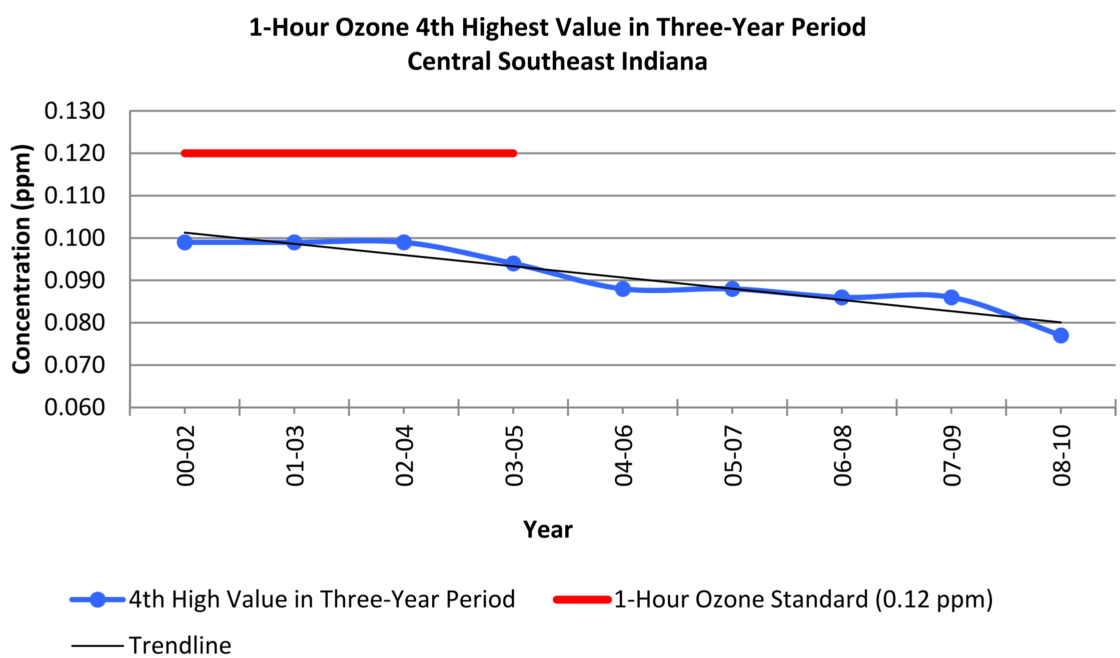


Table 6: Central Southeast Indiana 1-Hour Ozone 4th High Value in Three-Year Period Monitoring Data Summary

County	Site #	Site Name	4th High Value in Three Year-Period (ppm)										
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jackson	180710001	Brownstown	0.082	0.084	0.090	0.082	0.068	0.077	0.075	0.078	0.070	0.063	0.069

Graph 7: Central Southeast Indiana 8-Hour Ozone 4th High Values

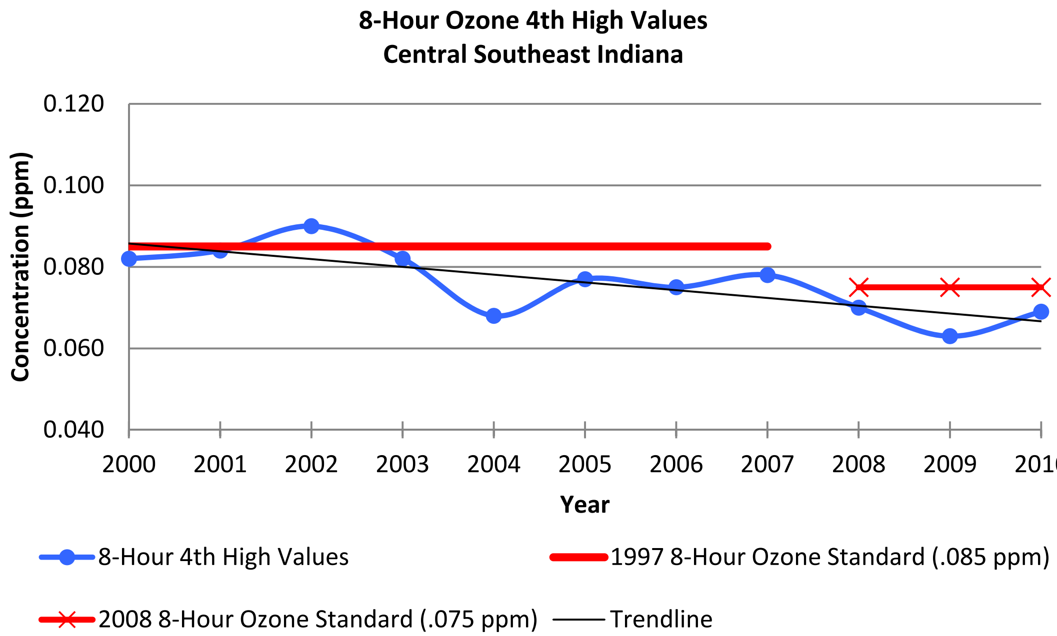


Table 7: Central Southeast Indiana 8-Hour Ozone 4th High Values Monitoring Data Summary

County	Site #	Site Name	4th Highest Ozone Value (ppm)										
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jackson	180710001	Brownstown	0.082	0.084	0.090	0.082	0.068	0.077	0.075	0.078	0.070	0.063	0.069

Graph 8: Central Southeast 8-Hour Ozone Three-Year Design Values

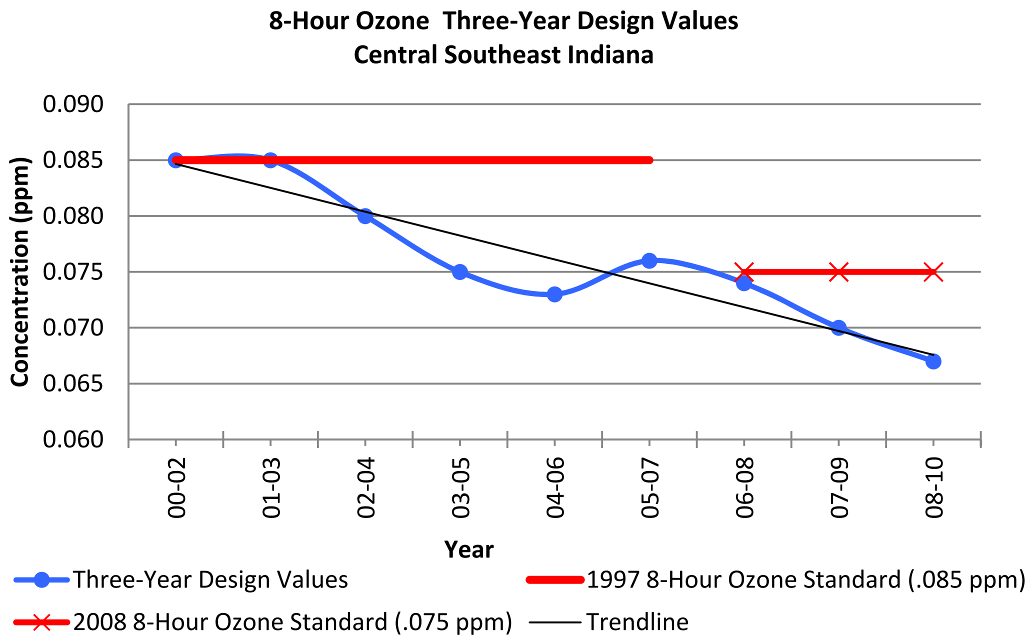


Table 8: Central Southeast Indiana 8-Hour Ozone Three-Year Design Value Monitoring Data Summary

County	Site #	Site Name	Three-Year Design Value (ppm)								
			00-02	01-03	02-04	03-05	04-06	05-07	06-08	07-09	08-10
Jackson	180710001	Brownstown	0.085	0.085	0.080	0.075	0.073	0.076	0.074	0.070	0.067
			Prior to 2008, highlighted red numbers are above the 8-hour O_3 standard of 0.085 ppm								
			Beginning in 2008, highlighted red numbers are above the 8-hour O_3 standard of 0.075 ppm								

At one time, portions of Central Southeast Indiana were in violation of the 8-hour ozone standard but are now monitoring below the standard. While fluctuations in monitoring data can be seen in Graphs 6, 7, and 8, monitoring data for both 1-hour and 8-hour ozone indicate a downward trend over time. Because ozone is formed by the secondary reaction of precursor pollutants, it is heavily influenced by meteorology (wind speed, temperature, stagnant air, etc.) and during an ozone season when peak meteorology conditions exist, it is not unusual to see an increase in ozone. The high spikes in ozone in 2002, 2005, and 2007 shown in Graphs 7 and 8 can be traced back to high temperatures and stagnant weather conditions during the ozone seasons of those years.

Ozone is not emitted directly into the air, but is created in the lower atmosphere. NO_x and VOC chemically react individually or collectively in the presence of sunlight to form ground-level ozone. U.S. EPA's NEI contains emissions information for NO_x and VOC and is used in the following graphs and charts. Graphs 9 and 10 illustrate the emissions trend for the ozone precursors in Central Southeast Indiana and Charts 6 and 7 shows how the average emissions are distributed among the different source categories.

