

US EPA ARCHIVE DOCUMENT



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*  
Governor

*Thomas W. Easterly*  
Commissioner

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March 11, 2009

Mr. Bharat Mathur  
Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region V  
77 West Jackson Boulevard  
Chicago, IL 60604-3608

Re: Recommendations Concerning Air Quality  
Designations for the 2008 Revised 8-Hour  
Ozone National Ambient Air Quality Standard

Dear Mr. Mathur:

This letter is in response to the United States Environmental Protection Agency's (U.S. EPA's) December 4, 2008, guidance memorandum concerning air quality designations for the revised 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS). The guidance indicates U.S. EPA's intention to propose designations in November 2009, and finalize them by March 12, 2010, and requests that states submit recommendations by March 12, 2009.

Enclosed are quality assured monitoring data from 2006 through 2008 for Indiana's ozone monitoring network. Indiana's monitored ozone concentrations have trended downward since 2002, resulting in just twelve Indiana counties (Boone, Clark, Floyd, Greene, Hamilton, Hancock, Lake, Marion, Morgan, Perry, Vanderburgh and Warrick) with design values above the revised 8-hour ozone standard. Indiana expects this downward trend to continue over the next few years with the continued phase-in of recently implemented federal and state regulations.

The following enclosures are also included with this letter:

- Enclosure 1—2006-2008 Indiana Ozone Summary
- Enclosure 2—List of Indiana Counties with Recommendations
- Enclosure 3—Map of Indiana Ozone Nonattainment Recommendations
- Enclosure 4—Indiana's Assessment of the Revised 2008 8-Hour Ozone Standard and Technical Support Documents
  - Appendix A—Indiana Growth Rates and Patterns
  - Appendix B—2006 Indiana Commuting Patterns
  - Appendix C—2005 Indiana Emissions Summary

Monitoring data indicates that Indiana's air quality continues to improve. Indiana firmly believes that the nonattainment boundaries for the revised 8-hour ozone standard should be limited to the counties that actually possess a three-year average ambient monitor-based design value above the standard. With the exception of two ozone monitors in Indiana (Charlestown-Clark County and Inglefield-Vanderburgh

County), monitored values exceed the standard by only 1 to 3 ppb. Because there is a public stigma associated with nonattainment designations, Indiana urges U.S. EPA to carefully review all data, as well as federal and regional modeling of the impact of federal and state control measures prior to imposing undue economic hardships on areas that are adjacent to counties where monitoring data slightly exceeds the revised standard.

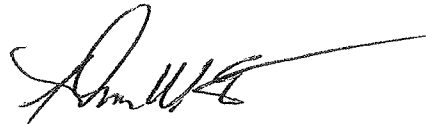
Limiting the designated nonattainment areas is further supported by the fact that air emissions in Indiana counties adjacent to the larger urban areas do not significantly contribute to exceeding monitors. Air quality in those counties will be further improved by federal and state control programs, such as the Clean Air Interstate Rule (CAIR) and cleaner engine and fuel standards, which are expected to dramatically reduce the precursors for ozone over the next few years.

Although the Clean Air Act (CAA) requires U.S. EPA to complete the designation process within two years of the effective date of the standard, it does allow U.S. EPA to take up to an additional year to issue designations (i.e., no later than three years after the effective date of the standard). In this case, that enables U.S. EPA to delay issuance of designations until March 12, 2011. Indiana urges U.S. EPA to take advantage of this CAA provision to fully realize the effects from some of the recently implemented federal and state control measures, prior to imposing an undue burden on states and local communities. Technical information within Enclosure 4 illustrates that all but one county in Indiana will likely attain the revised standard by 2012.

Since the U.S. EPA will not designate areas under the revised standard until the completion of the 2009 ozone season (2010 ozone season if designations are delayed another year), Indiana reserves the right to update the recommendations contained within based on the 2007-2009 design values, once available. Indiana also reserves the right to supplement its recommendations with additional technical support information as it becomes available and intends to do so within the next 60 days.

I appreciate the opportunity to provide comments and recommendations to U.S. EPA concerning the designations for the revised 2008 8-hour ozone standard. Likewise, I look forward to working with your staff as U.S. EPA moves forward with the designation process. If you have any questions regarding IDEM's analysis and recommendations, please feel free to contact me at (317) 232-8611 or Dan Murray, Assistant Commissioner, Office of Air Quality, at (317) 232-8222.

Sincerely,



Thomas W. Easterly  
Commissioner

TWE/dm/sad/skr  
Enclosures

cc: Cheryl L. Newton, U.S. EPA Region 5  
John Mooney, U.S. EPA Region 5  
Daniel Murray, IDEM-OAQ

## Enclosure 1

## 2000-2008 Indiana Ozone Summary

**Note:** Prior to 2008, the ozone standard was 0.08 parts per million (ppm). Attainment was determined by the average of the 4th highest ozone values over a three-year period. A value of 0.085 ppm or above was in violation of the standard. Beginning in 2008, the ozone standard was lowered to 0.075 ppm. Attainment is determined by the average of the 4th highest ozone values over a three-year period. A value of 0.076 ppm or above is a violation of the standard.

County	Site #	Site Name	4th Highest Ozone Value (ppm)									Three-Year Design Value (ppm)						
			2000	2001	2002	2003	2004	2005	2006	2007	2008	00-02	01-03	02-04	03-05	04-06	05-07	06-08
ALLEN	18 003 0002	LEO	0.091	0.082	0.093	0.090	0.073	0.086	0.073	0.077	0.066	0.088	0.088	0.085	0.083	0.077	0.078	0.072
ALLEN	18 003 0004	BEACON STREET	0.081	0.074	0.097	0.084	0.069	0.076	0.071	0.080	0.069	0.084	0.085	0.083	0.076	0.072	0.075	0.073
BOONE	18 011 0001	WHITESTOWN	0.082	0.084	0.099	0.088	0.072	0.082	0.080	0.083	0.073	0.088	0.090	0.086	0.080	0.078	0.081	0.078
CARROLL	18 015 0002	FLORA		0.079	0.096	0.079	0.071	0.075	0.073	0.078	0.065	0.087 <sup>2</sup>	0.084	0.082	0.075	0.073	0.075	0.072
CLARK *	18 019 0003/8	CHARLESTOWN / STATE PARK	0.085	0.086	0.100	0.090	0.074	0.080	0.079	0.090	0.075	0.090	0.092	0.088	0.081	0.077	0.083	0.081
DELAWARE	18 035 0010	ALBANY		0.084	0.095	0.085	0.070	0.081	0.072	0.079	0.062	0.089 <sup>2</sup>	0.088	0.083	0.078	0.074	0.077	0.071
ELKHART	18 039 0007	BRISTOL			0.099	0.087	0.077	0.086	0.067	0.082	0.068	0.099 <sup>1</sup>	0.093 <sup>2</sup>	0.087	0.083	0.076	0.078	0.072
FLOYD	18 043 1004	NEW ALBANY	0.077	0.076	0.097	0.086	0.071	0.080	0.076	0.082	0.075	0.083	0.086	0.084	0.079	0.075	0.079	0.077
GREENE	18 055 0001	PLUMMER	0.090	0.085	0.093	0.088	0.073	0.079	0.076	0.084	0.072	0.089	0.088	0.084	0.080	0.076	0.079	0.077
HAMILTON	18 057 1001	NOBLESVILLE	0.090	0.088	0.101	0.101	0.075	0.087	0.077	0.084	0.073	0.093	0.096	0.092	0.087	0.079	0.082	0.078
HANCOCK	18 059 0003	FORTVILLE	0.086	0.089	0.101	0.092	0.072	0.080	0.075	0.081	0.074	0.092	0.094	0.088	0.081	0.075	0.078	0.076
HENDRICKS	18 063 0004	AVON	0.087	0.083	0.095	0.079	0.071	0.078	0.073	0.079	0.068	0.088	0.085	0.081	0.076	0.074	0.076	0.073
HUNTINGTON	18 069 0002	ROANOKE	0.087	0.082	0.089	0.083	0.069	0.078	0.072	0.078	0.060	0.086	0.084	0.080	0.076	0.073	0.076	0.070
JACKSON	18 071 0001	BROWNSTOWN	0.082	0.084	0.090	0.082	0.068	0.077	0.075	0.078	0.070	0.085	0.085	0.080	0.075	0.073	0.076	0.074
JOHNSON	18 081 0002	TRAFALGAR	0.084	0.082	0.097	0.080	0.073	0.077	0.078	0.080	0.069	0.087	0.086	0.083	0.076	0.076	0.078	0.075
LAKE	18 089 0022	GARY IITRI	0.075	0.083	0.094	0.076	0.064	0.089	0.073	0.085	0.062	0.084	0.084	0.078	0.076	0.075	0.082	0.073
LAKE	18 089 0030	WHITING					0.064	0.088	0.081	0.088	0.062			0.064 <sup>1</sup>	0.076 <sup>2</sup>	0.077	0.085	0.077
LAKE	18 089 2006	HAMMOND	0.086	0.090	0.101	0.081	0.067	0.087	0.075	0.077	0.068	0.092	0.090	0.083	0.078	0.076	0.079	0.073
LAPORTE	18 091 0005	MICHIGAN CITY	0.080	0.090	0.107	0.082	0.070	0.084	0.075	0.073	0.059	0.092	0.093	0.086	0.078	0.076	0.077	0.069
LAPORTE	18 091 0010	LAPORTE	0.074	0.079	0.100	0.084	0.068	0.089	0.069	0.078	0.065	0.084	0.087	0.084	0.080	0.075	0.078	0.070
MADISON	18 095 0010	EMPORIA	0.080	0.090	0.104	0.091	0.072	0.078	0.073	0.078	0.065	0.091	0.095	0.089	0.080	0.074	0.076	0.072
MARION	18 097 0050	FORT HARRISON	0.083	0.087	0.100	0.091	0.073	0.080	0.076	0.083	0.075	0.090	0.092	0.088	0.081	0.076	0.079	0.078
MARION	18 097 0057	HARDING STREET	0.078	0.081	0.099	0.075	0.066	0.081	0.076	0.076	0.067	0.086	0.085	0.080	0.074	0.074	0.077	0.073
MARION	18 097 0073	EAST 16TH STREET	0.082	0.081	0.106	0.082	0.071	0.080	0.072	0.080	0.066	0.089	0.089	0.086	0.077	0.074	0.077	0.072
MORGAN	18 109 0005	MONROVIA	0.088	0.082	0.094	0.081	0.072	0.078	0.077	0.084	0.069	0.088	0.085	0.082	0.077	0.075	0.079	0.076
PERRY	18 123 0009	LEOPOLD					0.078	0.086	0.079	0.080	0.073			0.078 <sup>1</sup>	0.082 <sup>2</sup>	0.081	0.081	0.077
PORTER	18 127 0024	OGDEN DUNES	0.085	0.085	0.101	0.077	0.069	0.090	0.070	0.084	0.069	0.090	0.087	0.082	0.078	0.076	0.081	0.074
PORTER	18 127 0026	VALPARAISO	0.082	0.077	0.100	0.082	0.072	0.078	0.071	0.080	0.061	0.086	0.086	0.084	0.077	0.073	0.076	0.070
POSEY	18 129 0003	ST. PHILLIPS	0.085	0.079	0.097	0.077	0.071	0.077	0.058	0.080	0.069	0.087	0.084	0.081	0.075	0.068	0.071	0.069
ST. JOSEPH	18 141 0010	POTATO CREEK	0.079	0.078	0.092	0.081	0.073	0.078	0.069	0.075	0.063	0.083	0.083	0.082	0.077	0.073	0.074	0.069
ST. JOSEPH **	18 141 0008/15	ANGELA & EDDY / SHIELDS DRIVE	0.081	0.082	0.100	0.082	0.072	0.084	0.063	0.067	0.058	0.087	0.088	0.084	0.079	0.073	0.071	0.062
ST. JOSEPH	18 141 1007	GRANGER	0.078	0.089	0.104	0.086	0.076	0.086	0.070	0.082	0.069	0.090	0.093	0.088	0.082	0.077	0.079	0.073
SHELBY	18 145 0001	FAIRLAND	0.087	0.093	0.101	0.089	0.071	0.080	0.073	0.082	0.070	0.093	0.094	0.087	0.080	0.074	0.078	0.075
VANDERBURGH	18 163 0012	MILL ROAD	0.081	0.073	0.095	0.081	0.072	0.080	0.075	0.085	0.074	0.083	0.083	0.082	0.077	0.075	0.080	0.078
VANDERBURGH	18 163 0013	INGLEFIELD	0.075	0.072	0.086	0.075	0.058	0.056	0.081	0.088	0.072	0.077	0.077	0.073	0.063	0.065	0.075	0.080
VIGO	18 167 0018	TERRE HAUTE	0.075	0.082	0.082	0.066	0.057	0.064	0.060	0.077	0.059	0.079	0.076	0.068	0.062	0.060	0.067	0.065
VIGO	18 167 0024	SANDCUT		0.083	0.099	0.080	0.072	0.076	0.072	0.073	0.066	0.091 <sup>2</sup>	0.087	0.083	0.076	0.073	0.073	0.070
WARRICK	18 173 0008	BOONVILLE	0.073	0.078	0.091	0.076	0.073	0.080	0.078	0.083	0.071	0.080	0.081	0.080	0.076	0.077	0.080	0.077
WARRICK	18 173 0009	LYNNVILLE	0.077	0.075	0.090	0.078	0.066	0.076	0.070	0.080	0.064	0.080	0.081	0.078	0.073	0.070	0.075	0.071
WARRICK	18 173 0011	DAYVILLE						0.077	0.078	0.076	0.060				0.077 <sup>1</sup>	0.077 <sup>2</sup>	0.077	0.071

Prior to 2008, Red Numbers are >= 0.085 ppm

Beginning 2008, Red Numbers are >= 0.076 ppm

<sup>1</sup> One Year of Data

<sup>2</sup> Two Years of Data

2006-2008 Design Value Greater than or Equal to 0.076 ppm

\* Clark County ozone monitor was moved from Charlestown to Charlestown State Park in 2007. The 2005-2007 and 2006-2008 design values are calculated from both monitoring sites.

\*\* St. Joseph ozone monitor was moved from Angela & Eddy to Shields Drive on June 1, 2006. The 2004-2006 and 2005-2007 design values are calculated from both monitoring sites. The 2006-2008 design value is calculated from Shields Drive only.



## Enclosure 2

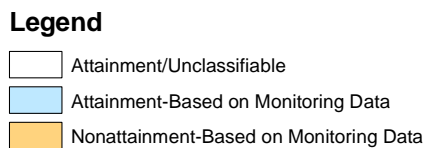
### List of Indiana Counties with Recommendations

County (Monitor ID)	2006-2008 Design Value (ppm)	Attainment Status for 1997 Ozone NAAQS	Indiana Recommendation for 2008 Ozone NAAQS	Reason For Recommendation for 2008 Ozone NAAQS
Allen (180030002)	0.072	Attainment with a Maintenance Plan (Redesignation approved 2-12-07)	Attainment	Monitor Values Below Standard
Allen (180030004)	0.073			
Boone (180110001)	<b>0.078</b>	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Nonattainment	Monitor Value Above Standard
Carroll (180150002)	0.072	Attainment/Unclassifiable	Attainment	Monitor Value Below Standard
Clark (180190003/8) <small>Clark County ozone monitor was moved from Charlestown to Charlestown State Park in 2007, the 2006-2008 Design Value is calculated from both monitoring sites.</small>	<b>0.081</b>	Attainment with a Maintenance Plan (Redesignation approved 7-19-07)	Nonattainment	Monitor Value Above Standard
Dearborn (Lawrenceburg Township) <small>Note: Indiana does not have an ozone monitor located in Dearborn County</small>	N/A	Nonattainment (Attainment Demonstration sent to U.S. EPA on 4-5-08)	Attainment/Unclassifiable	Insignificant Contributor
Delaware (180350010)	0.071	Attainment with a Maintenance Plan (Redesignation approved 1-3-06)	Attainment	Monitor Value Below Standard
Elkhart (180390007)	0.072	Attainment with a Maintenance Plan (Redesignation approved 7-19-07)	Attainment	Monitor Value Below Standard
Floyd (180431004)	<b>0.077</b>	Attainment with a Maintenance Plan (Redesignation approved 7-19-07)	Nonattainment	Monitor Value Above Standard
Greene (180550001)	<b>0.077</b>	Attainment with a Maintenance Plan (Redesignation approved 12-29-05)	Nonattainment	Monitor Value Above Standard
Hamilton (180571001)	<b>0.078</b>	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Nonattainment	Monitor Value Above Standard
Hancock (180590003)	<b>0.076</b>	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Nonattainment	Monitor Value Above Standard
Hendricks (180630004)	0.073	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Attainment	Monitor Value Below Standard
Huntington (180690002)	0.070	Attainment/Unclassifiable	Attainment	Monitor Value Below Standard
Jackson (180710001)	0.074	Attainment with a Maintenance Plan (Redesignation approved 12-29-05)	Attainment	Monitor Value Below Standard

Red text indicates 2006-2008 design value is greater than or equal to 0.076 ppm				
County (Monitor ID)	2006-2008 Design Value (ppm)	Attainment Status for 1997 Ozone NAAQS	Indiana Recommendation for 2008 Ozone NAAQS	Reason For Recommendation for 2008 Ozone NAAQS
Johnson (180810002)	0.075	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Attainment	Monitor Value Below Standard
Lake (180890022)	0.073	Nonattainment (Redesignation pending sent to U.S. EPA on 12-4-08)	Nonattainment	One Monitor Value Above the Standard
Lake (180890030)	0.077			
Lake (180892006)	0.073			
LaPorte (180910005)	0.069	Attainment with a Maintenance Plan (Redesignation approved 7-19-07)	Attainment	Monitor Values Below Standard
LaPorte (180910010)	0.070			
Madison (180950010)	0.072	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Attainment	Monitor Value Below Standard
Marion (180970050)	0.078	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Nonattainment	One Monitor Value Above the Standard
Marion (180970057)	0.073			
Marion (180970073)	0.072			
Morgan (181090005)	0.076	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Nonattainment	Monitor Value Above Standard
Perry (181230009)	0.077	Attainment/Unclassifiable	Nonattainment	Monitor Value Above Standard
Porter (181270024)	0.074	Nonattainment (Redesignation pending sent to U.S. EPA on 12-4-08)	Attainment	Monitor Values Below Standard
Porter (181270026)	0.070			
Posey (181290003)	0.069	Attainment/Unclassifiable	Attainment	Monitor Value Below Standard
St. Joseph (181410010)	0.069	Attainment with a Maintenance Plan (Redesignation approved 7-19-07)	Attainment	Monitor Values Below Standard
St. Joseph (181410015)	0.062			
St. Joseph (181411007)	0.073			
Shelby (181450001)	0.075	Attainment with a Maintenance Plan (Redesignation approved 10-19-07)	Attainment	Monitor Values Below Standard
Vanderburgh (181630012)	0.078	Attainment with a Maintenance Plan (Redesignation approved 1-30-06)	Nonattainment	Monitor Values Above Standard
Vanderburgh (181630013)	0.080			
Vigo (181670018)	0.065	Attainment with a Maintenance Plan (Redesignation approved 2-6-06)	Attainment	Monitor Values Below Standard
Vigo (181670024)	0.070			
Warrick (181730008)	0.077	Attainment with a Maintenance Plan (Redesignation approved 1-30-06)	Nonattainment	One Monitor Value Above the Standard
Warrick (181730009)	0.071			
Warrick (181730011)	0.071			
Red text indicates 2006-2008 design value is greater than or equal to 0.076 ppm				

Note: Indiana is recommending the remainder of the state as Attainment/Unclassifiable

**US EPA ARCHIVE DOCUMENT**



## Enclosure 4

### **Indiana's Assessment of the Revised 2008 8-hour Ozone Standard and Technical Support Documents March 2009**

U.S. EPA has not finalized its implementation guidance that outlines the process for transitioning from the 1997 8-hour ozone standard to the revised 2008 8-hour ozone standard. This plays a large role in determining the regulatory implications of nonattainment status for various types of areas for the revised 2008 8-hour ozone standard. IDEM urges U.S. EPA to do everything possible to finalize the 2008 8-hour implementation guidance before nonattainment boundaries are finalized. Uncertainty about the implementation requirements has had a definite impact on Indiana's development of recommendations and has made the process more difficult than it would have been had implementation guidance been available for the revised 2008 8-hour ozone standard. In addition, states should have the opportunity to supplement their recommendations to U.S. EPA concerning nonattainment designations under the revised 2008 8-hour ozone standard once a final implementation rule is published. U.S. EPA should not designate areas under the revised 2008 8-hour ozone standard until states have had an opportunity to evaluate the implications of the implementation rule for affected areas and supplement or revise these original recommendations.