Graph 9: Central Southeast Indiana NO_X Emissions

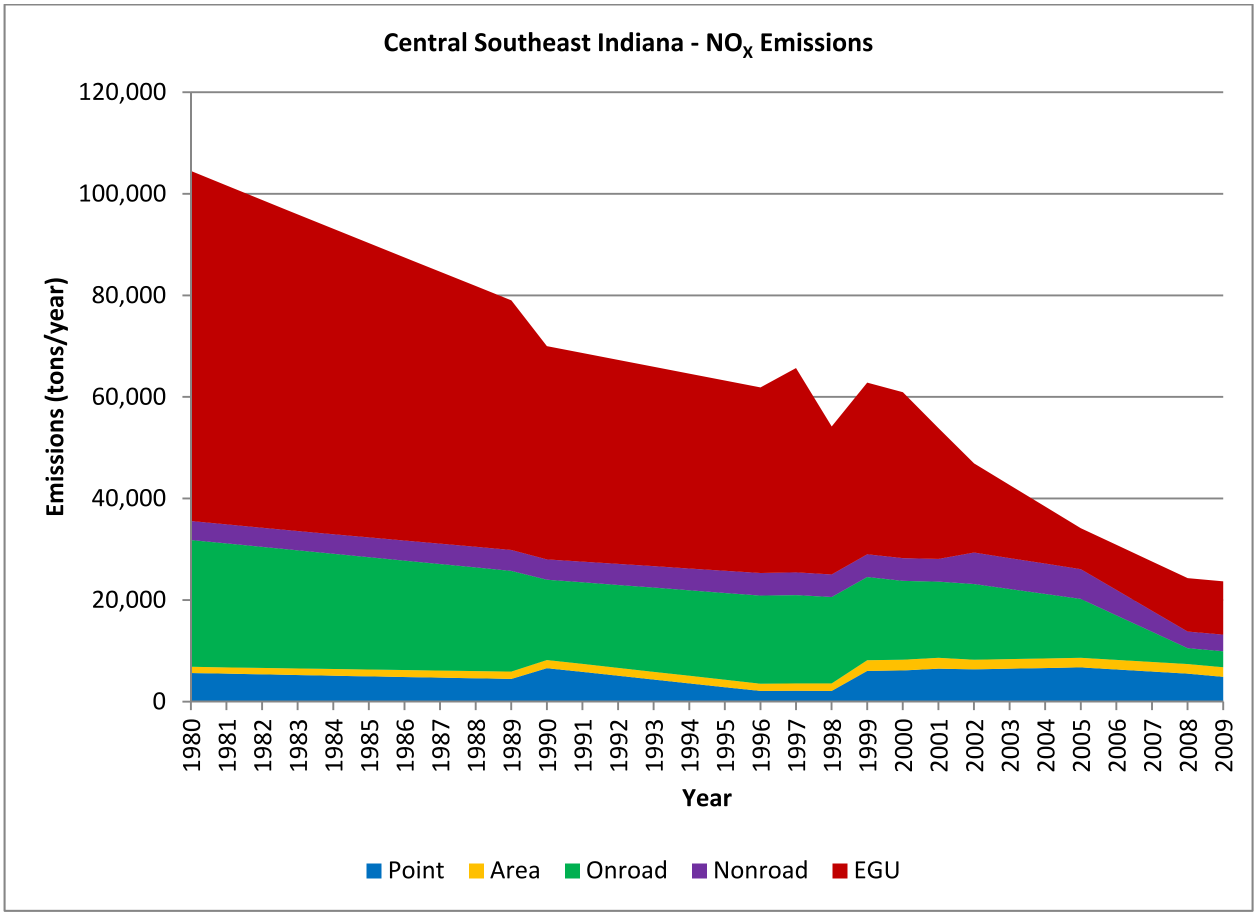
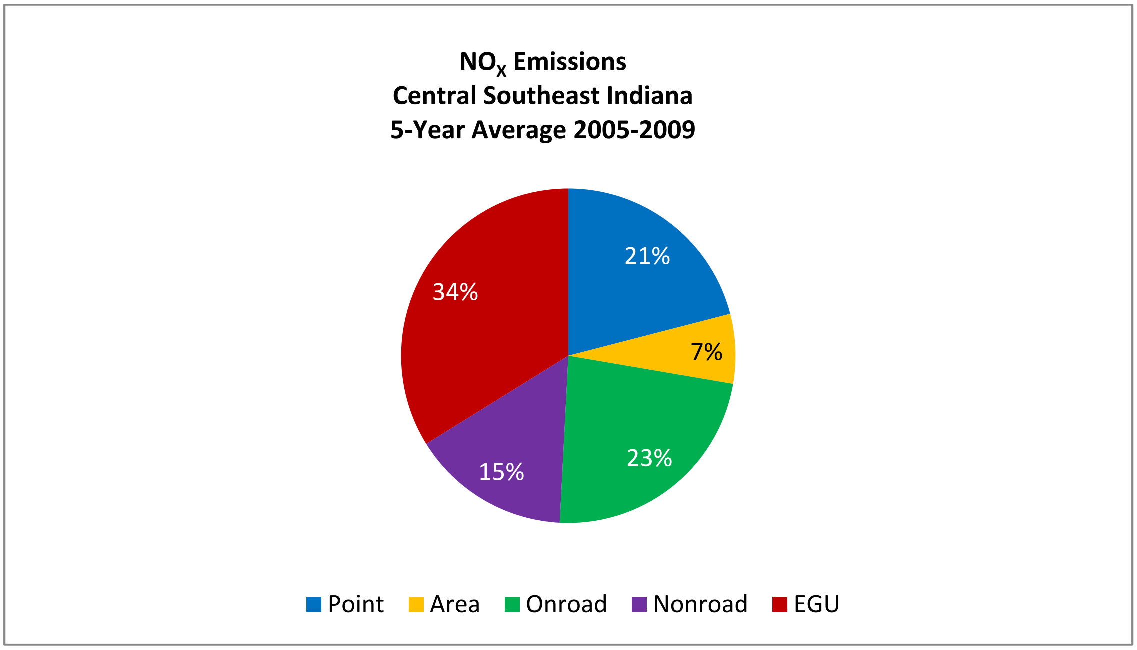


Chart 6: Central Southeast Indiana NO_X Emissions



Graph 10: Central Southeast Indiana VOC Emissions

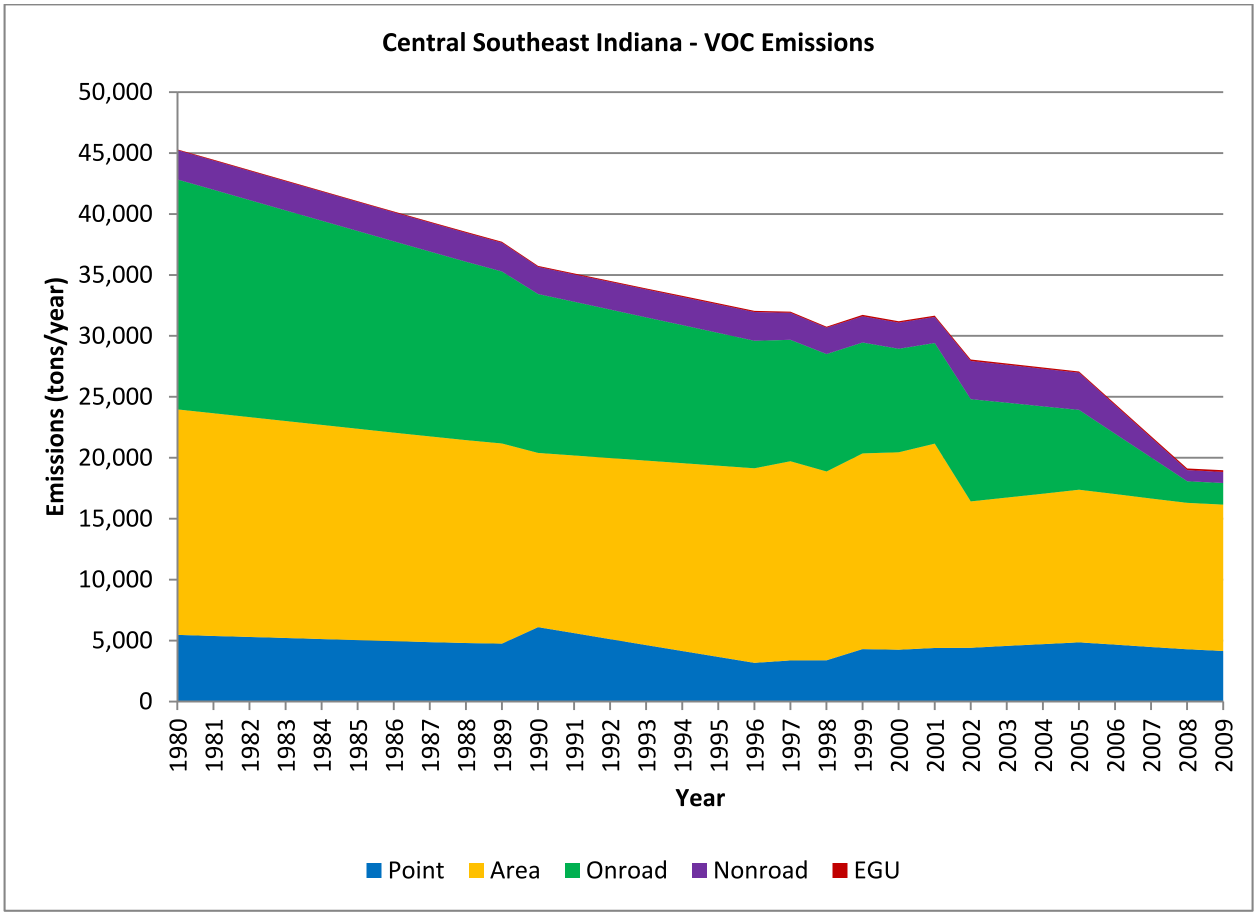
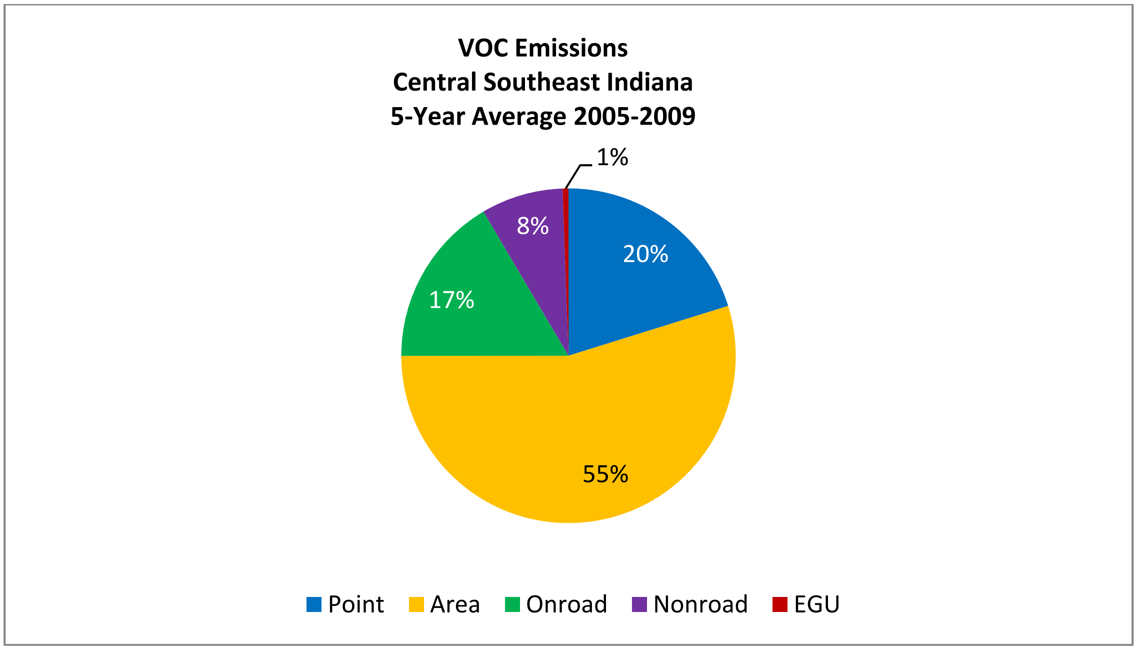


Chart 7: Central Southeast Indiana VOC Emissions



National controls, such as engine and fuel standards, as well as regional controls, such as the NO_x SIP Call, have led to a decrease in ozone precursor emissions over time. As Graphs 9 and 10 illustrate, NO_x and VOC emissions have decreased by 77% and 58%, respectively, within the Central Southeast Indiana area since 1980. This trend is true for the key precursors of ozone throughout Indiana and the upper Midwest. Reductions in NO_x and VOC emissions are also attributable to the implementation of the federal engine and fuel standards for onroad and nonroad vehicles and equipment, the NO_x SIP Call beginning in 2004, and to local controls that were necessary in reducing emissions in the Central Southeast Indiana area. Nationally, average ozone levels declined in the 1980's, leveled off in the 1990's, and showed a notable decline after 2004 with the implementation of the NO_x SIP Call. Further reductions in NO_x emissions in Central Southeast Indiana are expected in future years due to the installation of pollution control devices at the AEP – Tanner's Creek Generating Station in Dearborn County. The pollution control devices were installed because of a consent decree in early 2010 and are expected to achieve a 30% reduction of NO_x emissions from the facility.

For information on ozone standards, sources, health effects, and programs to reduce ozone, please see www.epa.gov/air/ozonepollution.

Particulate Matter (PM_{10})

There are no monitoring sites within the Central Southeast Indiana area that measure PM_{10} levels. U.S. EPA's NEI contains emissions information for PM_{10} and is used in Graph 11 and Chart 8. Graph 11 illustrates the emissions trend for PM_{10} in Central Southeast Indiana and Chart 8 shows how the average emissions are distributed among the different source categories. PM_{10} emissions in the Central Southeast Indiana area have been trending downward over time. If monitoring data for PM_{10} were available in the Central Southeast Indiana area, it is expected that monitor values would be trending downward as well.

Graph 11: Central Southeast Indiana PM_{10} Emissions

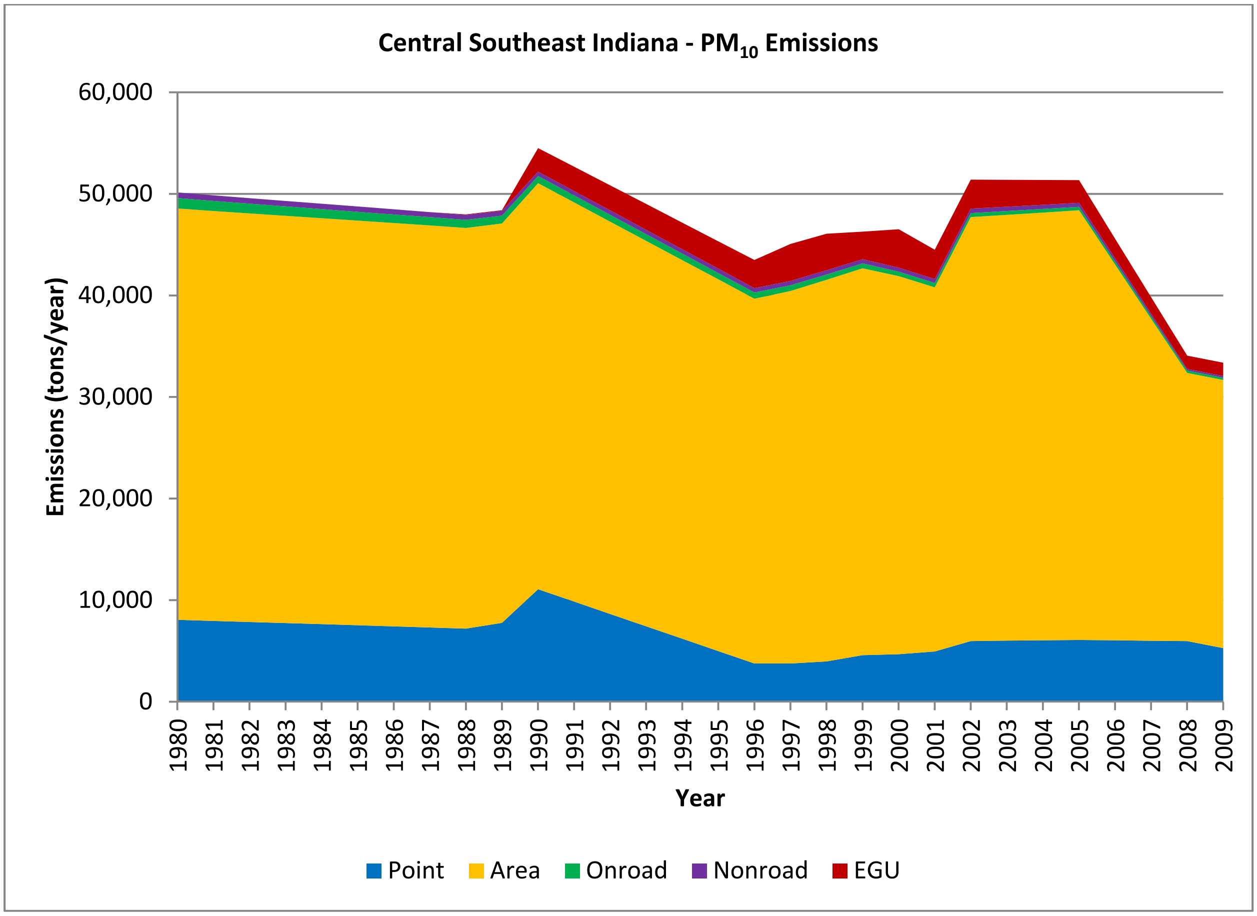
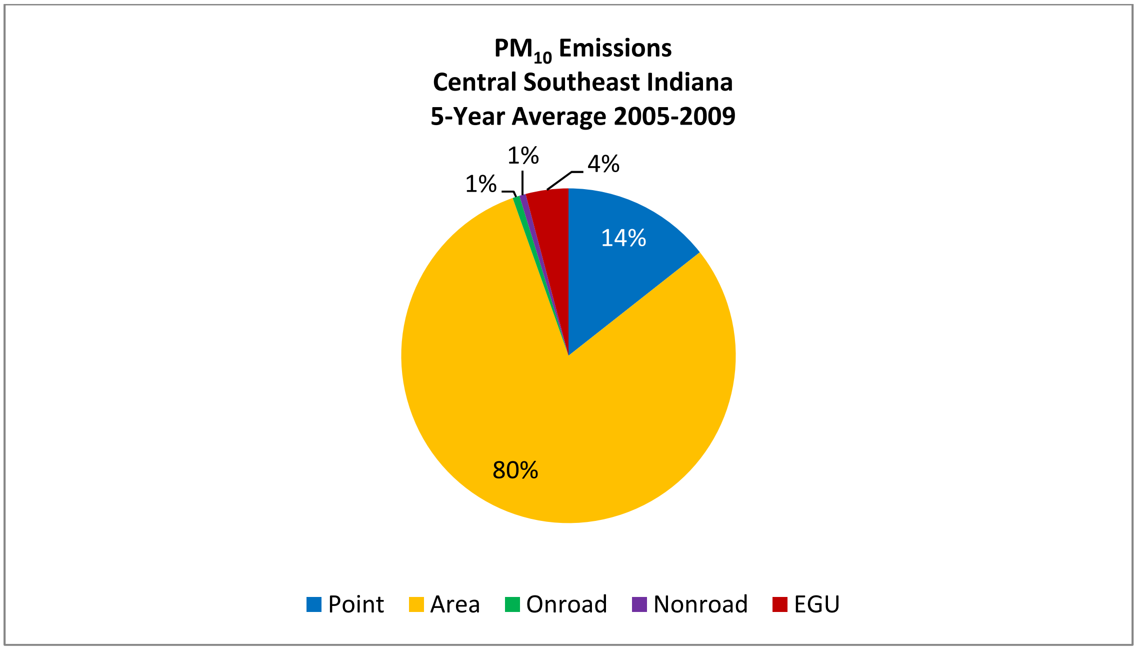


Chart 8: Central Southeast Indiana PM_{10} Emissions



National controls, such as engine and fuel standards, as well as regional controls, such as the NO_x SIP Call, have led to a decrease in PM_{10} values over time. As Graph 11 illustrates, total PM_{10} emissions have decreased by 33% within the Central Southeast Indiana area since 1980. This trend is true throughout Indiana and the upper Midwest. Reductions in PM_{10} are primarily due to better controls on local sources and secondary benefits from the implementation of federal programs to control other pollutants.

Sulfur Dioxide (SO_2)

Three monitoring sites within the Central Southeast Indiana area have measured SO_2 levels in Dearborn County over various years from 1980 to 2007. The trend data in Graph 12 reflect the annual arithmetic mean which was used to compare to the primary annual SO_2 standard at 0.03 ppm. Attainment of the primary annual SO_2 standard was determined by evaluating the annual arithmetic mean which could not exceed the standard. U.S. EPA revoked the primary annual SO_2 standard in June 2010 and replaced it with a 1-hour SO_2 standard. The highest annual arithmetic mean from all of the monitors in the Central Southeast Indiana area is plotted on Graph 12 for each year.

The trend data in Graph 13 reflect the 2nd highest 24-hour SO_2 concentrations, which were used to compare to the primary 24-hour SO_2 standard at 0.140 ppm. Attainment of the primary 24-hour SO_2 standard was determined by evaluating the 2nd highest 24-hour concentration, which could not exceed the standard. U.S. EPA revoked the primary 24-hour SO_2 standard in June 2010 and replaced it with a 1-hour SO_2 standard. The highest of the 2nd high 24-hour values from all of the monitors in the Central Southeast Indiana area is plotted on Graph 13 for each year.

The trend data in Graph 14 show the 99th percentile of the 1-hour SO_2 values, which are provided for reference purposes only, because they were collected prior to the implementation of the current standard. The design value of the 99th percentile is used for comparison to the primary 1-hour SO_2 standard; therefore, the one-year values shown in Graph 14 are not a true comparison to the primary 1-hour SO_2 standard. The values in Graph 14 reflect the highest 99th percentile from all of the monitors in the Central Southeast Indiana area which is plotted on the graph for each year. The 1-hour SO_2 standard at 75 ppb is not listed on this graph since it was not established until June 2010.