IDEM recognizes that U.S. EPA's implementation guidance for the revised 2008 8-hour ozone standard must be consistent with the Clean Air Act. The CAA provided highly specific requirements for the attainment of the 1-hour ozone standard but does not make provisions for an 8-hour ozone standard. IDEM recognizes that U.S. EPA is trying to make the existing language of Subpart 2 of the CAA fit the needs of the revised 8-hour ozone standard, for which it was not designed. In the early days of the CAA when the air pollutants being addressed had very localized impacts, mandatory controls in nonattainment areas were a sensible approach to reducing emissions where air quality was unhealthy. In many cases, the "mandatory" control measures required by the CAA have been extremely effective in reducing pollution levels. As more is learned about the cause and effects of ozone formation, mandatory controls that focus on localized impacts make less and less sense as these controls have been found to produce little to no measurable improvements to air quality. The most significant ozone control programs in recent years, the NO<sub>x</sub> SIP Call and CAIR, apply to sources region-wide or nationwide, not just those in designated nonattainment areas. Air quality analyses to date suggest that most of the counties in Indiana where air quality currently does not meet the revised 2008 8-hour ozone standard will meet that standard once CAIR is fully implemented.

The current implementation guidance for the 1997 8-hour ozone standard requires certain mandatory measures for areas of the country. This approach to designations is based on guidance for the 1-hour ozone standard which is out of date. Those mandatory measures are not needed in some areas and are not appropriate mechanisms to make progress towards cleaner air. According to the CAA and U.S. EPA's guidance for implementation of the 1997 8-hour ozone standard, any county designated as nonattainment would be automatically subject to stricter new source review requirements for new and expanding sources. While it makes sense to avoid or minimize increases in emissions in nonattainment areas, these new source review requirements



can have unintended consequences that, in many cases, just push new development to the outskirts of a nonattainment area. As a result, these requirements have contributed to sprawl, loss of farmland, and are inconsistent with policies that promote the development of brownfields. Development immediately adjacent to nonattainment areas can have just as deleterious an effect on local air quality as if the development occurred in the nonattainment area itself. U.S. EPA should avoid to the greatest extent possible mandatory control programs, especially for areas likely to meet the revised 2008 8-hour ozone standard without any additional controls beyond the reductions associated with CAIR.

Indiana counties are significantly impacted by regional transport of ozone and its precursors, Volatile Organic Compounds (VOC) and Oxides of Nitrogen (NO<sub>x</sub>). Reducing ozone precursors on a regional scale has a much greater impact on ground-level ozone levels than reductions achieved on a local scale. The inclusion of adjacent counties based on “cause and contribution” contradicts federal and state control programs. Local “mandatory” controls for ozone do not help expedite attainment of the standard. Designating counties nonattainment that measure air quality which attains the standard, or counties or portions of counties with major stationary sources would serve no purpose. Indiana counties that are currently violating the revised 2008 8-hour NAAQS will attain the standard in advance of the applicable deadline, and the attainment date will not move forward or backward as a result of including surrounding counties based on “cause and contribution”. U.S. EPA’s analyses and LADCO technical modeling to date suggest that all of Indiana will meet the revised 2008 8-hour ozone standard after implementation of currently required state and federal control measures, such as CAIR. Indiana is also developing and implementing statewide VOC rules such as Stage I vapor recovery, degreasing, auto refinishing, Architectural and Industrial Maintenance Coatings, and a Consumer and Commercial Coatings Rule. Statewide applicability of these VOC rules will further benefit air quality while balancing emission reductions statewide and ensure that the Indiana’s air quality will continue to be in attainment of the ozone NAAQS, and provide for an ample margin of safety.

U.S. EPA should reconsider its guidance and previous determination that counties or portions of counties with a large emissions base should be designated as nonattainment based upon the “cause or contribute” rationale. Most of the primary stationary sources within Indiana are already subject to federal control programs, including the CAIR. Since CAIR is considered equivalent to Reasonably Available Control Technology (RACT), these sources would not be subject to the RACT requirements for nonattainment areas as outlined under the 1997 8-hour implementation rule for ozone. As a result, the inclusion of counties beyond those where monitored violations occur will not achieve significant additional emission reductions or advance the attainment date under the revised 2008 8-hour ozone standard.

At a minimum, U.S. EPA should consider the size of any facility or power plant and its emission controls for a county that U.S. EPA feels may be contributing to a downwind monitor violation. For example, the only significant source of ozone precursor emissions in Dearborn County is the American Electric Power (AEP) - Tanners Creek power plant. The AEP-Tanners Creek power plant will be installing Selective Non-Catalytic Reduction (SNCR) technology on three of its four Electric Generating Units (EGUs), with operation to begin in mid-2009. This will achieve an additional 30% reduction in NO<sub>x</sub>. The reductions from facilities like the AEP-

Tanners Creek power plant will help improve air quality in the Southeast Indiana region. Designating an area nonattainment based solely on the fact that a facility and/or power plant is located there will not result in any further emission reductions or serve any useful purpose. Unless there is a documented significant contribution from a facility and/or power plant to a nonattainment area, the entire designation and State Implementation Plan (SIP) process will employ U.S. EPA and Indiana staff in a paperwork process that will do nothing to improve Indiana's air quality.

Recognizing that U.S. EPA is obligated to consider a county's contribution to a downwind monitored violation of the standard, sound evidence must exist that demonstrates that a county actually contributes to the downwind violation in order for the upwind county to be designated nonattainment. Counties that measure air quality below the standard, and are not proven to be significantly culpable for a downwind violation, should be designated attainment. Counties for which monitoring data does not exist, and are not proven to be significantly culpable for a downwind violation, should be considered unclassifiable and designated attainment.

In response to the United States Environmental Protection Agency's (U.S. EPA's) December 4, 2008 guidance memorandum titled "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards", the Indiana Department of Environmental Management (IDEM) has developed the following evaluation of nonattainment area boundaries for designating areas under the 2008 revised 8-hour ozone National Ambient Air Quality Standard (NAAQS).

## **Indiana Analysis by Region**

### **Northwest Indiana Area**

#### **Background**

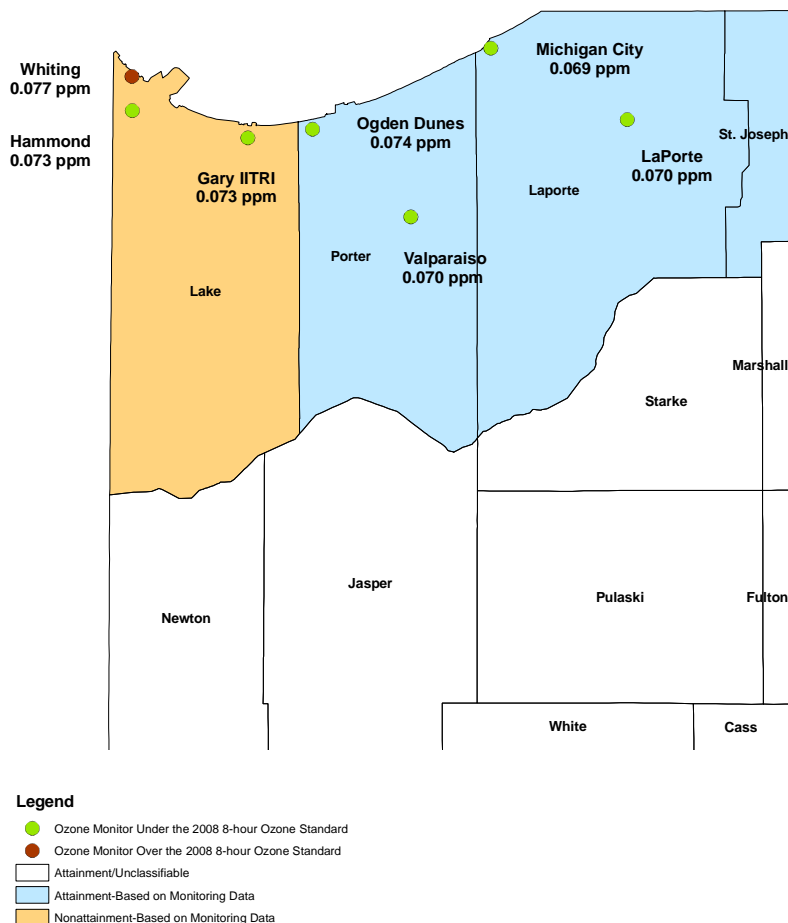
Lake and Porter counties were designated nonattainment under the 1997 8-hour ozone standard as part of the greater Chicago nonattainment area due to the assumed contribution to monitored violations in northeast Illinois. All of the monitor sites in Lake and Porter counties have measured air quality that meets the 1997 8-hour ozone standard since 2007. A Redesignation Petition and Maintenance Plan for the 1997 8-hour ozone standard for Indiana's portion of the Chicago Metropolitan Statistical Area (MSA) is currently pending U.S. EPA approval. The Indiana portion of the Chicago MSA includes Jasper, Lake, Newton and Porter counties. There are no monitors in Jasper or Newton counties.

LaPorte County was designated nonattainment under the 1997 8-hour ozone standard as its own MSA. The two monitor sites in LaPorte County have measured air quality that meets the 1997 8-hour ozone standard since 2005. A Redesignation Petition and Maintenance Plan for the 1997 8-hour ozone standard for LaPorte County was approved by U.S. EPA on July 19, 2007.

## Northwest Indiana Monitoring Data

County	Monitor Location	4 <sup>th</sup> Highest Ozone Values (ppm)			Design Value 2006-2008 (ppm)
		2006	2007	2008	
Lake	Gary IITRI	0.073	0.085	0.062	0.073
Lake	Whiting	0.081	0.088	0.062	0.077
Lake	Hammond	0.075	0.077	0.068	0.073
LaPorte	Michigan City	0.075	0.073	0.059	0.069
LaPorte	LaPorte	0.069	0.078	0.065	0.070
Porter	Ogden Dunes	0.070	0.084	0.069	0.074
Porter	Valparaiso	0.071	0.080	0.061	0.070

Highlighted data means 2006-2008 Design Value is above 0.076 ppm



There are five monitors in the Indiana portion of the Chicago MSA (Lake and Porter counties) and two monitors in the Michigan City (LaPorte County) MSA. Of the five monitors located in Lake and Porter counties, only one of them (Whiting) is over the revised 2008 8-hour

ozone standard. The two monitors located in the LaPorte County are also below the revised 2008 8-hour ozone standard.

There are no ozone monitors located in Newton or Jasper counties in Indiana. Newton County does not have any major stationary sources and does not impact monitored violations in Lake and Porter counties. There is only one stationary source located in Jasper County which is controlled under NO<sub>x</sub> SIP Call and CAIR and does not impact monitored violations in Lake or Porter counties. Newton and Jasper counties are essentially rural in nature, do not have measured air quality in excess of the revised 2008 8-hour ozone standard, and are not contributing to elevated ozone levels in the area. Jasper and Newton counties account for a small percentage of the total emissions for the entire MSA. Jasper and Newton counties also have a low population which is not expected to grow and fewer than 10,000 people work and commute outside the counties. Indiana believes there is no reason to include these counties in the nonattainment area. U.S. EPA should keep the nonattainment area for Northwest Indiana as small as possible.

Lake County is the only Indiana county in Northwest Indiana that is over the revised 2008 8-hour ozone standard. Porter County does not significantly impact monitored violations in Lake County or the Chicago area. Indiana has conducted an evaluation to determine the impacts Porter County sources have on ozone monitors in Lake County, Indiana and the Chicago area. As a result, Indiana has determined that emissions from Porter County do not affect the downwind area's ability to attain the ozone standard. Therefore, Porter County should be designated separately from Lake County, Indiana and the rest of the Chicago MSA. Within Illinois' portion of the Chicago MSA there are 18 monitors, of which only one of them (located in Alsip, IL) is over the revised 2008 8-hour ozone standard. The monitors in the Chicago area located closest to the Indiana state line and the lakefront, which should be more directly impacted by emission sources located in Lake and Porter counties, are monitoring attainment of the revised 2008 8-hour ozone standard. If emissions from Lake and Porter counties were significantly contributing to the violating monitors in Illinois, higher levels at the monitors located between Indiana and the violating monitors would be expected. It is unnecessary to extend the restrictions of a nonattainment area beyond Lake County, as it is the only county in Northwest Indiana violating the ozone standard.

### **Northwest Indiana Zero-Out and Future Year Modeling**

Lake Michigan Air Directors Consortium (LADCO) recently performed updated CAMx modeling for ozone to support attainment demonstrations for the five-state LADCO region. This modeling, referred to as "Round 5", uses the most recent emissions inventories and model updates. The Comprehensive Air Quality Model with extensions (CAMx version 4.51), developed by Environ, was the photochemical model used for the 8-hour ozone standard analysis. This model has been accepted by U.S. EPA as an approved air quality model for regulatory analysis. Requirements of the "Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS" (EPA-454/R-05-002, Oct. 2005) are satisfied with the use of CAMx for attainment demonstrations and other air quality related analyses.

2005 baseyear emissions as well as 2005 meteorology were used to conduct the photochemical modeling. The modeling included the implementation of "on-the-books" controls such as U.S. EPA motor vehicle and fuel standards and the Clean Air Interstate Rule (CAIR). In order to demonstrate the impact of Porter County emissions on the controlling ozone monitor in Northwest Indiana, a 2005 baseyear modeling run with all 2005 emissions was conducted. Then, all anthropogenic emissions from Porter County, including all point, area and mobile source emissions were removed (zeroed-out) from the emission files and the model was run again.

The table below, shows the modeling results of the zero-out of all anthropogenic emissions from Porter County on the Whiting, Lake County monitor. The difference between the two results is the ozone impacts (in parts per million) of Porter County emissions on the Whiting ozone monitor.

**Results of Zero-out Runs for Northwest Indiana Ozone Monitors**

Monitor ID	County	Site	2005 Modeled Design Value (ppm)	2005 Modeled Zero-Out Design Value (ppm)	2005 Modeled Difference (ppm)
180890022	Lake	Gary	0.1004	0.1005	+0.0001
180890030	Lake	Whiting	0.0998	0.0999	+0.0001
180892008	Lake	Hammond	0.0998	0.0999	+0.0001
181270024	Porter	Ogden Dunes	0.1023	0.1023	0.0000
181270026	Porter	Valparaiso	0.0956	0.0956	0.0000

Zeroing-out all anthropogenic emissions from Porter County showed a 0.0001 ppm increase in ozone concentrations at the Whiting monitor as well as the Gary and Hammond monitors in Lake County. These increases in ozone concentration from zeroed-out Porter County emissions indicate NO<sub>x</sub> disbenefit. However, the impacts are considered not significant. No other appreciable changes were modeled at surrounding ozone monitors in Lake or Porter County. Ozone decreases were modeled farther away from Porter County. LaPorte County ozone monitors at Michigan City had a 0.0003 ppm ozone decrease while the LaPorte monitor realized a 0.0001 ppm decrease. Ozone monitors in states surrounding Lake Michigan, especially those located on or near the lakeshore realized ozone decreases from 0.0001 to 0.0006 ppm.