Attainment of the primary 1-hour SO_2 standard is determined by evaluating the design value of the 99th percentile values of the daily maximum 1-hour averages at each monitor within an area, which must not exceed 75 ppb averaged over a three-year period. The values in Graph 14 reflect the design value of the 99th percentile of the daily maximum 1-hour average values for the years 2000 through 2007 from all of the monitors in the Central Southeast Indiana area is plotted on the graph for each year. An exceedance of the primary 1-hour SO_2 standard occurs when a 99th percentile value is equal to or greater than 75 ppb. A violation of the primary 1-hour SO_2 standard occurs when the three-year design value of the 99th percentile is equal to or greater than 75.5 ppb. A monitor can exceed the standard without being in violation. The values in Graph 15 reflect the design value of the 99th percentile values of the daily maximum 1-hour averages from all of the monitors in the Central Southeast Indiana area which is plotted on the graph for each year.

The data in Tables 9, 10, 11, and 12 include a monitoring site that measured annual, 24-hour, and 1-hour SO_2 from 2000 to 2007. Monitoring data for SO_2 prior to the year 2000 are available upon request. Monitoring data for all graphs display a downward trend over time. The monitor values for Central Southeast Indiana have always been below the primary annual and primary 24-hour SO_2 standards.

Monitoring data in Table 9 show the annual arithmetic mean for the years 2000 through 2007 which were compared to the primary annual SO_2 standard of 0.03 ppm. Monitoring data in Table 10 show the 2nd highest 24-hour value for the years 2000 through 2007 which were compared to the primary 24-hour SO_2 standard of 0.140 ppm.

Monitoring data in Table 11 show the 1-hour 99th percentile values for the years 2000 through 2007. Monitoring data in Table 12 show the design value of the 99th percentile values of the daily maximum 1-hour averages for the years 2000 through 2007 which are compared to the new primary 1-hour SO_2 standard at 75 ppb. In Tables 9, 10, and 12 values above the standards have been highlighted. The 1-hour SO_2 data prior to the 2008 through 2010 design value were not compared to any standard and the 99th percentile and design values from 2000 to 2007 are included for reference purposes only.

Graph 12: Central Southeast Indiana Annual Arithmetic Mean SO_2 Values

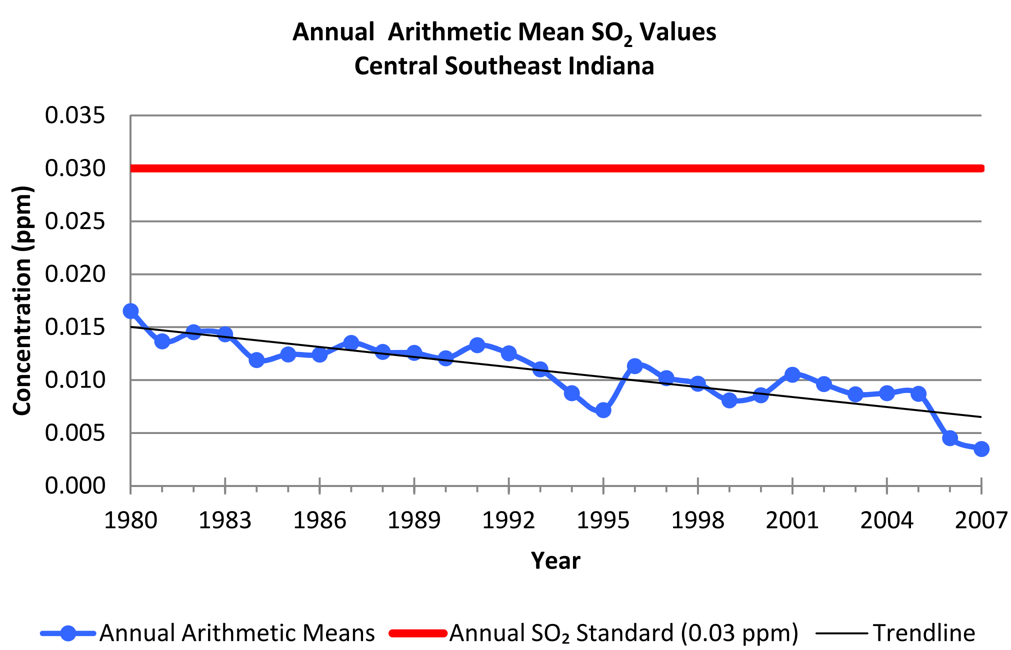


Table 9: Central Southeast Indiana Annual Arithmetic Mean SO_2 Values Monitoring Data Summary

County	Site ID	Site Name	Annual Arithmetic Mean (ppm)										
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Dearborn	180290004	Lawrenceburg - Tate St	0.009	0.011	0.010	0.009	0.009	0.009	0.005	0.003			

Highlighted red numbers are above the annual SO_2 standard of 0.03 ppm

Graph 13: Central Southeast Indiana 24-Hour SO_2 2nd High Values

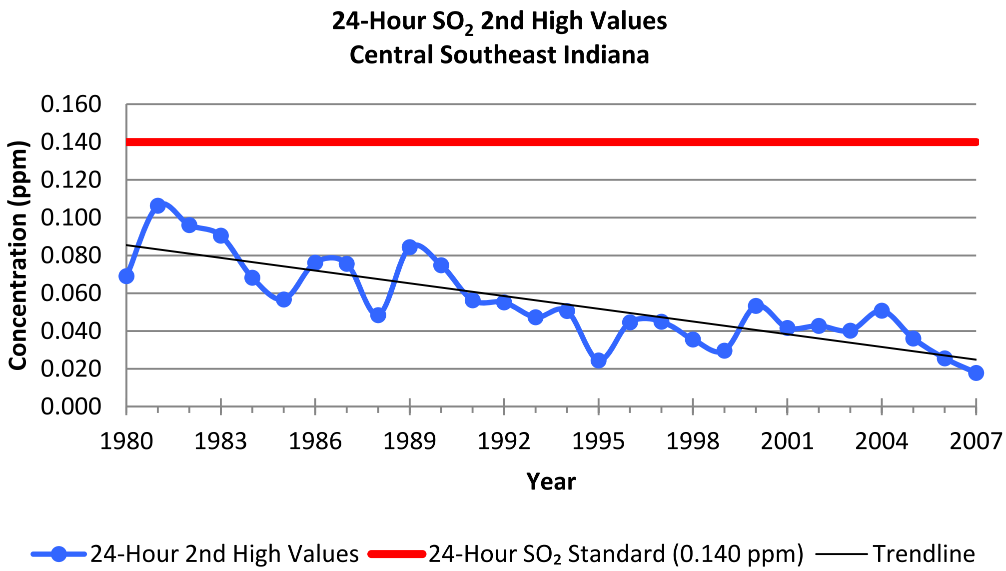


Table 10: Central Southeast Indiana 24-Hour SO_2 2nd High Values Monitoring Data Summary

County	Site ID	Site Name	2nd High Value (ppm)										
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Dearborn	180290004	Lawrenceburg - Tate St	0.053	0.042	0.043	0.040	0.051	0.036	0.026	0.018			
			Highlighted red numbers are over the 24-hour SO_2 standard of 0.14 ppm										

Graph 14: Central Southeast Indiana 1-Hour SO_2 99th Percentile Values

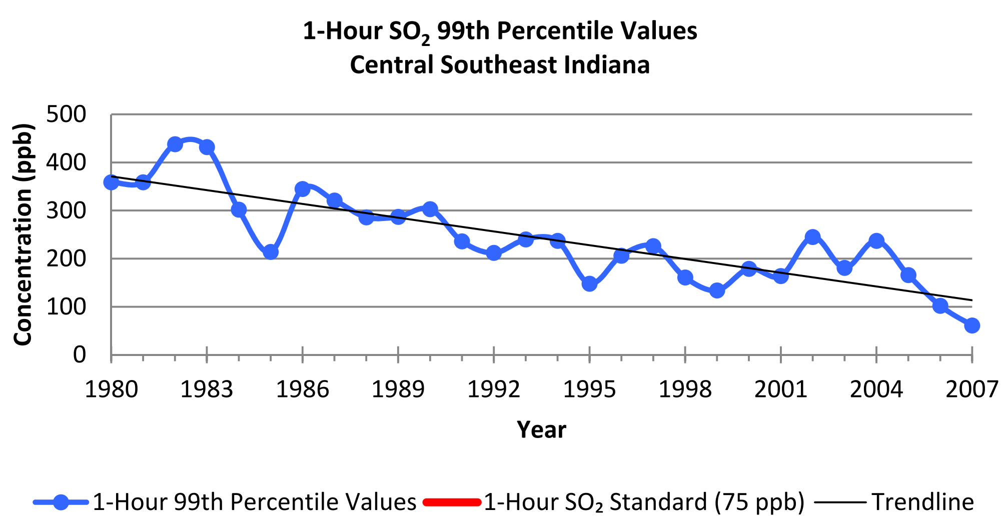


Table 11: Central Southeast Indiana 1-Hour SO_2 99th Percentile Values Monitoring Data Summary

County	Site ID	Site Name	99th Percentile Values (ppb)										
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Dearborn	180290004	Lawrenceburg - Tate St	179	164	245	181	237	166	102	61			

Graph 15: Central Southeast Indiana 1-Hour SO_2 Three-Year Design Values

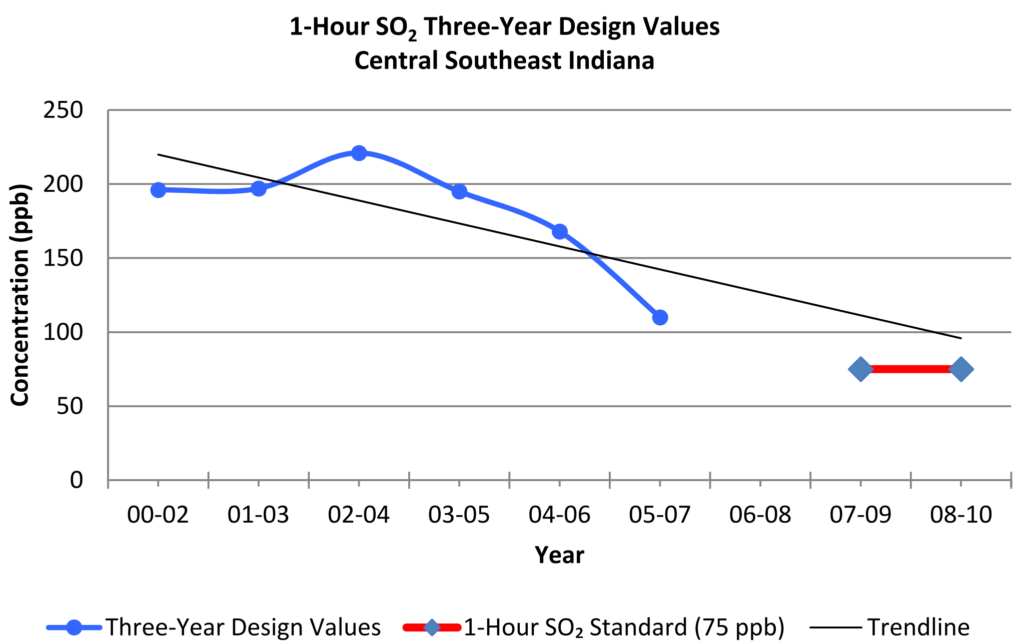


Table 12: Central Southeast Indiana 1-Hour SO_2 Three-Year Design Value Monitoring Data Summary

County	Site ID	Site Name	Three-Year Design Value (ppb)								
			00-02	01-03	02-04	03-05	04-06	05-07	06-08	07-09	08-10
Dearborn	180290004	Lawrenceburg - Tate St	196	197	221	195	168	110			

Beginning in 2010, highlighted red numbers are above the 1-hour SO_2 standard of 75 ppb

As shown in Graphs 12 and 13, both annual and 24-hour SO_2 values for the Central Southeast Indiana area have historically been below their respective standards. In addition, monitoring data shown in Graphs 14 and 15 indicate a downward trend in 1-hour SO_2 monitoring values over time. SO_2 monitors are located in close proximity to major sources in the area and data will fluctuate based on variability in facility operations and meteorology.