**Results of Zero-out Runs for MRPO Ozone Monitors**

Monitor ID	County	Site	2005 Modeled Design Value	2005 Modeled Zero-Out Design Value	2005 Modeled Difference
180890022	Lake	Gary	0.1004	0.1005	+0.0001
180890030	Lake	Whiting	0.0998	0.0999	+0.0001
180892008	Lake	Hammond	0.0998	0.0999	+0.0001
181270024	Porter	Ogden Dunes	0.1023	0.1023	0.0000
181270026	Porter	Valparaiso	0.0956	0.0956	0.0000
180910005	LaPorte	Michigan City	0.1045	0.1042	-0.0003
180910010	LaPorte	LaPorte	0.1036	0.1035	-0.0001
170317002	Cook – IL	Evanston	0.0997	0.0995	-0.0002



170971002	Lake – IL	Waukegan	0.1009	0.1005	-0.0004
170971007	Lake - IL	IL Beach St. Park	0.1009	0.1005	-0.0004
260050003	Allegan – MI	Holland	0.1019	0.1016	-0.0003
260210014	Berrien – MI	Coloma	0.1043	0.1037	-0.0006
260810020	Kent – MI	Grand Rapids	0.0909	0.0908	-0.0001
260810022	Kent – MI	14 Mile Road	0.0867	0.0866	-0.0001
261210039	Muskegon – MI	Muskegon	0.1010	0.1007	-0.0003
263910005	Ottawa – MI	Jenison	0.0948	0.0947	-0.0001
261530001	Schoolcraft - MI	Seney Natl. Wild.	0.0849	0.0848	-0.0001
550090026	Brown - WI	Green Bay	0.0818	0.0816	-0.0002
550290004	Door – WI	Newport State Park	0.0970	0.0970	0.0000
550370001	Florence – WI	Florence	0.0739	0.0735	-0.0004
550390006	Fond du Lac – WI	Fond du Lac	0.0787	0.0787	0.0000
550590002	Kenosha – WI	Jefferson	0.1011	0.1006	-0.0005
550590019	Kenosha – WI	Pleasant Prairie	0.1011	0.1006	-0.0005
550610002	Kewaunee – WI	Kewaunee	0.0939	0.0936	-0.0003
550710004	Manitowoc – WI	Collins Fire Tower	0.0839	0.0836	-0.0003
550710007	Manitowoc – WI	Two Rivers	0.0996	0.0992	-0.0004
550790010	Milwaukee – WI	Health Center	0.1010	0.1004	-0.0006
550790026	Milwaukee – WI	DNR SER Hdqtrs	0.1015	0.1009	-0.0006
550790041	Milwaukee – WI	UWM N. Campus	0.1015	0.1009	-0.0006
550790044	Milwaukee – WI	Milwaukee	0.0926	0.0923	-0.0003
550790085	Milwaukee – WI	Bayside	0.1041	0.1035	-0.0006
550791025	Milwaukee – WI	S. Milwaukee	0.0992	0.0987	-0.0005
550870009	Outagamie – WI	Appleton	0.0762	0.0760	-0.0002
550890008	Ozaukee – WI	Grafton	0.0873	0.0872	-0.0001
550890009	Ozaukee – WI	Harrington Beach	0.1018	0.1014	-0.0004
551010017	Racine – WI	Racine	0.1012	0.1006	-0.0006
551170006	Sheboygan – WI	Kohler Andre Park	0.0974	0.0970	-0.0004
551170007	Sheboygan – WI	Sheboygan Falls	0.0974	0.0970	-0.0004
551330017	Waukesha – WI	Carroll College	0.0851	0.0850	-0.0001
551330027	Waukesha – WI	Waukesha	0.0851	0.0850	-0.0001

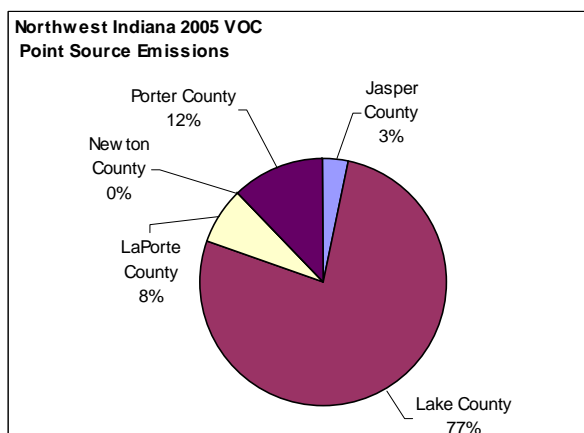
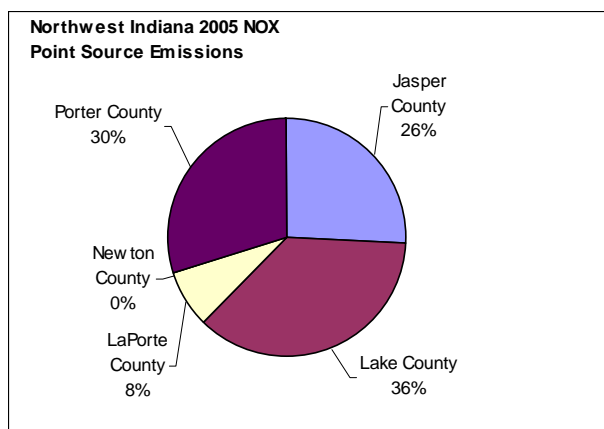
LADCO conducted future year modeling in order to determine the ozone impacts on monitors in the Midwest. The following table outlines LADCO's Round 5 future year modeling results for Lake, Porter and LaPorte County ozone monitors. Results show all monitors with the exception of the Whiting, Lake County monitor meet the 2008 revised 8-hour ozone NAAQS by 2012.

#### LADCO's Round 5 Future Year Modeling Results for 2009 and 2012

Monitor ID	County	Site	BaseYear D.V.	2009 D.V.	2012 D.V.
180890030	Lake	Whiting	0.0793	0.0770	0.0760
180890022	Lake	Gary	0.0777	0.0750	0.0740
180892008	Lake	Hammond	0.0777	0.0750	0.0740
180910010	LaPorte	LaPorte	0.0777	0.0740	0.0730
180910005	LaPorte	Michigan City	0.0770	0.0730	0.0720
181270024	Porter	Ogden Dunes	0.0783	0.0750	0.0740
181270026	Porter	Valparaiso	0.0753	0.0720	0.0710

## Northwest Indiana Emissions Data

2005 Point Source Emissions (Tons Per Year)				
	NO <sub>x</sub>	% of MSA	VOC	% of MSA
<b>Jasper County</b>	16,844.17	25.78%	239.19	3.40%
<b>Lake County</b>	23,769.48	36.38%	5,402.00	76.79%
<b>LaPorte County</b>	5,175.87	7.92%	536.42	7.63%
<b>Newton County</b>	0.00	0.00%	0.00	0.00%
<b>Porter County</b>	19,550.84	29.92%	857.07	12.18%
<b>Total</b>	<b>65,340.36</b>		<b>7,034.68</b>	



*Note: These charts do not account for emissions from Illinois sources, which would alter the ratios significantly.*

Because most of the area in Lake and Porter counties is urban, the two counties account for 66.3% of the area's total NO<sub>x</sub> emissions. Sources within Lake and Porter counties account for 88.9% of the VOC emissions from stationary sources. There are no major stationary sources located within Newton county. It does not appear that the emissions from Newton County have a significant impact on air quality within the MSA. Overall ozone values have continued to drop and NO<sub>x</sub> and VOC emissions are expected to decrease throughout the Midwest over the next few years when CAIR has been fully implemented.

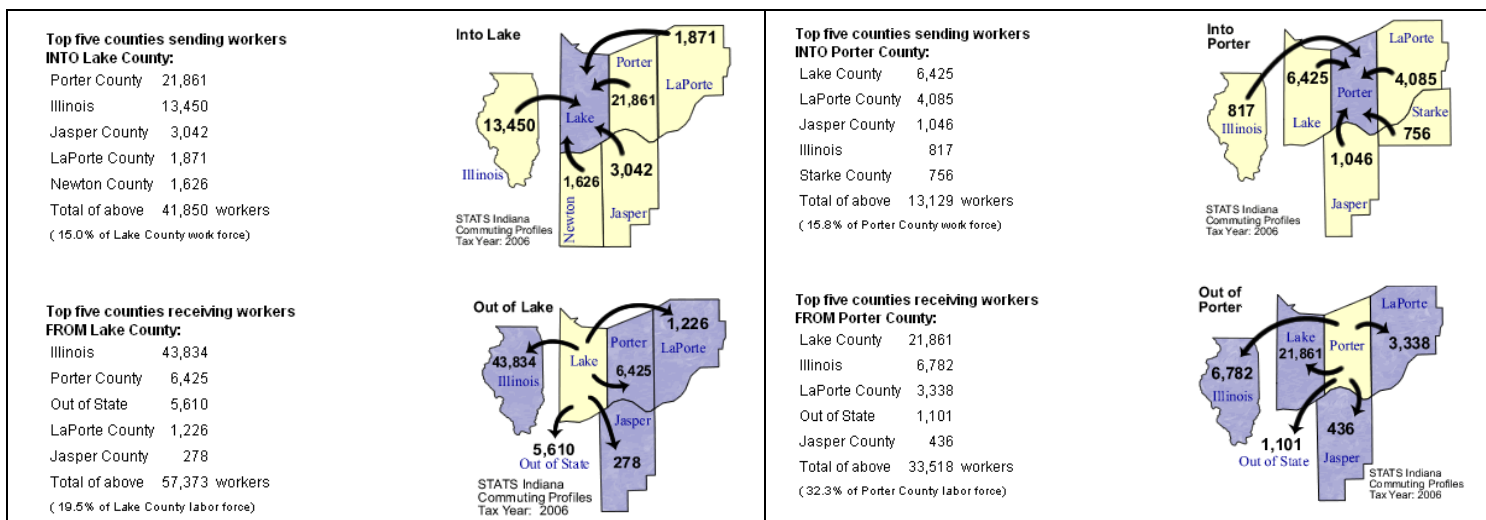
Lake and Porter counties are subject to the most stringent group of emission controls within the State of Indiana. This collection of permanent and enforceable controls is equally as stringent as those that apply elsewhere within the Chicago MSA and in some cases are more stringent. Vehicles registered in Lake and Porter counties are subject to reformulated gasoline and enhanced vehicle inspection and maintenance requirements. Indiana maintains a comprehensive vehicle inspection and maintenance program in Lake and Porter counties for all vehicles of model year 1976 and newer. Lake and Porter counties' vehicle inspection and maintenance program is more stringent than that which applies to the vast majority of the fleet that accounts for the Vehicle Miles Traveled (VMT) and long-term idling in close proximity to the monitoring sites.

## Level of Control of Emission Sources

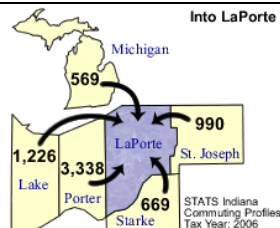
NO<sub>x</sub> emissions within Northwest Indiana are projected to decline by almost 42% between 2005 and 2020. Emission reduction benefits from federal rules are factored into the emission totals. These rules include the NO<sub>x</sub> SIP Call, Clean Air Interstate Rule (CAIR), Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements, the Highway Heavy-Duty Engine Rule, and the Non-Road Diesel Engine Rule. In fact most of the major ozone precursor sources within the area are subject to the NO<sub>x</sub> SIP Call, CAIR or RACT requirements.

## Northwest Indiana Traffic Patterns

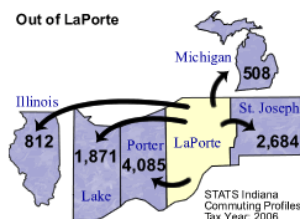
2006 Commuting Patterns					
	Total Workforce: Number of persons who live in County and work	Number of persons who live AND work in County	Number of persons who live in County and work in another County	Percent In County	Percent Out of County
Jasper County	21,368	15,124	6,244	70.8%	29.2%
Lake County	293,662	234,264	59,398	79.8%	20.2%
LaPorte County	68,494	57,268	11,226	83.6%	16.4%
Newton County	9,468	5,766	3,702	60.9%	39.1%
Porter County	103,805	68,933	34,872	66.4%	33.6%



**Top five counties sending workers INTO LaPorte County:**  
 Porter County 3,338  
 Lake County 1,226  
 St. Joseph County 990  
 Starke County 669  
 Michigan 569  
 Total of above 6,822 workers  
 ( 10.5% of LaPorte County work force)



**Top five counties receiving workers FROM LaPorte County:**  
 Porter County 4,085  
 St. Joseph County 2,684  
 Lake County 1,871  
 Illinois 812  
 Michigan 508  
 Total of above 9,960 workers  
 ( 14.5% of LaPorte County labor force)



Within Northwest Indiana, LaPorte County maintains the highest concentration (83.6%) of employment by residents of the county, compared to the other counties within the area. Lake (79.8%) county is also high. The majority of the traffic congestion occurs in Lake County. A significant level of commuting occurs from the surrounding counties to Lake and Porter counties. In fact Lake, LaPorte and Porter Counties have the largest level of commuting to and from each other in Northwest Indiana.

## Northwest Indiana Growth Rates and Patterns

	Population 1990	Population 2000	Percent Change from 1990 to 2000	Population Estimate 2007	Percent Change from 2000 to 2007	Population Estimate 2010	Percent Change from 2000 to 2010	Population Estimate 2020	Percent Change from 2000 to 2020
<b>Jasper County</b>	24,823	30,043	17.4%	32,275	6.9%	32,534	7.7%	35,206	14.7%
<b>Lake County</b>	475,594	484,564	1.9%	492,104	1.5%	483,183	-0.3%	503,203	3.7%
<b>LaPorte County</b>	107,066	110,106	2.8%	109,787	-0.3%	110,376	0.2%	110,656	0.5%
<b>Newton County</b>	13,551	14,586	7.1%	14,014	-3.9%	14,444	-1.0%	14,097	-3.3%
<b>Porter County</b>	128,932	146,798	12.2%	160,578	8.6%	156,755	6.4%	175,175	16.2%

## Evaluation for Northwest Indiana

March 12, 2009 Designation Recommendations for Northwest Indiana:

Jasper County	Attainment/Unclassifiable
Lake County	Nonattainment
LaPorte County	Attainment
Newton County	Attainment/Unclassifiable
Porter County	Attainment

## Central Indiana Area

### Background

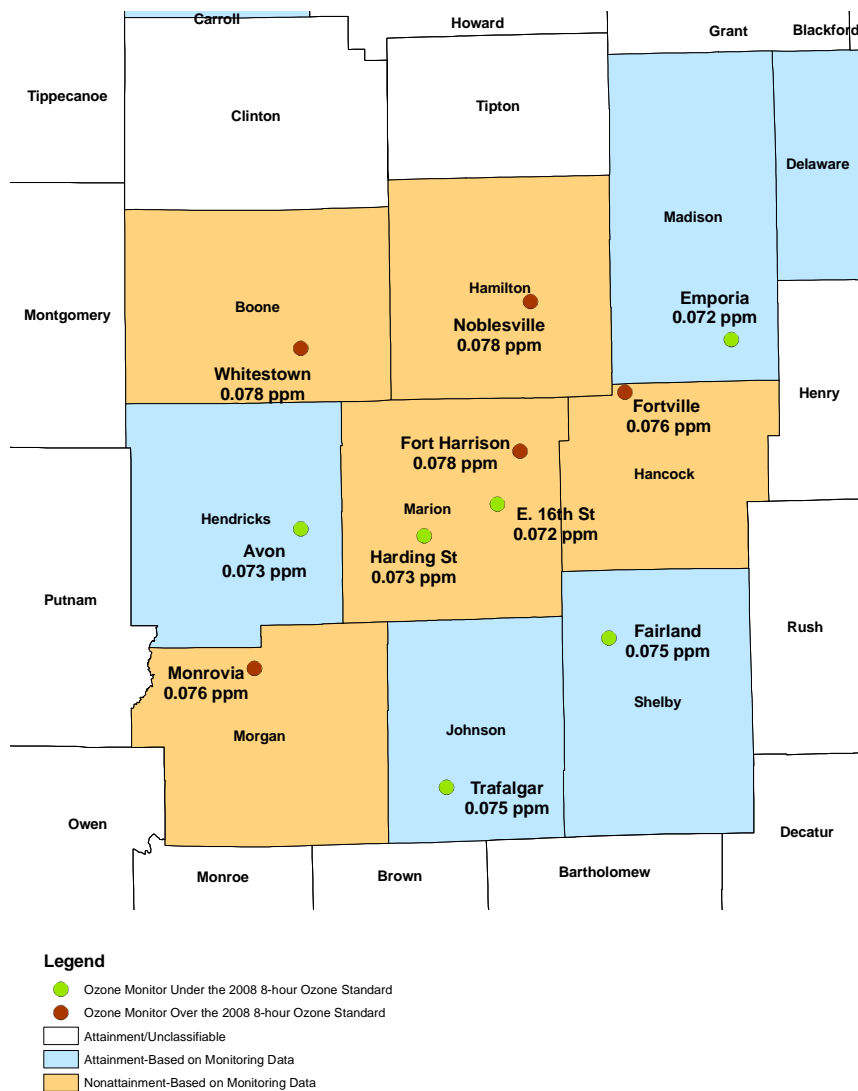
Eight of the ten counties in the Indianapolis MSA were designated nonattainment under the 1997 8-hour ozone standard. Madison County was also designated nonattainment under the 1997 8-hour ozone standard as part of the Central Indiana nonattainment area. All of the monitor sites in Central Indiana, within the Indianapolis and Anderson MSAs, have measured air quality that meets the 1997 8-hour ozone standard since 2005. A Redesignation Petition and Maintenance Plan for the Central Indiana nonattainment area was approved by U.S. EPA on October 19, 2007. The Indianapolis MSA includes Boone, Brown, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, Putnam and Shelby counties. The Anderson MSA includes Madison County. There are ozone monitors in every county in Central Indiana except Brown and Putnam counties.

### Central Indiana Monitoring Data

County	Monitor Location	4 <sup>th</sup> Highest Ozone Values (ppm)			Design Value 2006-2008 (ppm)
		2006	2007	2008	
Boone	Whitestown	0.080	0.083	0.073	0.078
Hamilton	Noblesville	0.077	0.084	0.073	0.078
Hancock	Fortville	0.075	0.081	0.074	0.076
Hendricks	Avon	0.073	0.079	0.068	0.073
Johnson	Trafalgar	0.078	0.080	0.069	0.075
Madison	Emporia	0.073	0.078	0.065	0.072
Marion	Fort Harrison	0.076	0.083	0.075	0.078
Marion	Harding Street	0.076	0.076	0.067	0.073
Marion	East 16 <sup>th</sup> Street	0.072	0.080	0.066	0.072
Morgan	Monrovia	0.077	0.084	0.069	0.076
Shelby	Fairland	0.073	0.082	0.070	0.075

*Highlighted data means 2006-2008 Design Value is above 0.076 ppm*





There are ten monitors in the Indianapolis MSA (located in Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan and Shelby counties) and one monitor in the Anderson MSA (Madison County). Of the ten monitors in the Indianapolis MSA, five of them are over the revised 2008 8-hour ozone standard. The monitor in the Anderson MSA is below the revised ozone 2008 8-hour ozone standard. Brown and Putnam counties do not have any major stationary sources and do not impact monitored violations in Central Indiana. Therefore, it is unnecessary to extend the restrictions of a nonattainment area within the Indianapolis MSA to any county other than the counties that have a monitored violation.