U.S. EPA's NEI contains emissions information for SO_2 and is used in Graph 16 and Chart 9. Graph 16 illustrates the emissions trend for SO_2 in Central Southeast Indiana and Chart 9 shows how the average emissions are distributed among the different source categories.

Graph 16: Central Southeast Indiana SO_2 Emissions

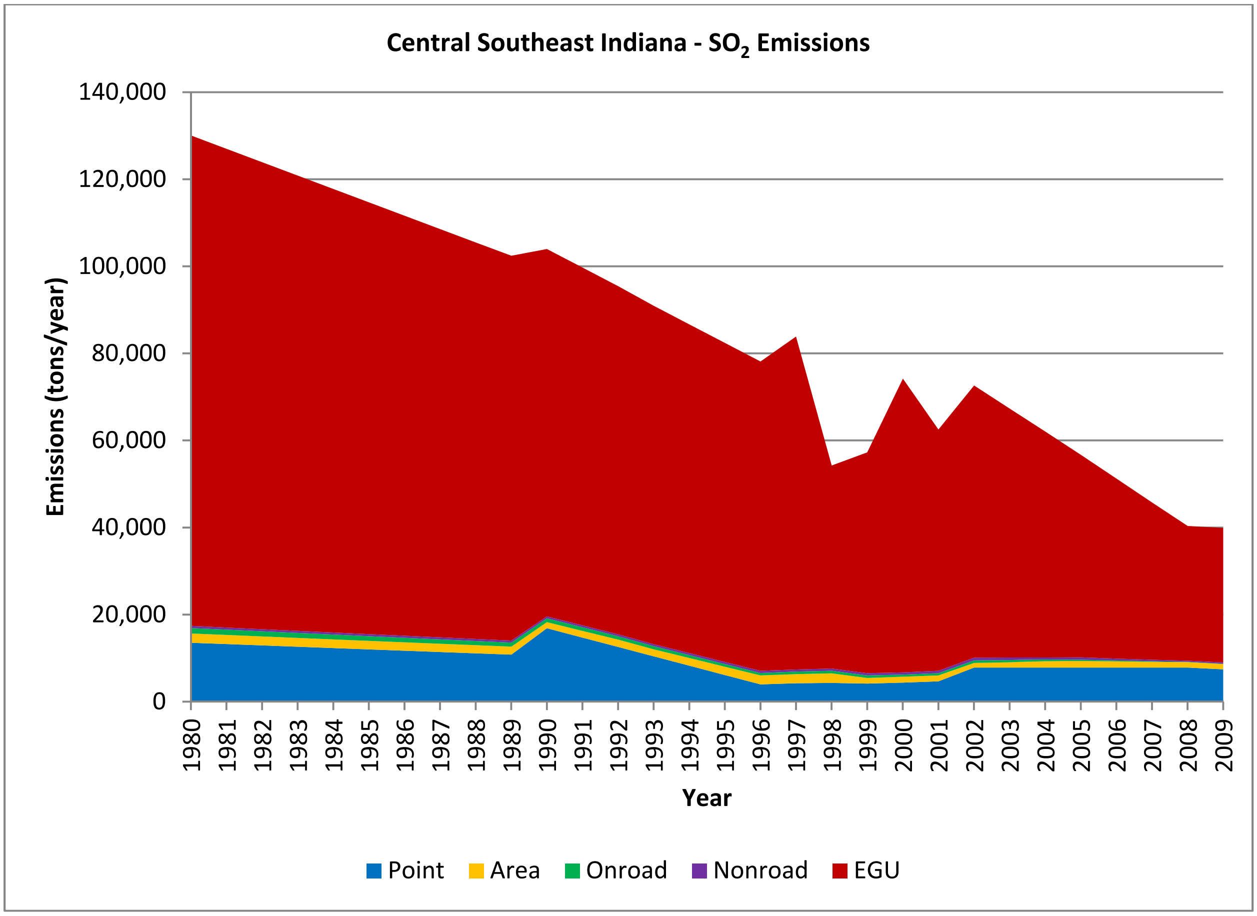
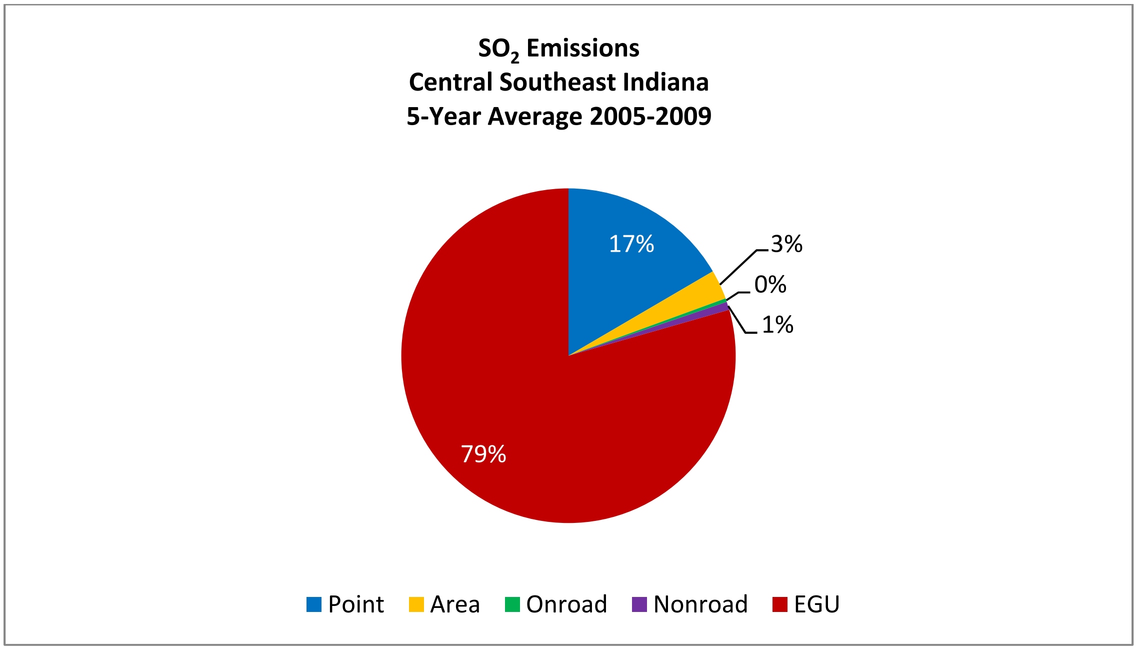


Chart 9: Central Southeast Indiana SO_2 Emissions



National and regional controls, such as the Acid Rain Program, engine fuel standards, and the NO_x SIP Call, have led to a decrease in SO_2 values over time. As Graph 16 illustrates, SO_2 emissions have decreased by 69% within the Central Southeast Indiana area since 1980. This trend is true throughout Indiana and the upper Midwest. Nationally, average SO_2 concentrations have decreased by more than 70% since 1980 due to the implementation of the Acid Rain Program.

For information on SO_2 standards, sources, health effects, and programs to reduce SO_2, please see www.epa.gov/air/sulfurdioxide.

Total Suspended Particulate (TSP)

All available TSP data for Central Southeast Indiana are from monitors that were located in Bartholomew County. The trend in Graph 17 reflects the annual geometric mean values, which were used to compare to the primary and secondary annual TSP standards of 75 µg/m^3. The highest annual geometric mean from all of the monitors in the Central Southeast Indiana area is plotted on the graph for each year. The trend data in Graph 18 reflect the 2nd highest 24-hour TSP concentrations, which were used to compare to the primary 24-hour TSP standard of 260 µg/m^3. The highest 2nd high 24-hour value from all of the monitors in the Central Southeast Indiana area is plotted on the graph for each year.

Both the primary and secondary annual TSP standards, as well as the primary and secondary 24-hour TSP standards, were revoked in 1987. TSP monitoring sites were discontinued across Indiana in 1995 because TSP was replaced by PM_{10}. Monitoring data for both annual and 24-hour TSP show a downward trend over time. While occasional spikes can be seen in the annual and 24-hour TSP values, the monitor values for Central Southeast Indiana have historically been below the primary and secondary annual and primary 24-hour TSP standards. TSP monitors were located in close proximity to major sources in the area and data fluctuate based on variability in facility operations and meteorology.

The data in Tables 13 and 14 are from the monitoring sites that measured annual and 24-hour $PM_{2.5}$ from 1980 through 1987. All available data for both annual and 24-hour TSP for the Central Southeast Indiana area are shown in the tables. Monitoring data for both annual and 24-hour TSP show a downward trend over time.

Monitoring data in Table 13 show the annual geometric mean for annual TSP for the years 1980 through 1987 which are compared to the primary and secondary annual $PM_{2.5}$ standards of 75 µg/m^3. Monitoring data in Table 14 show the 2nd highest 24-hour TSP concentrations for the years 1980 through 1987, which are compared to the primary 24-hour TSP standard of 260 µg/m^3.