### Central Indiana Zero-Out and Future Year Modeling

Lake Michigan Air Directors Consortium (LADCO) recently performed updated CAMx modeling for ozone to support attainment demonstrations for the five-state LADCO region. This modeling, referred to as “Round 5”, uses the most recent emissions inventories and model updates. The Comprehensive Air Quality Model with extensions (CAMx version 4.51),

developed by Environ, was the photochemical model used for the 8-hour ozone standard analysis. This model has been accepted by U.S. EPA as an approved air quality model for regulatory analysis. Requirements of the "Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS" (EPA-454/R-05-002, Oct. 2005) are satisfied with the use of CAMx for attainment demonstrations and other air quality related analyses.

2005 baseyear emissions as well as 2005 meteorology were used to conduct the photochemical modeling. The modeling included the implementation of "on-the-books" controls such as U.S. EPA motor vehicle and fuel standards and the Clean Air Interstate Rule (CAIR). In order to demonstrate the impact of Hendricks County emissions on the controlling ozone monitor in Central Indiana, a 2005 baseyear modeling run with all 2005 emissions was conducted. Then, all anthropogenic emissions from Hendricks County, including all point, area and mobile source emissions were removed (zeroed-out) from the emission files and the model was run again.

The table below shows the modeling results of zeroing-out all anthropogenic emissions from Hendricks County on the Noblesville, Hamilton County monitor. The difference between the two results is the ozone impacts in parts per million (ppm) of Hendricks County emissions on the Noblesville ozone monitor.

**Modeling Results of Zero-out Runs - Central Indiana Ozone Monitors**

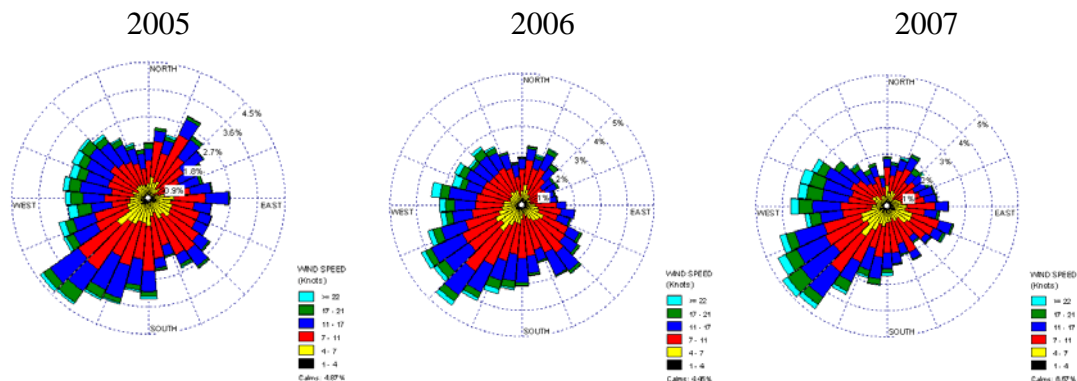
<b>Monitor ID</b>	<b>County</b>	<b>Site</b>	<b>2005 Modeled Design Value (ppm)</b>	<b>2005 Modeled Zero-Out Design Value (ppm)</b>	<b>2005 Modeled Difference (ppm)</b>
180110001	Boone	Whitestown	0.0872	0.0872	0.0000
180571001	Hamilton	Noblesville	0.0935	0.0935	0.0000
180590003	Hancock	Fortville	0.0926	0.0925	-0.0001
180630004	Hendricks	Avon	0.0895	0.0895	0.0000
180810002	Johnson	Trafalgar	0.0839	0.0839	0.0000
180950010	Madison	Emporia	0.0902	0.0900	-0.0002
180970050	Marion	Fort Harrison	0.0954	0.0954	0.0000
180970057	Marion	Harding Street	0.0957	0.0957	0.0000
180970073	Marion	E. 16 <sup>th</sup> Street	0.0964	0.0963	-0.0001
181090005	Morgan	Monrovia	0.0864	0.0864	0.0000
181450001	Shelby	Fairland	0.0916	0.0916	0.0000

Zeroing-out all anthropogenic emissions from Hendricks County showed no ozone impacts at the Noblesville monitor and a decrease in ozone of 0.0002 ppm at the Madison County monitor and 0.0001 ppm at the Hancock County monitor and Indianapolis monitor in Marion County.

Johnson and Shelby Counties, based on their locations to the south and southeast, would not be expected to show any appreciable ozone impacts on the Noblesville ozone monitor. Madison County, located to the east of the Noblesville ozone monitor, would be expected to show negligible ozone impacts on the monitor. The wind roses below show the winds during 2005 through 2007, with prevailing winds from the southwest. Therefore, any ozone precursors

from counties to the south, southeast and east would have minimal impacts on the Noblesville ozone monitor.

### Wind Rose for Indianapolis –2005, 2006 and 2007



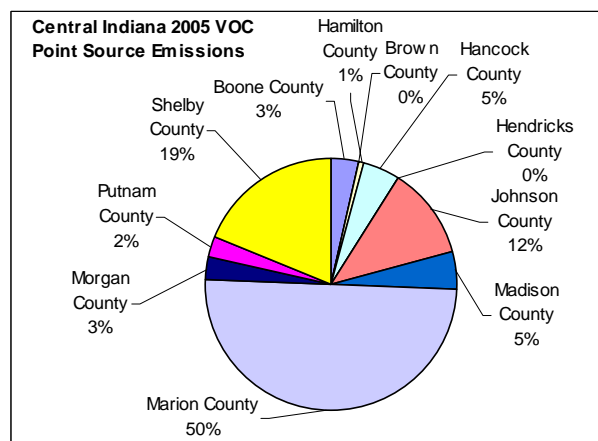
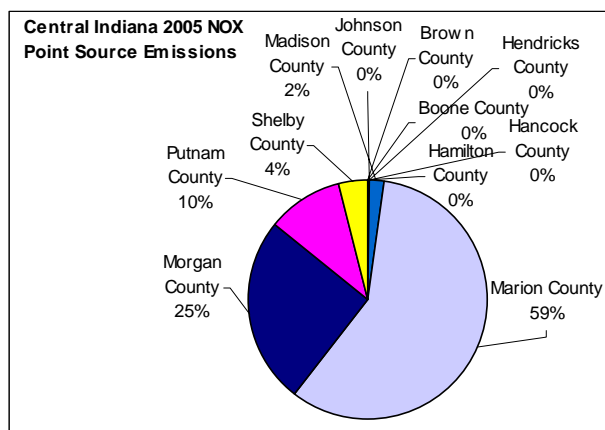
LADCO conducted future year modeling in order to determine the ozone impacts on monitors in the Midwest. The following table outlines LADCO's Round 5 future year modeling results for Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan and Shelby County ozone monitors. Results show all monitors meet the 2008 revised 8-hour ozone NAAQS by 2012.

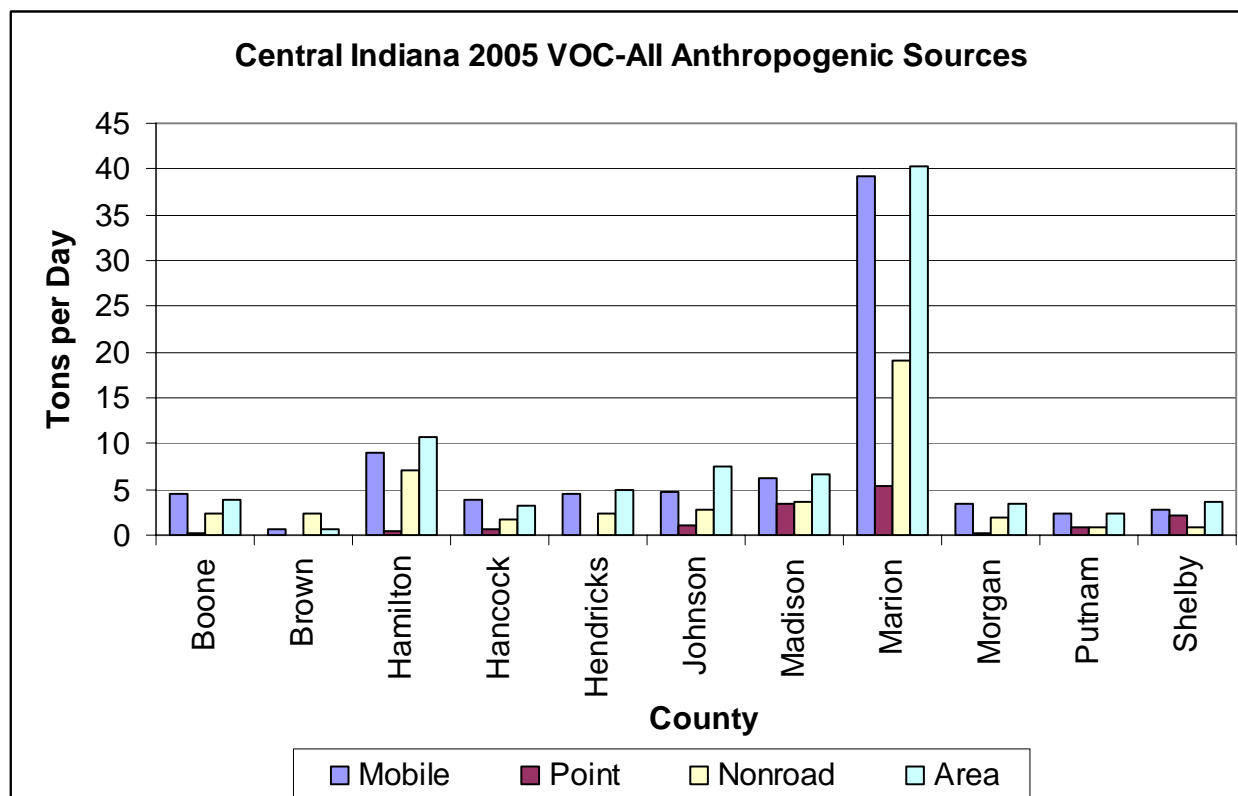
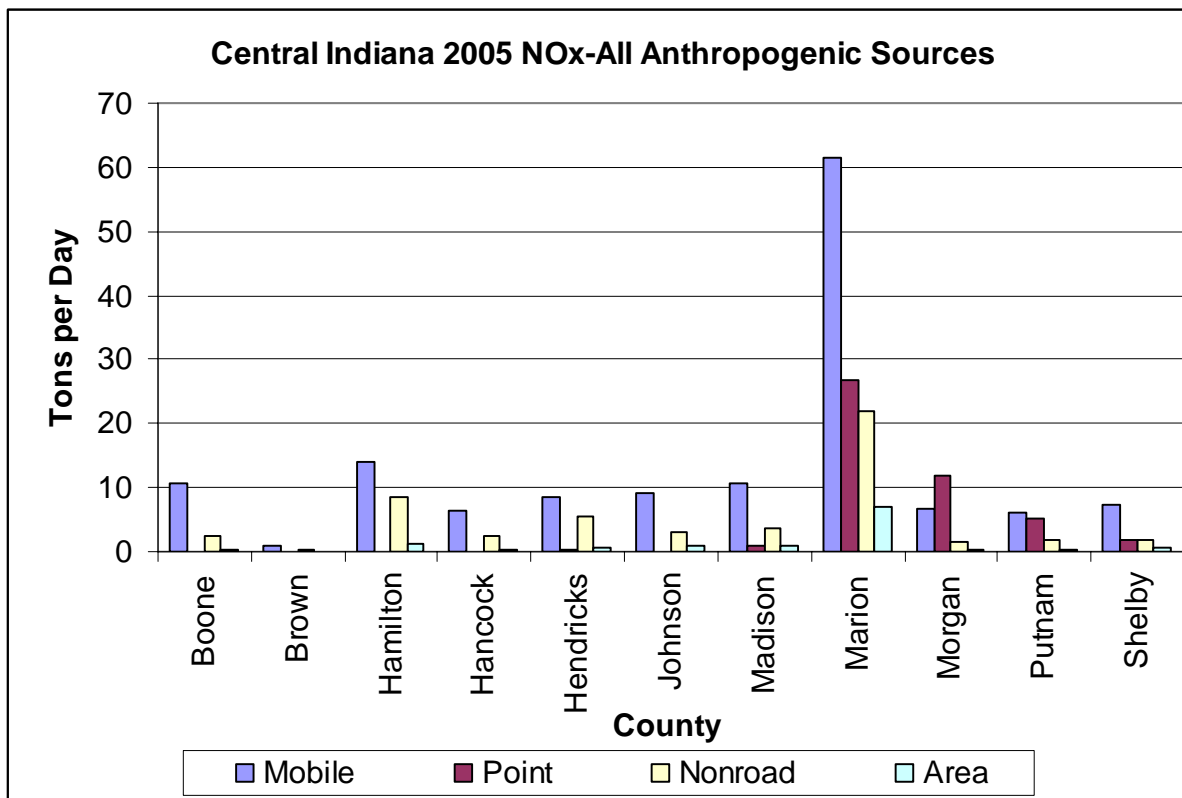
### LADCO's Round 5 Future Year Modeling Results for 2009 and 2012

Monitor ID	County	Site	BaseYear D.V.	2009 D.V.	2012 D.V.
180110001	Boone	Whitestown	0.0797	0.0750	0.0730
180571001	Hamilton	Noblesville	0.0827	0.0780	0.0750
180590003	Hancock	Fortville	0.0780	0.0730	0.0710
180630004	Hendricks	Avon	0.0753	0.0710	0.0690
180810002	Johnson	Trafalgar	0.0767	0.0720	0.0700
180970050	Marion	Fort Harrison	0.0787	0.0750	0.0730
180970057	Marion	Harding St	0.0750	0.0720	0.0710
180970073	Marion	Indianapolis	0.0757	0.0720	0.0700
180970042	Marion	Mann Road	0.0727	0.0700	0.0680
181090005	Morgan	Monrovia	0.0777	0.0730	0.0710
181450001	Shelby	Fairland	0.0773	0.0740	0.0720

## Central Indiana Emissions Data

2005 Point Source Emissions (Tons Per Year)				
	NO <sub>x</sub>	% of Area	VOC	% of Area
Boone County	0.00	0.00%	106.50	3.47%
Brown County	0.00	0.00%	0.00	0.00%
Hamilton County	28.51	0.16%	17.13	0.55%
Hancock County	13.30	0.07%	153.08	4.99%
Hendricks County	0.00	0.00%	0.04	0.00%
Johnson County	6.48	0.03%	364.63	11.88%
Madison County	334.74	1.91%	139.70	4.55%
Marion County	10,207.22	58.29%	1,536.68	50.10%
Morgan County	4,456.81	25.45%	96.25	3.13%
Putnam County	1,789.47	10.21%	75.38	2.45%
Shelby County	673.03	3.84%	577.49	18.82%
<b>TOTAL</b>	<b>17,509.56</b>		<b>3,066.88</b>	







Because the majority of Central Indiana is urban, the majority of the area's emissions come from Marion County. Marion County accounts for 58.29% of the area's total NO<sub>x</sub> point source emissions and 49.90% of the area's total VOC point source emissions. The only counties within Central Indiana with major stationary sources are Marion and Morgan counties. Point source emissions from the other counties in Central Indiana are negligible and do not have a significant impact on air quality within the MSAs. The comparison of all the anthropogenic (point, area, mobile and nonroad) sources for Central Indiana shows that Marion county dominates the emissions inventory in Central Indiana. All of the other counties within Central Indiana have very similar anthropogenic emission totals. The counties in Central Indiana that meet the 2008 revised 8-hour ozone standard (Hendricks, Johnson, Madison and Shelby counties) have very low anthropogenic emission totals for NO<sub>x</sub> and VOC. Based on the zero-out modeling of Hendricks County emissions, it would be anticipated that zeroing out of emissions from Johnson, Madison and Shelby counties would have similar ozone impacts to those from Hendricks County and not impact monitor violations in Central Indiana. Overall ozone values have continued to drop and NO<sub>x</sub> and VOC emissions are expected to decrease throughout the Midwest over the next few years when CAIR has been fully implemented.

### **Level of Control of Emission Sources**

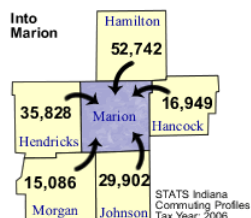
Marion County has the highest emissions of any of the counties in Central Indiana, but emissions are expected to decrease in the near future. The Indianapolis Power and Light (IPL)-Harding Street power plant located in Marion County is currently controlled by low NO<sub>x</sub> burner technology with separated overfire air. Since these control units are in place prior to the attainment date, emissions from the IPL-Harding Street power plant are not expected to increase in the near future. Morgan County contributes a small portion of the emissions to the Central Indiana area from the IPL-Eagle Valley power plant. This power plant is currently controlled by low NO<sub>x</sub> burner technology with separated overfire air. These controls are expected to remain in place and emissions from this plant should not increase in the future. The other counties in Central Indiana have similar emissions which are not contributing to the Indianapolis area. Most of the major ozone precursor sources within the area are subject to the NO<sub>x</sub> SIP Call, CAIR or RACT requirements.

## Central Indiana Traffic Patterns

2006 Commuting Patterns					
	Total Workforce: Number of persons who live in County and work	Number of persons who live AND work in County	Number of persons who live in County and work in another County	Percent In County	Percent Out of County
Boone County	35,330	19,972	15,358	56.5%	43.5%
Brown County	10,535	6,071	4,464	57.6%	42.4%
Hamilton County	160,076	97,104	62,972	60.7%	39.3%
Hancock County	45,409	24,158	21,251	53.2%	46.8%
Hendricks County	85,956	44,395	41,561	51.6%	48.4%
Johnson County	86,886	50,804	36,082	58.5%	41.5%
Madison County	82,881	65,138	17,743	78.6%	21.4%
Marion County	530,578	494,693	35,885	93.2%	6.8%
Morgan County	45,798	25,142	20,656	54.9%	45.1%
Putnam County	22,430	16,054	6,376	71.6%	28.4%
Shelby County	29,288	20,738	8,550	70.8%	29.2%

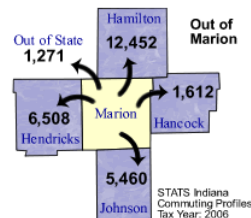
### Top five counties sending workers INTO Marion County:

Hamilton County 52,742  
Hendricks County 35,828  
Johnson County 29,902  
Hancock County 16,949  
Morgan County 15,086  
Total of above 150,507 workers  
(21.6% of Marion County work force)



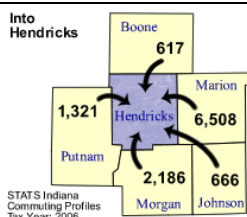
### Top five counties receiving workers FROM Marion County:

Hamilton County 12,452  
Hendricks County 6,508  
Johnson County 5,460  
Hancock County 1,612  
Out of State 1,271  
Total of above 27,303 workers  
(5.1% of Marion County labor force)



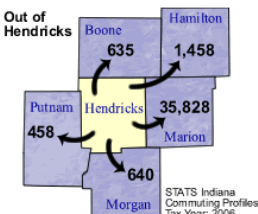
### Top five counties sending workers INTO Hendricks County:

Marion County 6,508  
Morgan County 2,186  
Putnam County 1,321  
Johnson County 666  
Boone County 617  
Total of above 11,298 workers  
(19.5% of Hendricks County work force)



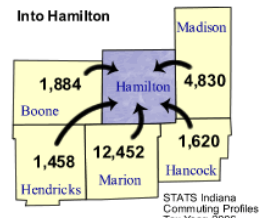
### Top five counties receiving workers FROM Hendricks County:

Marion County 35,828  
Hamilton County 1,458  
Morgan County 640  
Boone County 635  
Putnam County 458  
Total of above 39,019 workers  
(45.4% of Hendricks County labor force)



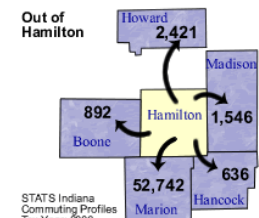
### Top five counties sending workers INTO Hamilton County:

Marion County 12,452  
Madison County 4,830  
Boone County 1,884  
Hancock County 1,620  
Hendricks County 1,458  
Total of above 22,244 workers  
(17.6% of Hamilton County work force)



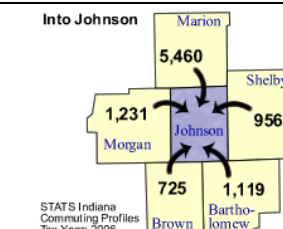
### Top five counties receiving workers FROM Hamilton County:

Marion County 52,742  
Howard County 2,421  
Madison County 1,546  
Boone County 892  
Hancock County 636  
Total of above 58,237 workers  
(36.4% of Hamilton County labor force)



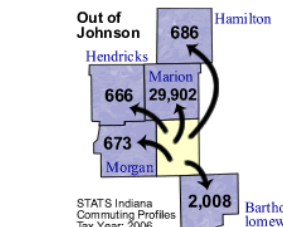
### Top five counties sending workers INTO Johnson County:

Marion County 5,460  
Morgan County 1,231  
Bartholomew County 1,119  
Shelby County 956  
Brown County 725  
Total of above 9,491 workers  
(15.2% of Johnson County work force)



### Top five counties receiving workers FROM Johnson County:

Marion County 29,902  
Bartholomew County 2,008  
Hamilton County 686  
Morgan County 673  
Hendricks County 666  
Total of above 33,935 workers  
(39.1% of Johnson County labor force)



Within Central Indiana, Marion County maintains the highest concentration (93.2%) for employment by residents of the county, compared to the other counties within the area. Madison (71.6%), Putnam (71.6%), and Shelby (70.8%) counties are also high. The majority of the traffic congestion occurs in Marion County. A significant level of commuting occurs from the surrounding counties to Marion County, namely Hamilton, Hendricks and Johnson counties.

### **Central Indiana Growth Rates and Patterns**

	Population 1990	Population 2000	Percent Change from 1990 to 2000	Population Estimate 2007	Percent Change from 2000 to 2007	Population Estimate 2010	Percent Change from 2000 to 2010	Population Estimate 2020	Percent Change from 2000 to 2020
<b>Boone County</b>	38,147	46,107	17.3%	54,137	14.8%	56,319	18.1%	66,186	30.3%
<b>Brown County</b>	14,080	14,957	5.9%	14,670	-1.9%	16,419	8.9%	15,168	1.4%
<b>Hamilton County</b>	108,936	182,740	40.4%	261,661	30.2%	298,642	38.8%	380,611	52.0%
<b>Hancock County</b>	45,527	55,391	17.8%	66,305	16.5%	67,426	17.8%	80,018	30.8%
<b>Hendricks County</b>	75,717	104,093	27.3%	134,558	22.6%	146,966	29.2%	175,070	40.5%
<b>Johnson County</b>	88,109	115,209	23.5%	135,951	15.3%	140,736	18.1%	161,585	28.7%
<b>Madison County</b>	130,669	133,358	2.0%	131,312	-1.5%	129,019	-3.3%	124,918	-6.3%
<b>Marion County</b>	797,159	860,454	7.4%	876,804	1.9%	866,409	0.7%	915,850	6.0%
<b>Morgan County</b>	55,920	66,689	16.1%	69,874	4.6%	71,862	7.2%	75,167	11.3%
<b>Putnam County</b>	30,315	36,019	15.8%	37,014	2.7%	38,484	6.4%	39,430	8.7%
<b>Shelby County</b>	40,307	43,445	7.2%	44,063	1.4%	43,934	1.1%	43,415	-0.0%

Central Indiana has had very rapid growth extending outward from Marion County into the counties of Hamilton, Hendricks and Johnson.

### **Evaluation for Central Indiana**

March 12, 2009 Designation Recommendations for Central Indiana:

Boone County	Nonattainment
Brown County	Attainment/Unclassifiable
Hamilton County	Nonattainment
Hancock County	Nonattainment
Hendricks County	Attainment
Johnson County	Attainment
Madison County	Attainment
Marion County	Nonattainment
Morgan County	Nonattainment
Putnam County	Attainment/Unclassifiable
Shelby County	Attainment

## Greene County, Indiana (Bloomington MSA)

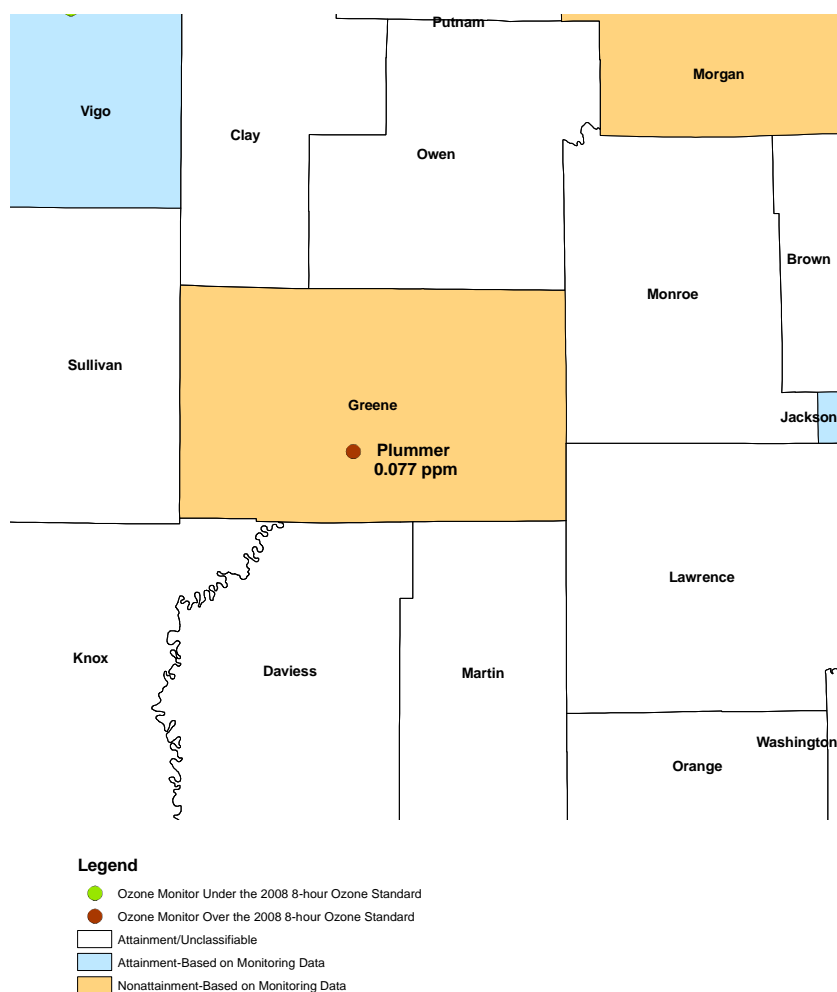
### Background

Greene County, which is part of the Bloomington MSA, was designated nonattainment under the 1997 8-hour ozone standard. The monitor site in Greene County has measured air quality that meets the 1997 8-hour ozone standard since 2003. A Redesignation Petition and Maintenance Plan for Greene County was approved by U.S. EPA on December 29, 2005. The Bloomington MSA includes Greene, Monroe and Owen counties. There are no ozone monitors in Monroe or Owen counties.

### Bloomington MSA Monitoring Data

County	Monitor Location	4 <sup>th</sup> Highest Ozone Values (ppm)			Design Value 2006-2008 (ppm)
		2006	2007	2008	
Greene	Plummer	0.076	0.084	0.072	0.077

*Highlighted data means 2006-2008 Design Value is above 0.076 ppm*



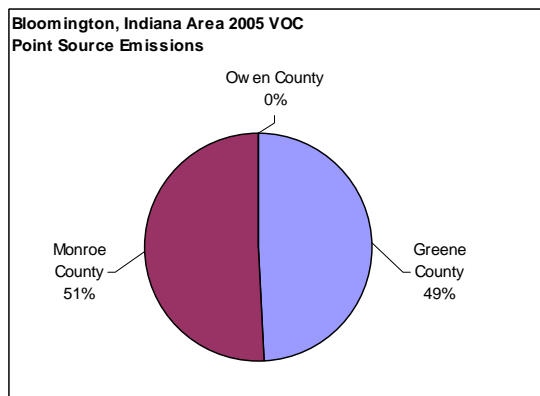
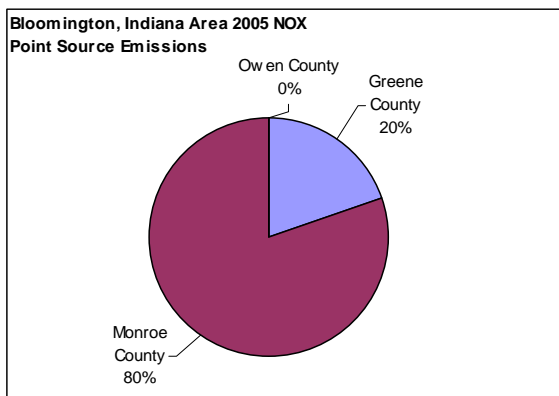
There is only one monitor located within the Bloomington MSA in Greene County and it is over the revised 2008 8-hour ozone standard. Within the Bloomington MSA, Monroe County accounts for the majority of the emissions, population, and vehicle miles traveled (VMT). Greene and Owen counties do not have any major stationary sources and do not impact monitored violations in the Bloomington MSA.

Greene County's air quality is dominated by regional transport of NO<sub>x</sub> into the area. U.S. EPA should recognize that local controls (including stricter permitting requirements) will not contribute to improved air quality and that regional controls will be effective over the next few years when the CAIR rule is fully implemented. Indiana believes there is no reason to include the other counties in the nonattainment area. The other counties in the MSA are essentially rural in nature, do not have measured air quality in excess of the revised 2008 8-hour ozone standard, and are not contributing to elevated ozone levels in the area. Indiana strongly encourages U.S. EPA to consider Greene County as a rural area affected by overwhelming transport.

LADCO conducted future year modeling in order to determine the ozone impacts on monitors in the Midwest. LADCO's Round 5 future year results for the Greene County ozone monitor show a modeled concentration of 0.0770 ppm by 2009 and a modeled concentration of 0.0750 ppm by 2012, meeting the 2008 revised 8-hour ozone NAAQS.

### **Bloomington MSA Emissions Data**

2005 Point Source Emissions (Tons Per Year)				
	NO <sub>x</sub>	% of Area	VOC	% of Area
Greene County	95.45	19.59%	177.56	49.26%
Monroe County	391.55	80.40%	182.86	50.73%
Owen County	0.00	0.00%	0.00	0.00%
<b>TOTAL</b>	<b>487.00</b>		<b>360.42</b>	



Monroe County accounts for 80.40% of the area's total NO<sub>x</sub> emissions and 50.73% of the area's total VOC emissions. There are no major stationary sources located in the area and emissions from Greene and Owen counties do not have a significant impact on air quality within

the MSA. Overall ozone values have continued to drop and NO<sub>x</sub> and VOC emissions are expected to decrease throughout the Midwest over the next few years when CAIR has been fully implemented.

## Level of Control of Emission Sources

Most of the major ozone precursor sources within the area are subject to the NO<sub>x</sub> SIP Call, CAIR or RACT requirements.

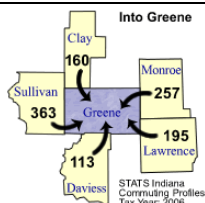
## Bloomington MSA Traffic Patterns

2006 Commuting Patterns					
	Total Workforce: Number of persons who live in County and work	Number of persons who live AND work in County	Number of persons who live in County and work in another County	Percent In County	Percent Out of County
Greene County	21,300	14,123	7,177	66.3%	33.7%
Monroe County	72,002	66,253	5,749	92.0%	8.0%
Owen County	13,571	8,092	5,479	59.6%	40.4%

### Top five counties sending workers

#### INTO Greene County:

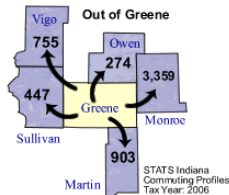
Sullivan County	363
Monroe County	257
Lawrence County	195
Clay County	160
Daviess County	113
Total of above	1,088 workers
(6.9% of Greene County workforce)	



### Top five counties receiving workers

#### FROM Greene County:

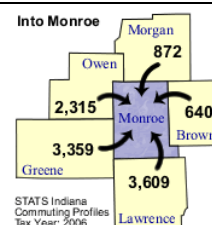
Monroe County	3,359
Martin County	903
Vigo County	755
Sullivan County	447
Owen County	274
Total of above	5,738 workers
(26.9% of Greene County labor force)	



### Top five counties sending workers

#### INTO Monroe County:

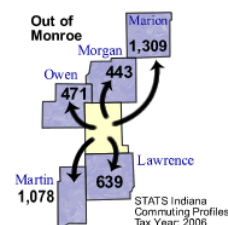
Lawrence County	3,609
Greene County	3,359
Owen County	2,315
Morgan County	872
Brown County	640
Total of above	10,795 workers
(13.2% of Monroe County workforce)	



### Top five counties receiving workers

#### FROM Monroe County:

Marion County	1,309
Martin County	1,078
Lawrence County	639
Owen County	471
Morgan County	443
Total of above	3,940 workers
(5.5% of Monroe County labor force)	



Monroe County maintains the highest concentration (92.0%) for employment by residents of the county, compared to the other counties within the area. The majority of the traffic congestion occurs in Monroe County and a significant level of commuting occurs from the surrounding counties to Monroe County



## **Bloomington MSA Growth Rates and Patterns**

	Population 1990	Population 2000	Percent Change from 1990 to 2000	Population Estimate 2007	Percent Change from 2000 to 2007	Population Estimate 2010	Percent Change from 2000 to 2010	Population Estimate 2020	Percent Change from 2000 to 2020
<b>Greene County</b>	30,410	33,157	8.3%	32,692	-1.4%	33,334	0.5%	33,421	0.8%
<b>Monroe County</b>	108,978	120,563	9.6%	128,643	6.3%	132,940	9.3%	130,014	7.3%
<b>Owen County</b>	17,281	21,786	20.7%	22,398	2.7%	24,264	10.2%	24,851	12.3%

The Bloomington MSA has not grown very rapidly over the past decade, nor is it expected to in the future. There are no expectations for regional growth that would adversely affect air quality.

## **Evaluation for Bloomington MSA**

March 12, 2009 Designation Recommendations for Bloomington MSA:

Greene County	Nonattainment
Monroe County	Attainment/Unclassifiable
Owen County	Attainment/Unclassifiable

## Southeastern Indiana

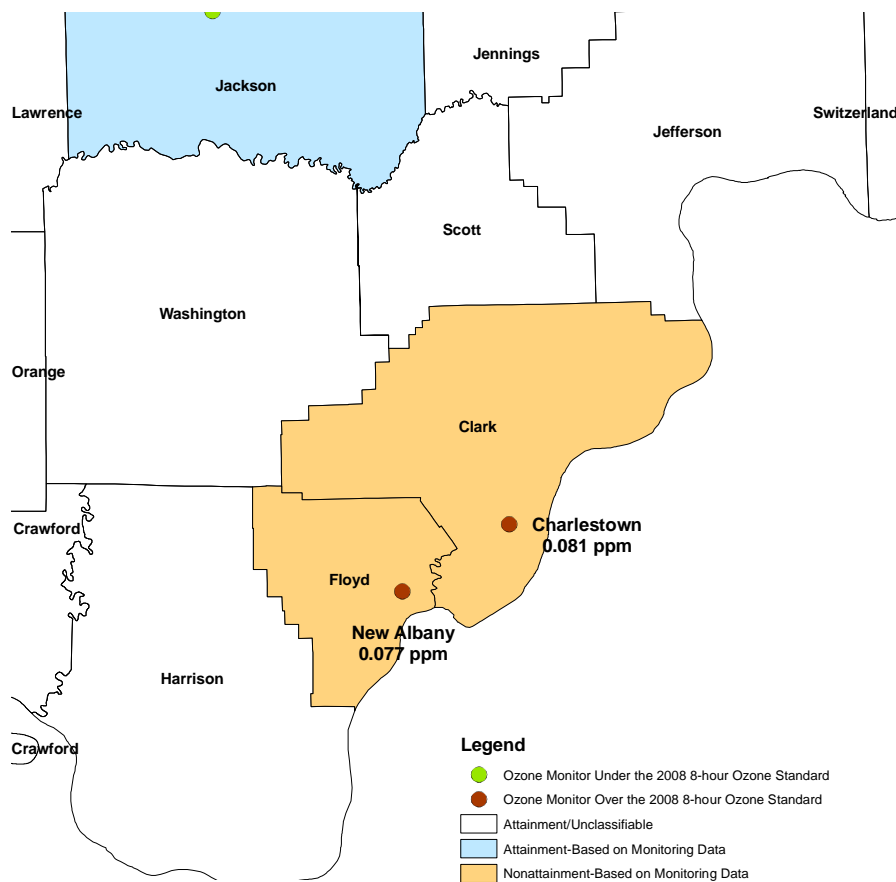
### Background

Clark and Floyd counties, which are part of the Louisville, Kentucky MSA, were designated nonattainment under the 1997 8-hour ozone standard. The monitor sites in Clark and Floyd counties have measured air quality that meets the 1997 8-hour ozone standard since 2003. A Redesignation Petition and Maintenance Plan for Clark and Floyd counties was approved by U.S. EPA on July 19, 2007. Indiana's portion of the Louisville, Kentucky MSA includes Clark, Floyd, Harrison and Washington counties. There are no ozone monitors in Harrison or Washington counties.