Graph 17: Central Southeast Indiana Annual Geometric Mean TSP Values

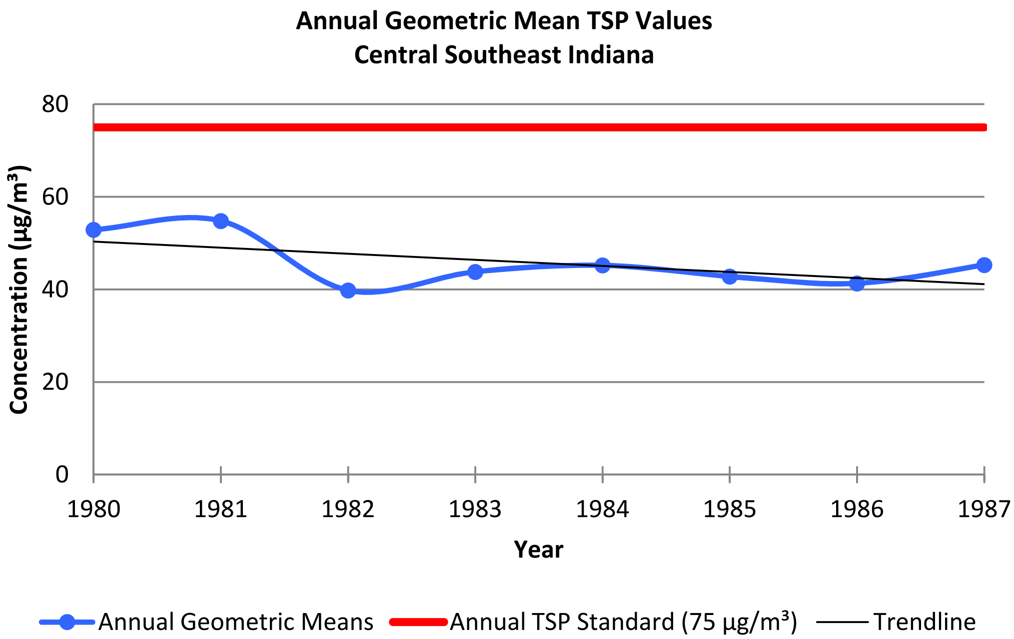


Table 13: Central Southeast Indiana Annual Geometric Mean TSP Values

County	Site #	Site Name	Annual Geometric Mean (µg/m³)											
			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Bartholomew	180050003	Hawcreek St.	53	55	40	44	45	43	41	45				
			Highlighted red numbers through 1987 are above the Annual TSP Standard of 75 µg/m³											

Graph 18: Central Southeast Indiana 24-Hour TSP 2nd High Values

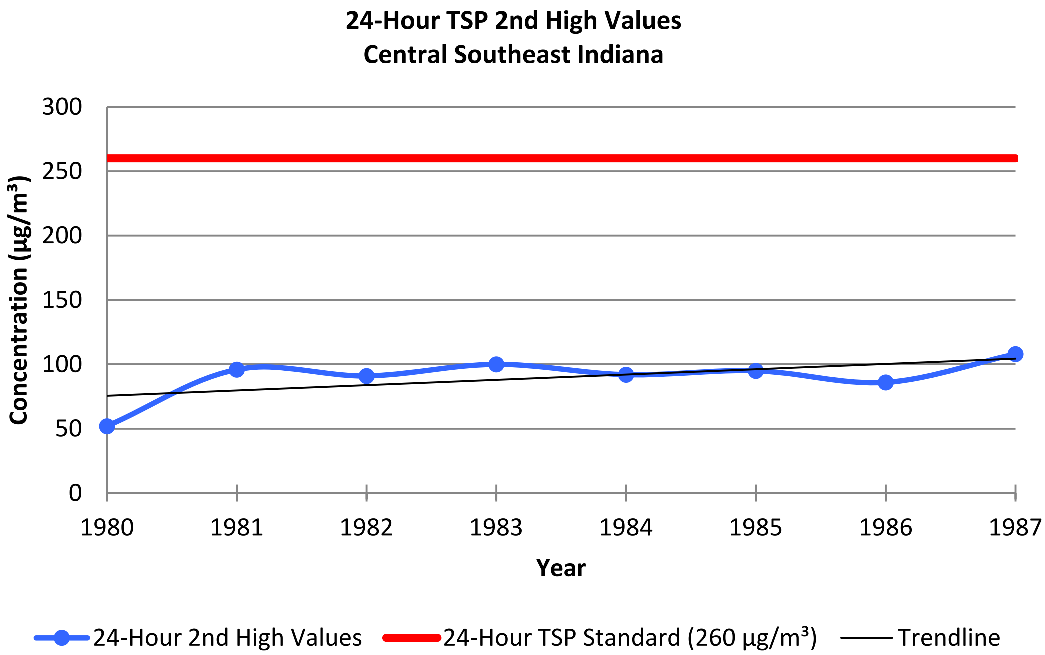


Table 14: Central Southeast Indiana 24-Hour TSP 2nd High Values

County	Site #	Site Name	2nd High Values (µg/m³)											
			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Bartholomew	180050003	Hawcreek St.	52	96	91	100	92	95	86	108				
			Highlighted red numbers through 1987 are above the 24-Hour TSP Standard of 260 µg/m³											

Future of Air Quality

U.S. EPA is required by the CAA to review each criteria pollutant standard to evaluate whether it adequately protects public health. If a criteria pollutant standard is lowered in the future, the Central Southeast Indiana area may monitor violations of the new standard simply because the standard could be set lower than current monitored values. However, as new air programs are implemented in the future, the Central Southeast Indiana area will continue to see declines in monitor and emission values, which will help it meet the threshold for any new criteria pollutant standards that are implemented. Local controls, such as the consent decree for AEP-Tanner's Creek Generating Station in Dearborn County, will also contribute towards the future improvement of monitoring data in the Central Southeast Indiana area.

Conclusions

Although overall population and VMT have been on the increase over time, the Central Southeast Indiana monitored air quality and emission values have been trending downward and will continue to improve into the future. The overall decrease in emissions in the Central Southeast Indiana area can be attributed to a variety of clean air programs put in place nationally (i.e. the Acid Rain Program, Tier II Emission Standards for Vehicles and Gasoline Sulfur Standards, Heavy-Duty Diesel Engine Program, and the Clean Air Nonroad Diesel Rule), regionally (i.e. the NO_x SIP Call, CAIR, and state rules), and locally through local ordinances (i.e. open burning regulations, outdoor wood-fired heating devices, and vehicle or engine operations) over the past 30 years. It is expected that this downward trend will persist as existing clean air programs continue and new programs such as CSAPR and recently adopted state rules are implemented (e.g. the Outdoor Hydronic Heater Rule, the Consumer and Commercial Products Rule, the Architectural and Industrial Maintenance Coatings Rule, the Automobile Refinishing Operations Rule, and the Stage I Vapor Recovery Rule).

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Appendix

Central Southeast Indiana County-Specific Emission Inventory Data

(1980-2009)

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Bartholomew County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	77,908.81	8,980.14	3,590.21	10,098.61	3,051.39	13,445.07
1981	75,446.31	8,746.26	3,509.04	9,954.31	2,964.21	13,070.13
1982	72,983.81	8,512.37	3,427.87	9,829.32	2,877.93	12,695.18
1983	70,521.31	8,278.49	3,346.70	9,704.33	2,792.45	12,320.24
1984	68,058.81	8,044.61	3,266.86	9,579.34	2,706.98	11,946.57
1985	65,664.23	7,810.73	3,187.02	9,454.35	2,621.50	11,574.74
1986	63,284.30	7,576.85	3,107.19	9,329.36	2,536.02	11,202.91
1987	60,904.36	7,342.97	3,027.35	9,204.37	2,450.55	10,831.09
1988	58,524.43	7,109.11	2,947.51	9,079.38	2,365.07	10,462.29
1989	56,144.49	6,875.50	2,867.68	9,114.30	2,279.59	10,099.52
1990	49,912.04	6,190.71	2,511.20	8,849.41	3,989.26	9,157.03
1991	48,174.06	6,017.29	2,456.37	8,680.08	3,377.08	8,913.27
1992	46,436.09	5,843.87	2,401.55	8,510.75	2,764.89	8,669.50
1993	44,698.11	5,670.45	2,346.72	8,341.42	2,152.71	8,425.74
1994	42,960.13	5,497.03	2,291.90	8,172.09	1,540.52	8,181.98
1995	41,222.16	5,323.61	2,240.75	8,002.76	928.33	7,938.21
1996	39,484.18	5,150.19	2,189.69	7,833.44	316.15	7,694.45
1997	38,127.44	5,187.82	2,228.84	8,060.16	326.92	7,756.91
1998	37,002.03	5,091.41	2,240.36	8,174.03	329.20	7,258.39
1999	40,760.59	5,537.48	2,725.40	8,831.19	516.13	7,376.05
2000	40,802.01	5,462.10	2,749.03	8,763.74	506.15	7,439.18
2001	40,004.91	5,309.14	2,655.10	8,514.46	520.41	7,520.50
2002	20,661.42	3,821.02	1,454.84	7,548.30	1,457.77	4,200.24
2003	19,499.88	3,571.68	1,467.35	7,567.97	1,442.57	4,158.06
2004	18,338.33	3,322.33	1,479.87	7,587.64	1,427.37	4,115.88
2005	17,176.79	3,072.98	1,492.38	7,607.31	1,412.16	4,073.70
2006	13,481.19	2,568.23	1,461.87	7,015.26	1,387.70	3,717.55
2007	9,785.60	2,063.48	1,431.36	6,423.20	1,363.23	3,361.41
2008	6,090.00	1,558.74	1,400.84	5,831.15	1,338.76	3,005.26
2009	6,090.00	1,558.74	1,400.84	5,831.15	1,338.76	3,005.26
%Change 1980 to 2009	-92.18%	-82.64%	-60.98%	-42.26%	-56.13%	-77.65%

Brown County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	13,040.33	1,159.51	684.43	1,963.41	84.73	1,302.74
1981	12,779.39	1,139.05	674.91	1,968.07	83.27	1,300.99
1982	12,518.45	1,118.59	665.40	1,972.73	81.81	1,299.25
1983	12,257.52	1,098.13	655.88	1,977.38	80.35	1,297.52
1984	11,996.58	1,077.67	646.37	1,982.04	78.89	1,295.78
1985	11,735.64	1,057.21	636.86	1,986.69	77.43	1,294.04
1986	11,474.71	1,036.75	627.34	1,991.35	75.97	1,292.30
1987	11,213.77	1,016.29	617.83	1,996.01	74.51	1,290.57
1988	10,952.83	995.83	608.31	2,000.66	73.05	1,288.83
1989	10,692.01	975.37	598.80	2,006.06	71.60	1,287.09
1990	9,034.02	703.32	561.94	1,912.74	95.86	1,173.48
1991	9,143.42	749.22	557.55	1,918.53	86.27	1,209.67
1992	9,252.81	795.12	553.16	1,924.32	76.68	1,245.86
1993	9,362.21	841.02	548.78	1,930.11	67.10	1,282.05
1994	9,471.61	886.91	544.39	1,935.91	57.51	1,318.24
1995	9,581.00	932.81	540.00	1,941.70	47.92	1,354.43
1996	9,690.40	978.71	535.61	1,947.49	38.33	1,390.62
1997	9,138.76	967.11	537.15	2,040.48	38.48	1,347.52
1998	9,045.47	942.55	573.34	2,157.04	38.58	1,353.85
1999	8,427.25	917.57	560.62	2,165.89	51.02	1,302.86
2000	7,837.56	831.95	534.27	2,038.55	44.74	1,265.37
2001	7,886.46	828.46	504.79	1,996.57	46.30	1,286.07
2002	8,990.27	848.97	418.24	2,540.69	74.56	1,643.57
2003	8,471.92	799.07	426.77	2,550.77	69.55	1,632.68
2004	7,953.57	749.18	435.30	2,560.85	64.54	1,621.78
2005	7,435.22	699.28	443.83	2,570.93	59.53	1,610.88
2006	5,868.00	545.19	430.22	2,091.52	52.99	1,390.02
2007	4,300.79	391.11	416.62	1,612.12	46.46	1,169.15
2008	2,733.57	237.02	403.01	1,132.71	39.92	948.28
2009	2,733.57	237.02	403.01	1,132.71	39.92	948.28
%Change 1980 to 2009	-79.04%	-79.56%	-41.12%	-42.31%	-52.89%	-27.21%