### Southeastern Indiana Monitoring Data

County	Monitor Location	4 <sup>th</sup> Highest Ozone Values (ppm)			Design Value 2006-2008 (ppm)
		2006	2007	2008	
Clark	Charlestown	0.079	0.090	0.075	0.081
Floyd	New Albany	0.076	0.082	0.075	0.077

*Highlighted data means 2006-2008 Design Value is above 0.076 ppm*



There are two monitors located within Indiana's portion of the Louisville, KY MSA and both are over the revised 2008 8-hour ozone standard. Within the Louisville MSA, Jefferson County, Kentucky accounts for the majority of the emissions, population, and vehicle miles traveled (VMT). Southeast Indiana's air quality is dominated by regional transport of NO<sub>x</sub> into the region. Indiana does not believe that emissions from Clark and Floyd counties affect the downwind area's ability to attain the ozone standard, noting that Clark and Floyd counties are downwind of Louisville. Indiana believes there is no reason to include any other Indiana counties in the nonattainment area. Harrison and Washington counties do not have any major stationary sources and do not impact monitored violations in the Louisville area. Harrison and Washington counties in Indiana are essentially rural in nature, do not have measured air quality in excess of the revised 2008 8-hour ozone standard, and are not contributing to elevated ozone levels in the area. Modeling shows that both Clark and Floyd counties will meet the revised 2008 8-hour ozone standard when regional NO<sub>x</sub> levels decrease. Air quality will continue to improve when the CAIR rule is fully implemented.

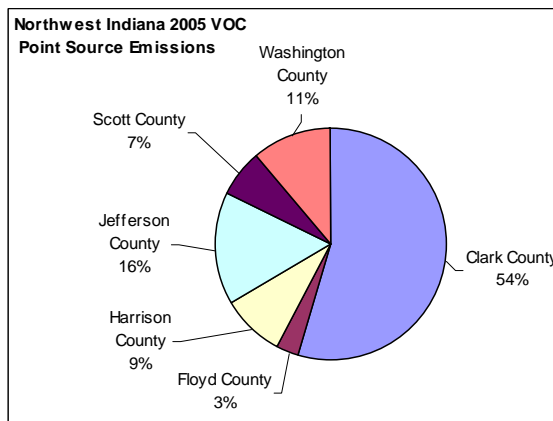
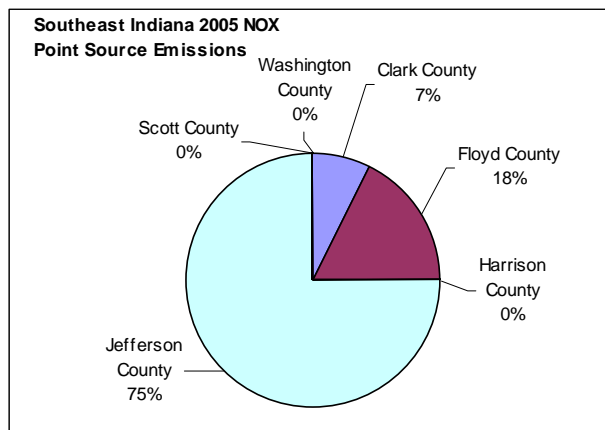
LADCO conducted future year modeling in order to determine the ozone impacts on monitors in the Midwest. The following table outlines LADCO's Round 5 future year modeling results for Clark and Floyd County ozone monitors. Results show both monitors meet the 2008 revised 8-hour ozone NAAQS by 2009 and 2012.

**LADCO's Round 5 Future Year Modeling Results for 2009 and 2012**

Monitor ID	County	Site	Base Year D.V.	2009 D.V.	2012 D.V.
180190003	Clark	Charlestown	0.0790	0.0750	0.0740
180431004	Floyd	New Albany	0.0777	0.0740	0.0730

**Southeastern Indiana Emissions Data**

2005 Point Source Emissions (Tons Per Year)				
	NO <sub>x</sub>	% of Area	VOC	% of Area
Clark County	2,225.53	7.37%	1,169.83	54.39%
Floyd County	5,305.99	17.58%	68.20	3.17%
Harrison County	5.60	0.01%	190.31	8.84%
Jefferson County	22,629.02	74.98%	340.60	15.83%
Scott County	9.73	0.03%	141.26	6.56%
Washington County	1.76	0.00%	240.51	11.18%
<b>TOTAL</b>	<b>30,177.63</b>		<b>2,150.71</b>	



*Note: These charts do not account for emissions from Kentucky sources, which would alter the ratios significantly.*

Jefferson County, Indiana accounts for 74.98% of the area's total NO<sub>x</sub> emissions and Clark County accounts for 54.39% of the area's total VOC emissions. The only major stationary source outside of the Louisville MSA is located in Jefferson County, Indiana. Jefferson County, Indiana is downwind from Clark and Floyd counties and emissions from Jefferson County, Indiana do not impact the Louisville MSA. Emissions from Harrison, Scott and Washington counties do not have a significant impact on air quality within the MSA. Overall ozone values have continued to drop and NO<sub>x</sub> and VOC emissions are expected to decrease throughout the Midwest over the next few years when CAIR has been fully implemented. Louisville, Kentucky is the core of the MSA and its population and emissions are significantly higher than those in Clark and Floyd counties.

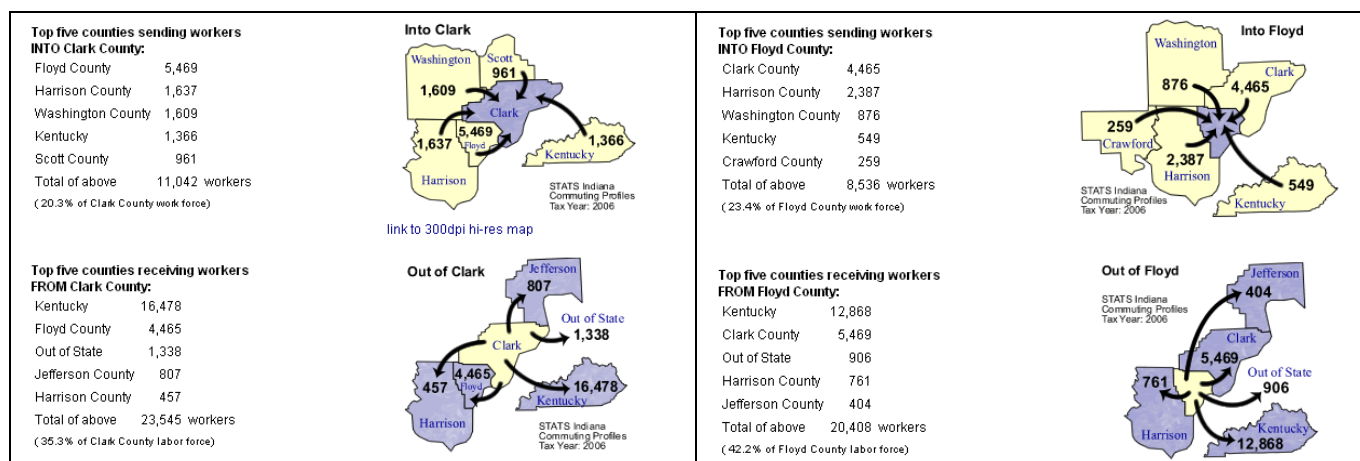
### **Level of Control of Emission Sources**

The only major stationary source located in the Indiana portion of the Louisville MSA is located in Floyd County. The Gallagher power plant located in Floyd County is currently controlled by low NO<sub>x</sub> burner technology with separated overfire air. The Duke Energy Indiana - Gallagher Station power plant is installing selective catalytic reduction systems on all four of its electric generating units anticipating operation starting in 2015.

The major stationary source located in Jefferson County, Indiana is downwind of the Louisville MSA. The Indiana Kentucky Electric Corporation - Clifty Creek power plant is currently controlled by selective catalytic reduction and overfire air. Indiana does not believe that the current or future emissions from the Clifty Creek power plant are affecting the monitor violations in Clark and Floyd counties. Most of the other major ozone precursor sources within the Louisville area are subject to the NO<sub>x</sub> SIP Call, CAIR or RACT requirements.

## Southeastern Indiana Traffic Patterns

2006 Commuting Patterns					
	Total Workforce: Number of persons who live in County and work	Number of persons who live AND work in County	Number of persons who live in County and work in another County	Percent In County	Percent Out of County
Clark County	66,760	42,078	24,682	63.0%	37.0%
Floyd County	48,350	27,319	21,031	56.5%	43.5%
Harrison County	25,597	15,051	10,546	58.8%	41.2%
Jefferson County	21,104	17,929	3,175	85.0%	15.0%
Scott County	14,977	10,491	4,486	70.0%	30.0%
Washington County	17,601	11,553	6,048	65.6%	34.4%



Within the Southeastern Indiana area, the highest concentrations of employment by residents of the county and vehicle miles traveled (VMT) is split between Clark and Floyd counties. Although mild urban growth is occurring in neighboring counties, the majority of the region's VMT and traffic congestion is generated within the core urban areas of Jeffersonville (Clark County) and New Albany (Floyd County), and Clark (63.0%) and Floyd (56.5%) counties maintain high concentrations for employment, compared to the other counties within the area. The majority of the traffic congestion occurs in Clark and Floyd counties. A significant level of commuting occurs from the surrounding counties to Clark and Floyd counties. In fact, those two counties have the largest level of commuting to and from each other in Southeastern Indiana.

## Southeastern Indiana Growth Rates and Patterns

	Population 1990	Population 2000	Percent Change from 1990 to 2000	Population Estimate 2007	Percent Change from 2000 to 2007	Population Estimate 2010	Percent Change from 2000 to 2010	Population Estimate 2020	Percent Change from 2000 to 2020
<b>Clark County</b>	87,774	96,472	9.0%	105,035	8.2%	101,969	5.4%	111,310	13.3%
<b>Floyd County</b>	64,404	70,823	9.1%	73,064	3.1%	71,992	1.6%	73,569	3.7%
<b>Harrison County</b>	29,890	34,325	12.9%	36,810	6.8%	38,203	10.2%	41,185	16.7%
<b>Jefferson County</b>	29,797	31,705	6.0%	32,704	3.1%	33,293	4.8%	34,209	7.3%
<b>Scott County</b>	20,991	22,960	8.6%	23,679	3.0%	24,947	8.0%	25,850	11.2%
<b>Washington County</b>	23,717	27,223	12.9%	27,920	2.5%	29,613	8.1%	30,015	9.3%

Southeastern Indiana as a region has not grown very rapidly over the past decade, nor is it expected to in the future. There are signs of population shifts, but no expectation for regional growth that would adversely affect air quality.

### Evaluation for Southeastern Indiana

March 12, 2009 Designation Recommendations for Southeastern Indiana:

Clark County	Nonattainment
Floyd County	Nonattainment
Harrison County	Attainment/Unclassifiable
Jefferson County	Attainment/Unclassifiable
Scott County	Attainment/Unclassifiable
Washington County	Attainment/Unclassifiable

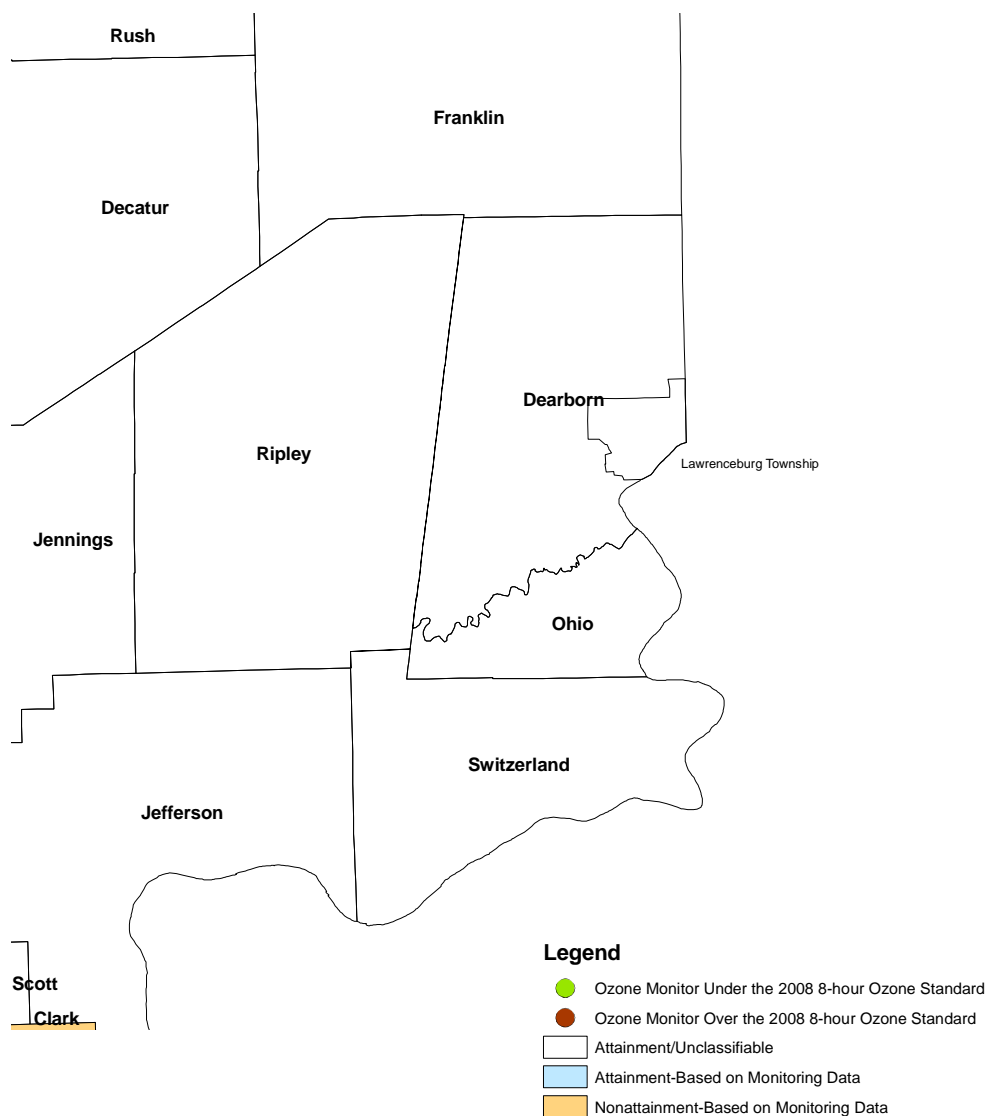


## Dearborn County, Indiana

### Background

Lawrenceburg Township in Dearborn County, Indiana, which is part of the Cincinnati, Ohio MSA, was designated nonattainment under the 1997 8-hour ozone standard. There are no ozone monitoring sites in Dearborn County, Indiana. An attainment demonstration was sent to U.S. EPA on April 5, 2008, which states that the area will attain the ozone standard by 2009. Indiana's portion of the Cincinnati, Ohio MSA includes Dearborn, Franklin and Ohio counties.

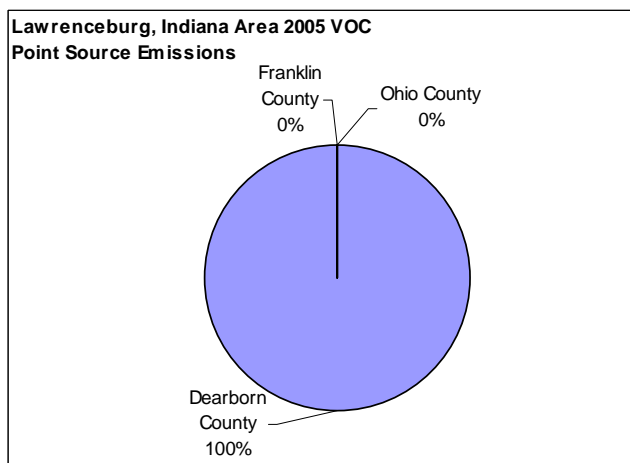
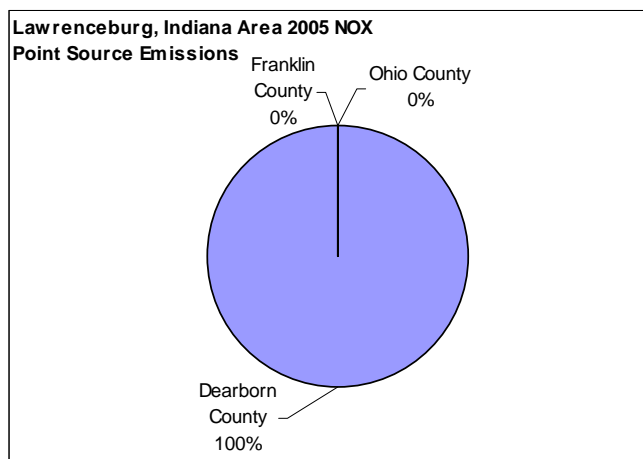
### Dearborn County, Indiana Monitoring Data



There are no monitors located in the Indiana portion of the Cincinnati MSA. Within the Cincinnati MSA, Hamilton County, Ohio accounts for the majority of the emissions, population, and vehicle miles traveled (VMT). If monitors were located in the Indiana portion of the MSA, it is reasonable to assume that the values would be consistent with background values elsewhere in the state and Midwest. Therefore, Indiana does not believe the ozone concentrations in this area exceed the revised 2008 8-hour ozone standard. Additionally, based on analysis of similar urban areas, Indiana does not believe that emissions from Dearborn County and surrounding counties contribute significantly to ozone values elsewhere in the Cincinnati MSA.