Dearborn County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	37,905.96	74,338.67	3,586.54	4,714.05	115,472.28	5,371.90
1981	36,995.65	72,115.22	3,539.25	4,688.08	112,724.89	5,284.01
1982	36,093.42	69,892.88	3,491.95	4,662.10	109,977.50	5,196.13
1983	35,191.19	67,670.53	3,444.66	4,636.13	107,230.12	5,108.24
1984	34,288.95	65,448.19	3,397.36	4,610.16	104,482.73	5,020.36
1985	33,386.72	63,225.85	3,350.07	4,584.19	101,735.34	4,932.48
1986	32,484.49	61,003.51	3,302.77	4,558.21	98,987.95	4,844.59
1987	31,582.26	58,781.17	3,255.48	4,532.24	96,240.57	4,756.71
1988	30,680.88	56,558.83	3,208.18	4,558.78	93,493.18	4,668.82
1989	29,779.55	54,336.49	3,160.89	4,584.92	90,745.79	4,580.94
1990	26,094.89	47,018.52	3,113.37	6,652.13	86,564.37	4,616.45
1991	25,844.77	46,068.41	3,239.46	6,705.96	84,345.68	4,478.76
1992	25,594.66	45,118.31	3,365.54	6,759.79	82,126.98	4,341.08
1993	25,344.54	44,168.20	3,491.62	6,813.61	79,908.29	4,203.39
1994	25,094.42	43,218.09	3,619.07	6,867.44	77,689.60	4,065.70
1995	24,844.31	42,267.99	3,746.57	6,921.27	75,470.90	3,928.02
1996	24,594.19	41,317.88	3,875.41	6,975.10	73,252.21	3,790.33
1997	23,838.33	45,085.18	4,708.21	7,924.73	78,803.20	3,781.27
1998	23,386.66	33,976.82	4,768.76	8,068.02	49,125.14	3,691.38
1999	23,073.90	39,270.44	3,835.90	7,202.03	51,989.37	3,722.15
2000	22,161.16	37,996.60	4,880.93	8,183.22	68,748.83	3,662.14
2001	22,348.10	31,138.82	3,945.15	7,140.73	56,773.90	3,732.20
2002	21,503.80	22,960.59	3,675.15	7,636.44	63,947.71	3,559.53
2003	20,251.20	19,723.98	3,480.03	7,446.89	58,723.16	3,582.87
2004	18,998.59	16,487.36	3,284.90	7,257.33	53,498.62	3,606.20
2005	17,745.99	13,250.74	3,089.78	7,067.78	48,274.07	3,629.54
2006	14,158.09	13,472.12	2,720.67	6,060.95	42,960.87	3,238.16
2007	10,570.19	13,693.51	2,351.55	5,054.11	37,647.68	2,846.78
2008	6,982.29	13,914.89	1,982.44	4,047.28	32,334.48	2,455.40
2009	6,872.61	13,381.13	1,952.68	3,996.14	32,183.89	2,419.08
%Change 1980 to 2009	-81.87%	-82.00%	-45.56%	-15.23%	-72.13%	-54.97%

Decatur County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	35,487.25	3,498.88	1,530.21	4,583.46	728.06	4,514.76
1981	34,518.21	3,440.48	1,514.29	4,647.15	716.48	4,448.71
1982	33,549.17	3,382.08	1,498.37	4,710.83	704.90	4,382.81
1983	32,580.13	3,323.67	1,482.45	4,774.51	693.33	4,316.91
1984	31,611.94	3,265.27	1,466.53	4,838.20	681.75	4,251.04
1985	30,647.66	3,206.87	1,450.61	4,901.88	670.17	4,185.67
1986	29,683.39	3,148.47	1,434.69	4,965.57	658.60	4,120.31
1987	28,719.12	3,090.06	1,418.77	5,029.25	647.02	4,054.95
1988	27,754.84	3,031.66	1,402.85	5,092.93	635.44	3,989.59
1989	26,790.57	2,973.26	1,386.93	5,186.92	623.87	3,924.23
1990	23,948.80	2,525.38	1,371.42	5,526.06	1,192.78	3,211.28
1991	23,383.60	2,548.72	1,351.41	5,507.84	1,013.32	3,305.44
1992	22,818.41	2,572.06	1,331.39	5,489.61	833.87	3,399.60
1993	22,253.22	2,595.41	1,311.37	5,471.38	654.41	3,493.76
1994	21,688.02	2,618.75	1,291.35	5,453.15	474.95	3,587.92
1995	21,122.83	2,642.09	1,272.71	5,434.92	295.50	3,682.08
1996	20,557.63	2,665.43	1,254.36	5,416.69	116.04	3,776.24
1997	19,877.75	2,697.95	1,262.84	5,485.15	118.96	3,782.25
1998	19,334.34	2,666.16	1,239.68	5,400.47	120.45	3,673.00
1999	18,264.46	2,650.10	1,231.04	5,411.40	156.59	4,091.89
2000	17,492.16	2,506.11	1,207.79	5,279.90	145.67	3,780.01
2001	17,925.47	2,524.80	1,149.60	5,160.63	153.85	3,875.58
2002	15,926.11	2,820.50	1,284.39	7,411.55	666.48	3,001.19
2003	14,793.93	2,656.16	1,281.20	7,404.52	656.62	2,927.39
2004	13,661.75	2,491.81	1,278.01	7,397.49	646.76	2,853.58
2005	12,529.57	2,327.47	1,274.82	7,390.45	636.90	2,779.78
2006	9,640.74	1,811.49	1,260.43	6,831.40	614.40	2,543.32
2007	6,751.90	1,295.51	1,246.03	6,272.34	591.90	2,306.86
2008	3,863.07	779.53	1,231.64	5,713.28	569.39	2,070.41
2009	3,809.14	779.53	1,231.64	5,198.08	569.39	2,147.21
%Change 1980 to 2009	-89.27%	-77.72%	-19.51%	13.41%	-21.79%	-52.44%

Franklin County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	20,480.23	2,096.94	1,110.60	3,394.30	262.68	2,277.65
1981	19,953.75	2,055.96	1,091.97	3,399.25	257.03	2,239.95
1982	19,427.37	2,014.97	1,073.34	3,404.20	251.38	2,202.26
1983	18,900.98	1,973.99	1,054.71	3,409.16	245.74	2,164.56
1984	18,374.59	1,933.01	1,036.08	3,414.11	240.09	2,126.86
1985	17,848.21	1,892.03	1,017.46	3,419.07	234.45	2,089.17
1986	17,321.82	1,851.04	998.83	3,424.02	228.80	2,051.47
1987	16,795.43	1,810.06	980.20	3,428.98	223.16	2,013.77
1988	16,269.05	1,769.08	961.57	3,433.93	217.51	1,982.35
1989	15,742.66	1,728.10	942.94	3,444.55	211.86	1,954.01
1990	14,874.45	1,482.13	927.88	3,549.15	323.26	1,845.75
1991	14,377.87	1,486.78	904.47	3,501.94	282.64	1,834.15
1992	13,881.29	1,491.43	881.06	3,454.73	242.01	1,822.55
1993	13,384.71	1,496.08	857.65	3,407.52	201.39	1,810.95
1994	12,888.13	1,500.72	834.23	3,360.31	160.77	1,799.35
1995	12,391.55	1,505.37	810.82	3,313.11	120.14	1,787.75
1996	11,894.97	1,510.02	787.41	3,265.90	79.52	1,776.15
1997	11,345.46	1,507.12	804.03	3,414.65	81.49	1,744.52
1998	11,058.90	1,475.34	806.12	3,411.96	82.42	1,725.03
1999	10,291.92	1,442.70	798.93	3,436.82	96.08	1,658.33
2000	10,010.71	1,390.56	781.21	3,316.05	90.32	1,636.88
2001	9,747.89	1,335.31	734.77	3,223.23	91.65	1,633.59
2002	10,840.52	1,453.44	650.03	4,149.64	183.82	1,811.16
2003	10,077.01	1,376.66	651.73	4,151.92	176.98	1,752.08
2004	9,313.50	1,299.88	653.42	4,154.20	170.14	1,693.00
2005	8,549.99	1,223.10	655.12	4,156.48	163.29	1,633.91
2006	6,639.37	959.28	643.72	3,658.04	150.68	1,446.27
2007	4,728.76	695.46	632.32	3,159.59	138.06	1,258.63
2008	2,818.14	431.65	620.92	2,661.14	125.44	1,070.98
2009	2,818.14	431.65	620.92	2,661.14	125.44	1,070.98
%Change 1980 to 2009	-79.70%	-79.42%	-44.09%	-21.60%	-52.25%	-52.98%