### Dearborn County, Indiana Emissions Data

2005 Point Source Emissions (Tons Per Year)				
	NO <sub>x</sub>	% of Area	VOC	% of Area
Dearborn County	10,407.81	100.00%	1,204.44	100.00%
Franklin County	0.00	0.00%	0.00	0.00%
Ohio County	0.00	0.00%	0.00	0.00%
<b>TOTAL</b>	<b>10,407.81</b>		<b>1,204.44</b>	



*Note: These charts do not account for emissions from Ohio sources, which would alter the ratios significantly.*

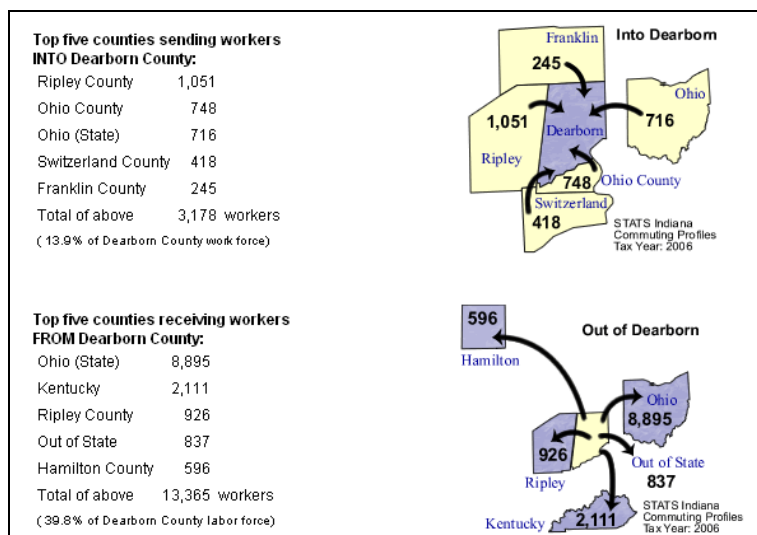
Dearborn County accounts for 100% of Indiana's portion of the Cincinnati MSA's total NO<sub>x</sub> and total VOC emissions. The only major stationary source in the area is located in Lawrenceburg Township in Dearborn County. Essentially the rest of Dearborn County along with the rest of Indiana's portion (Franklin and Ohio counties) of the Cincinnati MSA are rural in nature. Emissions from Franklin and Ohio counties do not have a significant impact on air quality within the MSA. Overall ozone values have continued to drop and NO<sub>x</sub> emissions are expected to decrease throughout the Midwest over the next few years when CAIR has been fully implemented.

## Level of Control of Emission Sources

The American Electric Power (AEP) -Tanner's Creek Generating Station power plant, located in Lawrenceburg Township in Dearborn County, is covered by a consent decree and several, but not all, electric generating units will have to apply controls. Currently the power plant is controlled by low NO<sub>x</sub> burner technology (dry bottom only) and overfire air. AEP-Tanner's Creek Generating Station will be installing selective non-catalytic reduction systems on three of its four electric generating units, with operation to begin in mid-2009. This will achieve an additional 30% reduction in NO<sub>x</sub>. Indiana believes that emissions from Dearborn County do not affect the downwind area's ability to attain the revised 2008 8-hour ozone standard. Most of the other major ozone precursor sources within the Cincinnati area are subject to the NO<sub>x</sub> SIP Call, CAIR or RACT requirements.

## Dearborn County, Indiana Traffic Patterns

2006 Commuting Patterns					
	Total Workforce: Number of persons who live in County and work	Number of persons who live AND work in County	Number of persons who live in County and work in another County	Percent In County	Percent Out of County
Dearborn County	33,559	19,067	14,492	56.8%	43.2%
Franklin County	15,585	8,456	7,129	54.3%	45.7%
Ohio County	4,126	2,201	1,925	53.3%	46.7%



## **Dearborn County, Indiana Growth Rates and Patterns**

	Population 1990	Population 2000	Percent Change from 1990 to 2000	Population Estimate 2007	Percent Change from 2000 to 2007	Population Estimate 2010	Percent Change from 2000 to 2010	Population Estimate 2020	Percent Change from 2000 to 2020
<b>Dearborn County</b>	38,835	46,109	15.8%	49,759	7.3%	50,855	9.3%	54,017	14.6%
<b>Franklin County</b>	19,580	22,151	11.6%	23,234	4.7%	24,035	7.8%	24,413	9.3%
<b>Ohio County</b>	5,315	5,623	5.5%	5,772	2.6%	6,092	7.7%	6,220	9.6%

Dearborn, Franklin and Ohio counties have not grown very rapidly over the past decade, nor are they expected to in the future. There are no expectations for regional growth that would adversely affect air quality.

## **Evaluation for Dearborn County, Indiana**

March 12, 2009 Designation Recommendations for Lawrenceburg, Indiana Area:

Dearborn County	Attainment/Unclassifiable
Franklin County	Attainment/Unclassifiable
Ohio County	Attainment/Unclassifiable

## Southwestern Indiana

### Background

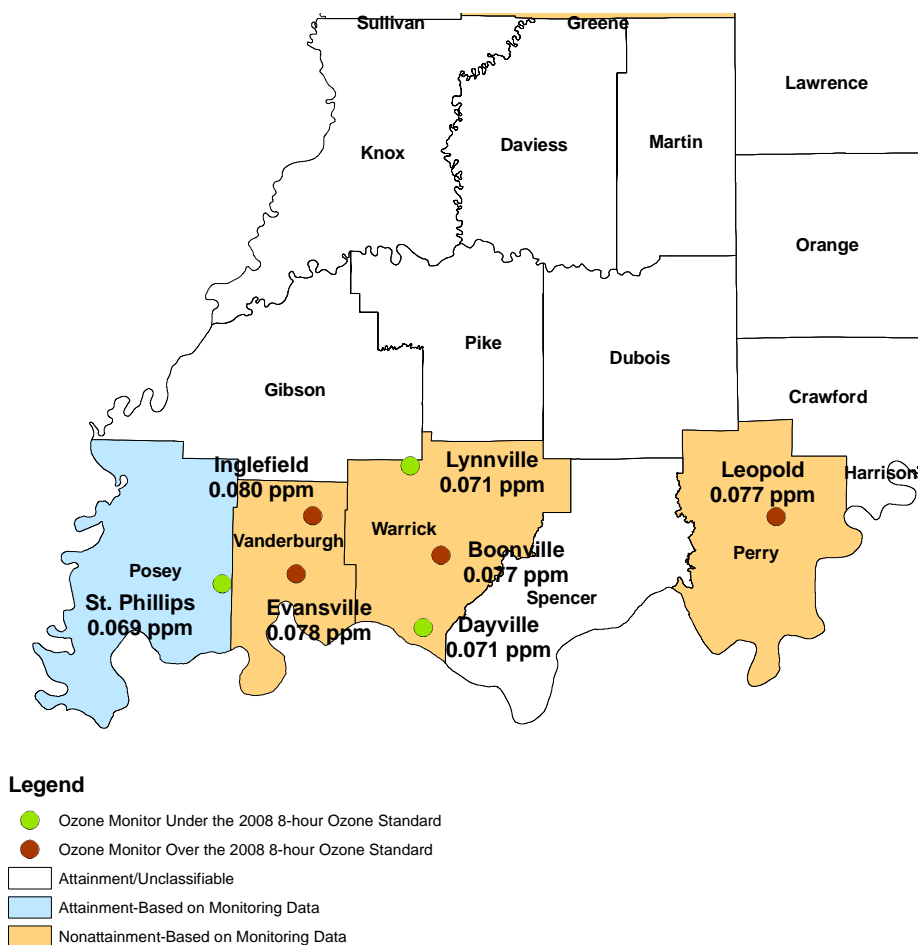
Vanderburgh and Warrick counties, which are part of the Evansville, MSA, were designated nonattainment under the 1997 8-hour ozone standard. The monitor sites in Vanderburgh and Warrick counties have measured air quality that meets the 1997 8-hour ozone standard since 2002. A Redesignation Petition and Maintenance Plan for Vanderburgh and Warrick counties was approved by U.S. EPA on January 30, 2006. The Evansville MSA includes Gibson, Posey, Vanderburgh and Warrick. There are ozone monitors in every county in the Evansville MSA except for Gibson County.

Perry County is not part of an MSA and was designated attainment under the 1997 8-hour ozone standard.

### Southwestern Indiana Monitoring Data

County	Monitor Location	4 <sup>th</sup> Highest Ozone Values (ppm)			Design Value 2006-2008 (ppm)
		2006	2007	2008	
Perry	Leopold	0.079	0.080	0.073	0.077
Posey	St. Phillips	0.058	0.080	0.069	0.069
Vanderburgh	Mill Road	0.075	0.085	0.074	0.078
Vanderburgh	Inglefield	0.081	0.088	0.072	0.080
Warrick	Boonville	0.078	0.083	0.071	0.077
Warrick	Lynnville	0.070	0.080	0.064	0.071
Warrick	Dayville	0.078	0.076	0.060	0.071

*Highlighted data means 2006-2008 Design Value is above 0.076 ppm*



There are six monitors located within the Evansville MSA and three of them are over the revised 2008 8-hour ozone standard. Within the Evansville MSA, Vanderburgh and Warrick counties account for the majority of the emissions, population, and vehicle miles traveled (VMT). Indiana also has a monitor in Leopold in nearby Perry County. The monitor in Leopold is over the revised 2008 8-hour ozone standard.

Southwest Indiana's air quality is clearly dominated by the many large sources of  $\text{NO}_x$  in the region. Ozone levels have been decreasing over the past few years as  $\text{NO}_x$  controls have been installed at many of these sources. Air quality will continue to improve when the CAIR rule is fully implemented. The only monitors in the region that exceed the revised 2008 8-hour ozone standard are in Vanderburgh and Warrick counties. Indiana believes there is no reason to include the other counties in the nonattainment area. U.S. EPA should keep the nonattainment areas as small as possible. The prevailing wind direction is from southwest, south and southeast, which means that Vanderburgh County emissions are not dominating the ozone readings in Warrick County, directly to the east. It is the regional levels of  $\text{NO}_x$  to the south and southwest of Warrick County that are primarily causing the high levels. Modeling shows that both Vanderburgh and Warrick counties will meet the revised 2008 8-hour ozone standard when regional  $\text{NO}_x$  levels decrease. Perry County's air quality is dominated by regional transport of



NO<sub>x</sub> into the area. Air quality will continue to improve when the CAIR rule is fully implemented. Perry County is not located within an MSA but the monitor exceeds the revised 2008 8-hour ozone standard. Indiana believes there is no reason to include other counties, other than Perry County, in the nonattainment area. The other counties in the area are essentially rural in nature, do not have measured air quality in excess of the revised 2008 8-hour ozone standard, and are not contributing to elevated ozone levels in Perry County. Indiana strongly encourages U.S. EPA to consider Perry County as a rural area affected by overwhelming transport.

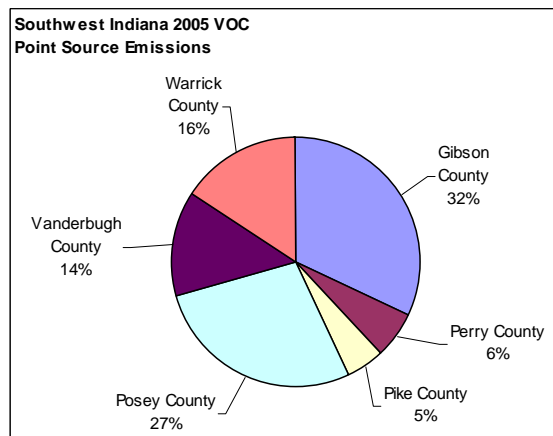
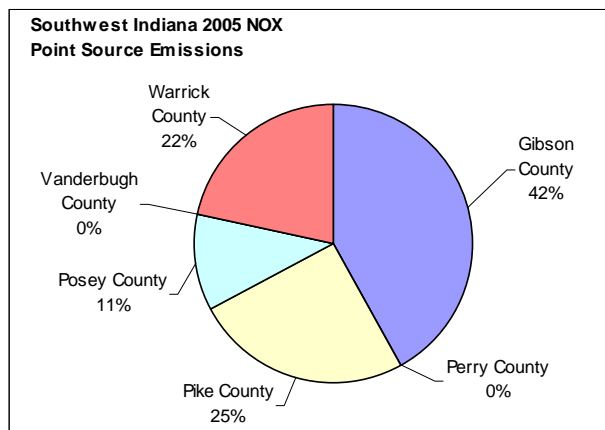
LADCO conducted future year modeling in order to determine the ozone impacts on monitors in the Midwest. The following table outlines LADCO's Round 5 future year modeling results for Posey, Vanderburgh and Warrick County ozone monitors. Results show all monitors in Southwest Indiana meet the 2008 revised 8-hour ozone NAAQS by 2009 and 2012. There is insufficient data to determine the baseyear design value in order to conduct future-year modeling for Perry County at this time.

**LADCO's Round 5 Future Year Modeling Results for 2009 and 2012**

Monitor ID	County	Site	BaseYear D.V.	2009 D.V.	2012 D.V.
181290003	Posey	St. Phillips	0.0717	0.0680	0.0670
181630012	Vanderburgh	Mill Road	0.0773	0.0730	0.0720
181630013	Vanderburgh	Inglefield	0.0677	0.0640	0.0630
181730008	Warrick	Boonville	0.0777	0.0740	0.0730
181730011	Warrick	Dayville	0.0775	0.0740	0.0730
181730009	Warrick	Lynnville	0.0727	0.0700	0.0690

### Southwestern Indiana Emissions Data

2005 Point Source Emissions (Tons Per Year)				
	NO <sub>x</sub>	% of Area	VOC	% of Area
Gibson County	30,364.55	41.80%	1,236.72	31.88%
Perry County	91.61	0.12%	239.83	6.18%
Pike County	18,299.68	25.19%	197.77	5.09%
Posey County	8,064.24	11.10%	1,064.64	27.44%
Vanderburgh County	119.04	0.16%	524.03	13.50%
Warrick County	15,689.05	21.60%	616.29	15.88%
<b>TOTAL</b>	<b>72,628.17</b>		<b>3,879.28</b>	



Gibson County accounts for 41.80% of the area's total NO<sub>x</sub> emissions and 31.88% of the area's total VOC emissions. Gibson County is downwind of the Evansville area and does not impact monitor violations in Vanderburgh and Warrick counties. Vanderburgh County has significantly lower emissions than surrounding counties in Southwestern Indiana. There are no major stationary sources in Perry County and emissions from that county are not impacting the Evansville MSA. Overall, ozone values have continued to drop and NO<sub>x</sub> and VOC emissions are expected to decrease throughout the Midwest over the next few years when CAIR has been fully implemented. Reductions expected to occur in Warrick and Gibson counties over the next two years will significantly alter the contribution from these counties and further improve air quality in the near future.

### Level of Control of Emission Sources

NO<sub>x</sub> emissions from electric generating units in the Southwestern Indiana area have decreased substantially during the past few years. The decrease in NO<sub>x</sub> can be largely attributed to those electric generating units located within and surrounding the Southwest Indiana area that have reduced their NO<sub>x</sub> emissions as a result of the NO<sub>x</sub> SIP Call.

The Southern Indiana Gas and Electric Company, Inc. (SIGECO) - F.B. Culley power plant located in Warrick County was required to shut down one of its electric generating units. The other two electric generating units are under a consent decree to operate at 95% efficiency at all times the units are in operation. With the consent decree, the controls result in a significant reduction in NO<sub>x</sub> emissions. These controls will be in place prior to the attainment date and emissions from the power plant will not increase in the near future. The ALCOA – Warrick Operations power plant located in Warrick County is currently controlled by Low NO<sub>x</sub> Burner Technology with Overfire Air. These controls are in place prior to the attainment date. Indiana believes that emissions from Warrick County do not affect the downwind area's ability to attain the ozone standard. Most of the other major ozone precursor sources within the Evansville area are subject to the NO<sub>x</sub> SIP Call, CAIR or RACT requirements.

## Comparison of 2005 Estimated and 2020 Projected Emission Estimates for Southwestern Indiana (Annual Tons)

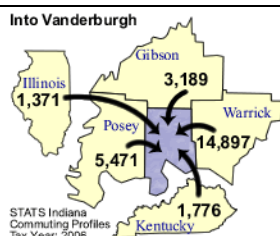
	2005	2020	Change	% Change
<b>NO<sub>x</sub></b>	100,738.05	33,920.55	-66,817.50	66.33%

NO<sub>x</sub> emissions within the Southwestern Indiana area are projected to decline by 66.33% between 2005 and 2020. Emission reduction benefits from federal rules covering the NO<sub>x</sub> SIP Call, CAIR, Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements, the Highway Heavy-Duty Engine Rule and the Nonroad Diesel Engine Rule are factored into the percent changes. Further, due to the implementation of the NO<sub>x</sub> SIP Call and CAIR, NO<sub>x</sub> and ozone levels entering this area will also be decreasing.

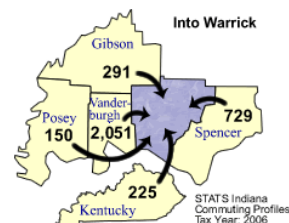
## Southwestern Indiana Traffic Patterns

2006 Commuting Patterns					
	Total Workforce: Number of persons who live in County and work	Number of persons who live AND work in County	Number of persons who live in County and work in another County	Percent In County	Percent Out of County
<b>Gibson County</b>	22,589	17,739	4,850	78.5%	21.5%
<b>Perry County</b>	12,448	9,204	3,244	73.9%	26.1%
<b>Pike County</b>	8,955	5,379	3,576	60.1%	39.9%
<b>Posey County</b>	18,217	11,752	6,465	64.5%	35.5%
<b>Vanderburgh County</b>	113,021	104,474	8,547	92.4%	7.6%
<b>Warrick County</b>	39,248	20,834	18,414	53.1%	46.9%

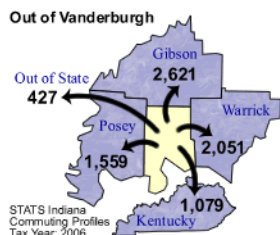
**Top five counties sending workers INTO Vanderburgh County:**  
Warrick County 14,897  
Posey County 5,471  
Gibson County 3,189  
Kentucky 1,776  
Illinois 1,371  
Total of above 26,704 workers  
(19.9% of Vanderburgh County work force)



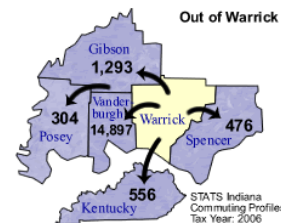
**Top five counties sending workers INTO Warrick County:**  
Vanderburgh County 2,051  
Spencer County 729  
Gibson County 291  
Kentucky 225  
Posey County 150  
Total of above 3,446 workers  
(13.9% of Warrick County work force)



**Top five counties receiving workers FROM Vanderburgh County:**  
Gibson County 2,621  
Warrick County 2,051  
Posey County 1,559  
Kentucky 1,079  
Out of State 427  
Total of above 7,737 workers  
(6.8% of Vanderburgh County labor force)



**Top five counties receiving workers FROM Warrick County:**  
Vanderburgh County 14,897  
Gibson County 1,293  
Kentucky 556  
Spencer County 476  
Posey County 304  
Total of above 17,526 workers  
(44.7% of Warrick County labor force)



Within the Evansville MSA, Vanderburgh (92.4%) County maintains the highest concentration of employment by residents of the county, compared to the other counties within the area. The majority of the traffic congestion occurs in Vanderburgh and Warrick counties. A significant level of commuting occurs from the surrounding counties to Vanderburgh and

Warrick counties. These two counties have the largest level of commuting to and from each other.

### **Southwestern Indiana Growth Rates and Patterns**

	Population 1990	Population 2000	Percent Change from 1990 to 2000	Population Estimate 2007	Percent Change from 2000 to 2007	Population Estimate 2010	Percent Change from 2000 to 2010	Population Estimate 2020	Percent Change from 2000 to 2020
Gibson County	31,913	32,500	1.8%	32,754	0.8%	32,904	1.2%	35,004	7.2%
Perry County	19,107	18,899	-1.1%	18,916	0.0%	18,709	-1.0%	18,738	-0.9%
Pike County	12,509	12,837	2.6%	12,605	-1.8%	13,317	3.6%	12,986	1.1%
Posey County	25,968	27,061	4.0%	26,262	-3.0%	26,605	-1.7%	26,053	-3.7%
Vanderburgh County	165,058	171,922	4.0%	174,425	1.4%	174,355	1.4%	174,827	1.7%
Warrick County	44,920	52,383	14.2%	57,090	8.2%	56,631	7.5%	62,845	16.6%

Southwestern Indiana as a region has not grown very rapidly over the past decade, nor is it expected to in the future. There are signs of population shifts, but no expectation for regional growth that would adversely affect air quality.

### **Evaluation for Southwestern Indiana**

March 12, 2009 Designation Recommendations for Southwestern Indiana:

Gibson County	Attainment/Unclassifiable
Perry County	Nonattainment
Pike County	Attainment/Unclassifiable
Posey County	Attainment
Vanderburgh County	Nonattainment
Warrick County	Nonattainment

## REVISIONS TO EPA'S OZONE AIR QUALITY INDEX FACT SHEET

### ACTION

- On March 12, 2008 EPA revised its Air Quality Index (AQI) for ozone to reflect changes to the national ambient air quality standards for ground-level ozone. The AQI is EPA's color-coded tool for communicating daily air quality to the public.
- The AQI revisions address the ranges of ozone that are represented by the AQI categories, such as "good," "moderate," "unhealthy for sensitive groups," and "unhealthy." EPA has adjusted the upper end of the "moderate" range to be equal to the new primary 8-hour ozone standard, which is 0.075 parts per million (ppm), and has made proportional changes to the other categories. This action is part of the rule EPA issued to significantly strengthen the ozone standards.
- Under the revised AQI, ozone levels above 0.075 ppm would be considered in the "unhealthy for sensitive groups" category –known to many people as a "code orange" air quality day. When ozone is in this category, EPA recommends certain groups adjust their activity levels to reduce their ozone exposure. These groups include children and adults who are active outdoors, people with asthma or other lung diseases and older adults.
- State and local governments may begin using the new AQI breakpoints immediately to issue voluntary ozone forecasts and for calling air quality action days. Cities of 350,000 and larger are required to report the daily AQI and must begin using the new breakpoints no later than 60 days after the revised ozone standards are published in the Federal Register.
- The table below shows the new breakpoints:

Category	AQI Value	1997 8-hour (ppm)	2008 8-hour (ppm)
Good	0-50	0.000-0.064	0.000-0.059
Moderate	51-100	0.065-0.084	0.060-0.075
Unhealthy for Sensitive Groups	101-150	0.085-0.104	0.076-0.095
Unhealthy	151-200	0.105-0.124	0.096-0.115
Very Unhealthy	201-300	0.125-0.374	0.116-0.374
Hazardous	301-400	No Change	No Change
	401-500	No Change	No Change

**BACKGROUND:**

- EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. An AQI value of 100 generally corresponds to the “primary,” national air quality standard for the pollutant, which is the standard EPA sets to protect public health.
- AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy -- at first for certain sensitive groups of people, then for everyone as AQI values get higher.
- People can reduce their exposure to ozone by changing the time of their activity or simply taking it easier on days when ozone levels are expected to be high. For example, a runner could run in the morning, when ozone levels are lower, instead of in the afternoon, when conditions tend to be more favorable for ozone formation. A runner also could reduce exposure by taking a walk instead of going for the run.
- State and local governments issue voluntary ozone forecasts for more than 300 U.S. cities during the ozone season, which generally runs from May 1 to September 30. More than 200 cities also issue forecasts for particle pollution, which can be a problem year-round, depending on location. These forecasts are widely carried on television and in newspapers, and also are available on the AIRNow Web site, at [www.airnow.gov](http://www.airnow.gov).

**FOR MORE INFORMATION**

- For a daily map showing air quality forecasts across the country, go to [www.airnow.gov](http://www.airnow.gov) and click on “National Forecast.”
- To learn more about air pollution and health, go to [www.airnow.gov](http://www.airnow.gov) and click on “Publications.”
- For more information about EPA’s action to strengthen the national ozone standards, visit [www.epa.gov/groundlevelozone](http://www.epa.gov/groundlevelozone).



**FACT SHEET**  
**FINAL REVISIONS TO THE NATIONAL AMBIENT AIR QUALITY STANDARDS**  
**FOR OZONE**

**SUMMARY OF ACTION**

*Ozone standards*

- On March 12, 2008, EPA significantly strengthened its national ambient air quality standards (NAAQS) for ground-level ozone, the primary component of smog. These changes will improve both public health protection and the protection of sensitive trees and plants.
- EPA is revising the 8-hour “primary” ozone standard, designed to protect public health, to a level of 0.075 parts per million (ppm). The previous standard, set in 1997, was 0.08 ppm. Because ozone is measured out to three decimal places, the standard effectively became 0.084 ppm as a result of rounding.
- EPA is also strengthening the secondary 8-hour ozone standard to the level of 0.075 ppm making it identical to the revised primary standard. EPA decided to strengthen the secondary ozone standard after concluding that the 1997 secondary standard is not adequate to protect public welfare. Current ozone air quality concentrations in many areas of the country -- including some areas that meet the 1997 ozone standards -- are high enough to harm sensitive vegetation and ecosystems.
- EPA estimates that the revised standards will yield health benefits valued between \$2 billion and \$17 billion. Those benefits include preventing cases of bronchitis, aggravated asthma, hospital and emergency room visits, nonfatal heart attacks and premature death, among others.
- In addition, EPA is changing the Air Quality Index (AQI) to reflect the new primary standard. The AQI is EPA’s color-coded tool designed for use by state and local authorities to inform the public about daily air pollution levels in their communities.

*Scientific Review*

- Breathing air containing ozone can reduce lung function and increase respiratory symptoms, thereby aggravating asthma or other respiratory conditions. Ozone exposure also has been associated with increased susceptibility to respiratory infections, medication use by asthmatics, doctors visits, and emergency department visits and hospital admissions for individuals with respiratory disease. Ozone exposure may also contribute to premature death, especially in people with heart and lung disease.
- After evaluating the results of more than 1,700 new scientific studies available for this review, EPA concluded that ozone causes adverse health effects at the level of the 1997 standard and below. This newly available evidence strengthens EPA’s confidence in the findings of the 1997 review and identifies important new health endpoints associated with ozone exposure, including mortality, increased asthma medication use, school absenteeism, and cardiac-related effects. Furthermore, studies of asthmatics indicate that they experience larger and more serious responses to ozone that last longer than responses for healthy individuals.

- In addition, new scientific evidence since the last review of the ozone NAAQS continues to show that repeated exposure to ozone damages sensitive vegetation and trees, including those in forests and parks, leading to reduced growth and productivity, increased susceptibility to disease and pests, and damaged foliage.
- EPA selected levels for the final standards after completing an extensive review of thousands of scientific studies on the impact of ground level ozone on public health and the environment. The Agency also carefully reviewed and considered public comment as well as comment from its Clean Air Scientific Advisory Committee (CASAC) on the proposed standards. EPA held five public hearings and received thousands of written comments.

#### *Clean Air Rules*

- EPA has issued a number of rules that will help states make progress toward meeting the revised ozone standards. These rules will significantly reduce ground-level ozone pollution, both regionally and nationally, by reducing emissions of NO<sub>x</sub>. These rules include the Clean Air Interstate Rule to reduce ozone forming emissions from power plants in the eastern United States, and the Clean Diesel Program to reduce emissions from highway, nonroad and stationary diesel engines nationwide.

### **DETERMINING COMPLIANCE WITH THE STANDARDS**

- In addition to changing the level of the standards from 0.08 ppm to 0.075 ppm, EPA is now specifying the level of the standard to the third decimal. An area will meet the revised standards if the three-year average of the annual fourth-highest daily maximum 8-hour average at every ozone monitor is less than or equal to the level of the standard (i.e., 0.075 ppm).

### **BENEFITS AND COSTS**

- The Clean Air Act prohibits EPA from considering costs in setting or revising National Ambient Air Quality Standards. To inform the public, the Agency analyzes the benefits and costs of meeting the standards as required by Executive Order 12866 and guidance from the White House Office of Management and Budget.
- To estimate the benefits of meeting a standard, EPA uses a sophisticated peer-reviewed approach to model the relationship between air quality and health and welfare effects, the air quality impacts of implementing future pollution control technologies, and the dollar values of resulting public health improvements.
- EPA's Regulatory Impact Analysis presents a range of benefits for meeting the revised ozone standards:
  - o Based on the largest multi-city study used in EPA's risk analysis, an estimated 260 to 2,000 premature deaths would be avoided annually in 2020. When added to the other projected benefits from reduced ozone, these avoided deaths lead to an estimated total ozone-related benefit of \$3 to \$17 billion per year.

- Using three studies that synthesize data across a large number of individual studies, an estimated 420 to 2,300 premature deaths would be avoided annually in 2020, leading to total monetized ozone-related benefits of between \$4 and \$17 billion per year.
- Alternatively, if there is no causal relationship between ozone and mortality, avoided premature deaths associated with reduced ozone exposure would be zero, and the total monetized ozone-related benefits would range between \$2 billion and \$17 billion per year (including 190 to 2,000 deaths per year avoided due to reduced particle pollution).
- The benefits estimates also include the value of an estimated reduction in the following adverse health effects in 2020:
  - 380 cases of chronic bronchitis,
  - 890 nonfatal heart attacks,
  - 1,900 hospital and emergency room visits,
  - 1,000 cases of acute bronchitis,
  - 11,600 cases of upper and lower respiratory symptoms,
  - 6,100 cases of aggravated asthma,
  - 243,000 days when people miss work or school, and
  - 750,000 days when people must restrict their activities because of ozone-related illnesses

*Note: These benefits estimates reflect both the ozone and particle pollution reductions that would result from a revised ozone standard.*
- To estimate the costs of meeting a standard, EPA uses several peer-reviewed approaches for modeling the cost of using both existing controls and controls that may be developed in the future for reducing NO<sub>x</sub> and VOCs .

EPA estimates that costs of implementing a standard of 0.075 ppm would range from a low of \$7.6 billion to a high of \$8.8 billion annually in 2020.

## IMPLEMENTING THE STANDARDS

- These revised standards will lead to substantially improved air quality in urban and rural areas throughout the United States.
- The Clean Air Act requires EPA to designate areas as attainment (meeting the standards), nonattainment (not meeting the standards), or unclassifiable (insufficient data to classify) after the Agency sets a new standard, or revises an existing standard. The following schedule will apply to the revised ozone standards:
  - States must make recommendations to EPA no later than March 2009 for areas to be designated attainment, nonattainment and unclassifiable.

- o EPA will issue final designations of attainment, nonattainment and unclassifiable areas no later than March 2010 unless there is insufficient information to make these designation decisions. In that case, EPA will issue designations no later than March 2011.
- o States must submit State Implementation Plans outlining how they will reduce pollution to meet the standards by a date that EPA will establish in a separate rule. That date will be no later than three years after EPA's final designations. If EPA issues designations in 2010, then these plans would be due no later than 2013.
- o States are required to meet the standards by deadlines that may vary based on the severity of the problem in the area.
- EPA will issue a separate rule to address monitoring requirements necessary to implement the new standards. EPA intends to propose a monitoring rule in June 2008 and issue a final rule by March 2009.

## **BACKGROUND:**

### **WHAT IS OZONE?**

- Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O<sub>3</sub>). While upper atmospheric ozone forms a protective layer from the sun's harmful rays, ground level ozone is the primary component of smog.
- Ground-level ozone is not emitted directly into the air, but forms through a reaction of nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the presence of sunlight.
- Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are the major man-made sources of NO<sub>x</sub> and VOCs.
- Because sunlight and hot weather accelerate its formation, ozone is mainly a summertime air pollutant. Both urban and rural areas can have high ozone levels, often due to transport of ozone or its precursors (NO<sub>x</sub> and VOCs) from hundreds of miles away.

### **OZONE AND PUBLIC HEALTH**

- Health effects associated with exposure to ground-level ozone include:
  - o Reduced lung function, making it more difficult for people to breathe as deeply and vigorously as normal;
  - o Irritated airways, causing coughing, sore or scratchy throat, pain when taking a deep breath and shortness of breath;
  - o Increased frequency of asthma attacks;
  - o Inflammation of and damage to the lining of the lung;
  - o Increased susceptibility to respiratory infection; and
  - o Aggravation of chronic lung diseases such as asthma, emphysema and bronchitis.

- In some people, these effects can lead to:
  - o Increased medication use among asthmatics;
  - o More frequent doctors visits;
  - o School absences; and
  - o Increased emergency room visits and hospital admissions.
- Ozone may continue to cause lung damage even when the symptoms have disappeared.
- Breathing ozone may contribute to premature death, especially in people with heart and lung disease.

## **OZONE AND THE ENVIRONMENT**

- Ground-level ozone can have harmful effects on various plants and ecosystems. When sufficient ozone enters the leaves of a plant, it can:
  - o Interfere with the ability of sensitive plants to produce and store food, making them more susceptible to certain diseases, insects, other pollutants, competition and harsh weather
  - o Visibly damage the leaves of trees and other plants, harming the appearance of urban vegetation, national parks, and recreation areas; and
  - o Reduce forest growth and crop yields.

## **REVIEW OF THE OZONE STANDARDS**

- The Clean Air Act directs EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. National standards exist for six pollutants: ozone, particulate matter, carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide.
- For each of these pollutants, the Clean Air Act requires EPA to set the health-based or “primary” standards at a level judged to be “requisite to protect the public health with an adequate margin of safety” and establish secondary standards that are “requisite” to protect public welfare from “any known or anticipated effects associated with the pollutant in the ambient air” including effects on crops, vegetation, wildlife, buildings and national monuments, and visibility.
- The law requires EPA to review the standards once every five years to determine whether revisions to the standards are appropriate.
- EPA last updated the ozone standards in 1997. The decision to revise the standards was challenged in court by a number of parties and ultimately reached the U.S. Supreme Court. In 2001, the Court unanimously upheld the constitutionality of the 1970 Clean Air Act provision that authorizes EPA to set NAAQS to protect public health and welfare. The Court also affirmed that the Clean Air Act requires EPA to set ambient air quality standards, at levels sufficient but not more than necessary, to protect the public health with an adequate margin of safety, and to protect the public welfare, without considering the economic costs of implementing the standards.

- Under terms of a consent decree, EPA agreed to issue a proposal on the ozone standards by June 20, 2007 and a final rule by March 12, 2008.
- The ozone review process began with an assessment of scientific studies on ozone by EPA's National Center for Environmental Assessment. This assessment was published as an Air Quality Criteria Document for Ozone, which explored the scientific data pertaining to the health and environmental effects associated with ozone. EPA's Office of Air Quality Planning & Standards then prepared a "Staff Paper" document which presented key policy-relevant scientific information, the results of quantitative exposure and risk assessments with associated uncertainties, and a policy assessment that identified policy options, including ranges of standards, for consideration by the Administrator.
- The Criteria Document and Staff Paper underwent extensive scientific and public review, including review by the Clean Air Scientific Advisory Committee (CASAC), EPA's independent scientific advisory body established by the Clean Air Act. As part of its mandate, CASAC makes recommendations to EPA on the adequacy of the existing standards and revisions it believes would be appropriate. Based on the scientific assessments, and taking into account the recommendations of CASAC and public comments, the EPA Administrator must judge whether it is appropriate to revise the standards.
- Before making a final decision on whether to revise the ozone NAAQS, EPA undertook an extensive public review and comment process on its proposed decision of June 20, 2007. The Agency carefully considered and analyzed issues raised in public comments during the public comment period on the proposed rule, which ended October 9, 2007.

#### **FOR MORE INFORMATION**

- Interested parties can download the notice from EPA's Web site at:  
<http://www.epa.gov/groundlevelozone>





# OZONE NONATTAINMENT AREAS



## US EPA ARCHIVE DOCUMENT