Jackson County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	44,939.59	5,008.17	2,447.48	5,934.88	1,414.79	5,874.05
1981	43,748.86	4,915.53	2,406.81	5,892.10	1,379.52	5,790.71
1982	42,558.14	4,830.24	2,366.14	5,849.33	1,344.27	5,707.36
1983	41,367.98	4,748.36	2,325.47	5,806.55	1,309.03	5,624.02
1984	40,183.23	4,666.49	2,284.79	5,763.78	1,273.78	5,540.68
1985	38,998.49	4,584.61	2,244.12	5,721.00	1,238.53	5,457.34
1986	37,813.75	4,502.74	2,203.45	5,678.23	1,203.29	5,373.99
1987	36,629.01	4,420.86	2,162.78	5,635.45	1,168.04	5,290.65
1988	35,444.27	4,338.99	2,122.10	5,592.68	1,132.79	5,207.31
1989	34,259.53	4,257.11	2,081.43	5,741.11	1,097.57	5,124.26
1990	31,742.73	4,078.43	2,106.99	5,920.76	1,972.25	4,466.32
1991	30,763.85	3,984.95	1,973.67	5,772.34	1,670.43	4,527.11
1992	29,784.98	3,891.47	1,840.35	5,623.92	1,368.61	4,587.90
1993	28,806.11	3,797.99	1,707.03	5,475.50	1,066.80	4,648.69
1994	27,827.23	3,704.50	1,573.71	5,327.08	764.98	4,709.47
1995	26,848.36	3,611.02	1,440.39	5,178.66	463.16	4,770.26
1996	25,869.48	3,517.54	1,361.17	5,030.24	161.34	4,831.05
1997	24,854.52	3,541.88	1,370.39	5,156.38	165.16	4,838.95
1998	24,247.97	3,490.96	1,374.31	5,173.90	167.24	4,632.63
1999	22,969.88	3,593.58	1,366.98	5,219.92	261.87	4,782.23
2000	22,482.55	3,482.69	1,356.39	5,113.45	252.65	4,651.13
2001	22,227.28	3,426.85	1,270.21	4,925.06	260.13	4,721.19
2002	22,537.85	3,976.93	1,155.78	6,115.65	853.99	4,322.77
2003	20,900.71	3,794.98	1,159.91	6,120.49	840.66	4,209.52
2004	19,263.57	3,613.03	1,164.04	6,125.33	827.33	4,096.27
2005	17,626.44	3,431.08	1,168.16	6,130.17	814.01	3,983.01
2006	13,658.61	2,785.65	1,145.28	5,432.85	782.63	3,615.43
2007	9,690.79	2,140.21	1,122.40	4,735.54	751.26	3,247.85
2008	5,722.97	1,494.78	1,099.52	4,038.22	719.88	2,880.26
2009	5,721.20	1,493.72	1,098.44	4,035.73	719.47	2,883.05
%Change 1980 to 2009	-80.79%	-70.17%	-55.12%	-32.00%	-49.15%	-50.92%

Jennings County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	16,561.93	1,790.24	1,104.24	3,587.14	734.27	2,216.44
1981	16,203.01	1,770.33	1,093.13	3,599.08	716.16	2,198.71
1982	15,844.09	1,750.43	1,082.02	3,611.02	698.06	2,180.98
1983	15,487.20	1,730.52	1,070.90	3,622.96	679.96	2,163.24
1984	15,130.69	1,710.61	1,059.79	3,634.90	661.85	2,145.51
1985	14,774.18	1,690.71	1,048.67	3,646.84	643.75	2,127.81
1986	14,417.67	1,670.80	1,037.56	3,658.78	625.64	2,110.13
1987	14,061.16	1,650.89	1,026.45	3,670.72	607.54	2,092.45
1988	13,704.65	1,630.99	1,015.33	3,682.66	589.44	2,074.77
1989	13,348.13	1,611.08	1,004.22	3,717.43	571.33	2,057.09
1990	10,180.60	1,157.81	1,004.73	4,021.27	802.42	1,571.56
1991	10,627.11	1,253.60	973.35	3,926.18	760.49	1,688.36
1992	11,073.62	1,349.40	941.97	3,831.08	718.57	1,805.15
1993	11,517.13	1,447.19	910.59	3,735.99	440.64	1,921.91
1994	11,963.63	1,542.98	883.97	3,640.90	398.71	2,038.71
1995	12,410.14	1,638.78	857.50	3,545.80	356.79	2,155.50
1996	12,856.65	1,734.57	832.66	3,450.71	314.86	2,272.30
1997	12,164.37	1,720.07	850.35	3,613.65	212.17	2,257.46
1998	11,776.70	1,676.76	870.18	3,715.97	232.76	2,197.05
1999	10,918.39	1,651.49	874.54	3,789.29	194.72	2,058.75
2000	10,449.62	1,586.22	876.85	3,746.72	230.56	2,029.23
2001	10,123.60	1,539.23	831.45	3,667.63	215.13	2,050.17
2002	10,965.09	1,645.69	713.06	4,725.13	394.45	2,074.25
2003	10,402.37	1,576.81	767.72	4,786.50	390.40	2,048.58
2004	9,839.66	1,507.92	822.39	4,847.88	386.34	2,022.91
2005	9,277.94	1,438.03	884.15	4,916.35	361.29	1,997.22
2006	7,107.46	1,166.48	834.45	4,297.15	342.79	1,785.86
2007	4,936.99	894.92	784.75	3,677.95	324.29	1,574.50
2008	2,770.51	627.37	740.55	3,064.26	382.79	1,363.13
2009	2,770.51	627.37	740.82	3,064.26	382.79	1,363.13
%Change 1980 to 2009	-74.98%	-64.96%	-32.91%	-14.58%	-47.87%	-38.50%

Lawrence County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	31,844.48	4,787.02	2,527.55	10,916.70	8,081.53	5,037.75
1981	31,101.83	4,658.13	2,516.32	10,768.25	7,917.05	4,948.46
1982	30,359.18	4,529.24	2,505.08	10,619.80	7,752.56	4,859.16
1983	29,616.53	4,400.34	2,493.84	10,471.36	7,588.92	4,770.11
1984	28,873.88	4,294.01	2,482.61	10,322.91	7,427.00	4,681.27
1985	28,131.23	4,200.07	2,471.37	10,174.46	7,265.07	4,592.44
1986	27,388.59	4,106.56	2,460.13	10,026.02	7,103.14	4,503.61
1987	26,645.94	4,013.09	2,448.90	9,877.57	6,941.58	4,414.77
1988	25,903.29	3,919.63	2,437.66	9,729.12	6,780.30	4,325.94
1989	25,182.33	3,826.17	2,426.43	9,779.66	6,619.02	4,237.11
1990	21,182.48	4,799.34	3,255.79	13,075.32	8,588.18	3,928.27
1991	21,323.08	4,456.11	2,938.17	11,748.06	7,782.50	3,903.17
1992	21,463.67	4,112.88	2,620.56	10,420.81	6,976.83	3,878.08
1993	21,604.27	3,769.65	2,302.95	9,093.55	6,171.15	3,852.99
1994	21,744.86	3,426.41	1,990.31	7,766.30	5,365.47	3,827.89
1995	21,885.45	3,083.18	1,846.64	6,439.05	4,559.80	3,802.80
1996	22,026.05	2,739.95	1,741.77	5,111.79	3,754.12	3,777.70
1997	20,890.20	2,722.80	1,699.60	5,016.92	4,011.66	3,741.28
1998	20,296.18	2,652.38	1,807.82	5,436.63	4,068.86	3,601.93
1999	18,895.13	5,554.45	1,867.60	5,565.48	3,842.41	3,334.40
2000	18,692.57	5,591.32	1,895.12	5,479.55	4,040.56	3,335.22
2001	17,941.85	5,707.17	1,864.58	5,382.69	4,329.59	3,329.51
2002	19,616.18	7,120.32	1,159.58	5,839.94	4,577.63	3,451.42
2003	18,423.58	7,010.26	1,189.85	5,874.85	4,562.72	3,403.65
2004	17,230.99	6,900.19	1,220.11	5,909.75	4,547.80	3,355.88
2005	16,038.40	6,790.12	1,250.37	5,944.65	4,532.89	3,308.11
2006	12,588.54	6,025.17	1,207.35	5,262.64	4,507.34	2,937.83
2007	9,138.68	5,260.22	1,164.33	4,580.63	4,481.79	2,567.54
2008	5,688.82	4,495.27	1,121.31	3,898.62	4,456.24	2,197.26
2009	5,654.12	4,413.74	1,098.28	3,827.63	4,179.84	2,163.65
%Change 1980 to 2009	-82.24%	-7.80%	-56.55%	-64.94%	-48.28%	-57.05%

Ripley County Emissions (Tons per Year)

Year	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
1980	26,075.32	2,856.64	1,608.16	4,953.03	239.92	5,270.37
1981	25,432.58	2,810.67	1,586.19	4,936.11	233.86	5,178.56
1982	24,789.84	2,764.70	1,564.21	4,919.18	227.79	5,086.74
1983	24,147.11	2,718.73	1,542.24	4,902.26	221.73	4,994.92
1984	23,504.37	2,672.76	1,520.27	4,885.33	215.66	4,903.10
1985	22,861.63	2,626.79	1,498.29	4,868.41	209.60	4,811.28
1986	22,218.90	2,580.82	1,476.32	4,851.48	203.53	4,719.46
1987	21,576.16	2,534.85	1,454.34	4,834.56	197.47	4,627.64
1988	20,933.42	2,488.88	1,432.37	4,817.63	204.35	4,543.92
1989	20,290.68	2,442.91	1,410.39	4,812.18	212.78	4,469.77
1990	18,320.56	2,047.18	1,447.65	5,000.40	455.55	5,775.10
1991	17,996.82	2,083.12	1,385.55	4,910.20	396.50	5,271.69
1992	17,673.09	2,119.06	1,323.45	4,820.00	337.46	4,768.28
1993	17,349.35	2,155.01	1,261.34	4,729.79	278.41	4,264.87
1994	17,025.61	2,190.95	1,199.24	4,639.59	219.36	3,761.46
1995	16,701.88	2,226.89	1,149.40	4,549.39	160.32	3,258.05
1996	16,378.14	2,262.83	1,102.29	4,459.19	101.27	2,754.64
1997	15,750.08	2,265.65	1,070.77	4,355.36	103.06	2,749.70
1998	15,310.93	2,218.85	1,098.06	4,531.20	103.80	2,634.25
1999	14,364.47	2,205.22	1,107.42	4,651.39	143.81	3,401.74
2000	13,687.71	2,085.74	1,106.17	4,591.05	135.21	3,412.99
2001	13,772.73	2,080.81	1,055.34	4,495.88	140.65	3,518.68
2002	14,530.44	2,265.72	922.71	5,428.96	473.47	4,002.96
2003	13,886.98	2,152.20	961.35	5,474.91	469.73	4,027.17
2004	13,243.52	2,038.68	999.99	5,520.86	465.99	4,051.38
2005	12,600.06	1,925.15	1,038.63	5,566.81	462.25	4,075.60
2006	9,777.12	1,544.64	995.50	4,942.67	439.10	3,764.73
2007	6,954.17	1,164.13	952.37	4,318.53	415.95	3,453.86
2008	4,131.23	783.61	909.24	3,694.38	392.80	3,143.00
2009	4,131.23	783.61	888.63	3,637.00	392.80	2,986.88
%Change 1980 to 2009	-84.16%	-72.57%	-44.74%	-26.57%	63.72%	-43.33%