



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

November 13, 2008

Ms. Lynn Buhl
Regional Administrator
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3950

Re: Technical Addendum for the
Attainment Demonstration and Technical
Support Document for the Central Indiana
Fine Particle Nonattainment Area

Dear Ms. Buhl:

The Indiana Department of Environmental Management (IDEM) has prepared this technical addendum to the Attainment Demonstration and Technical Support Document for the Central Indiana Fine Particle Nonattainment Area (Attainment Demonstration) to validate the original SIP quality Lake Michigan Air Directors Consortium (LADCO) – Round 5 annual PM_{2.5} modeling results for the Clean Air Interstate Rule (CAIR). IDEM submitted the Attainment Demonstration to the United States Environmental Protection Agency (U.S. EPA) with a request for parallel processing on April 3, 2008 and a final submission on June 5, 2008 to demonstrate how the area will attain the National Ambient Air Quality Standard (NAAQS) for annual fine particles by the attainment date (i.e. April 5, 2010).

On July 11, 2008, the U.S. Court of Appeals, for the District of Columbia Circuit, vacated the U.S. EPA's CAIR in its entirety. Based on the implications of the court's ruling, LADCO in cooperation with IDEM has recently conducted SIP quality Round 5 annual PM_{2.5} modeling to determine the air quality impacts associated with CAIR controls not being in place on electrical generating units (EGUs) in the Midwest region. The 2009 modeled results show that the highest modeled concentration will be 13.4 µg/m³, at least 1.6 µg/m³ below the NAAQS for annual fine particles (15.0 µg/m³), with other modeled results in Marion County and other nearby areas being much lower. Modeling results for 2012 and 2018 indicate future year design values will continue to decline without CAIR. Tables 1.3, 3.5, 3.7, 7.1 and Figure 7.1 (to be considered updates to Tables 1.3, 3.5, 3.7, 7.1 and Figure 7.1 on Pages 12, 30, 34, 47 and 48 of the Attainment Demonstration) show the LADCO – Round 5 non-CAIR annual PM_{2.5} modeling results.

**Updated Table 1.3
Attainment Test Results**

Monitor ID	Monitor Name	County	Modeled Design Value 2003-2007	Base-case without CAIR – 2009
			($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
18-097-0042	Mann Road	Marion	14.2	11.9
18-097-0078	Washington Park	Marion	15.3	12.8
18-097-0079	E. 75th St.	Marion	14.7	12.4
18-097-0081	W 18th St	Marion	16.1	13.4
18-097-0083	E. Michigan St.	Marion	15.9	13.4

**Updated Table 3.5
Attainment Test Results for Central Indiana**

Monitor ID	Monitor Name	County	Modeled Design Value 2003-2007	Base-case without CAIR – 2009
			($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
18-097-0042	Mann Road	Marion	14.2	11.9
18-097-0078	Washington Park	Marion	15.3	12.8
18-097-0079	E. 75th St.	Marion	14.7	12.4
18-097-0081	W 18th St	Marion	16.1	13.4
18-097-0083	E. Michigan St.	Marion	15.9	13.4

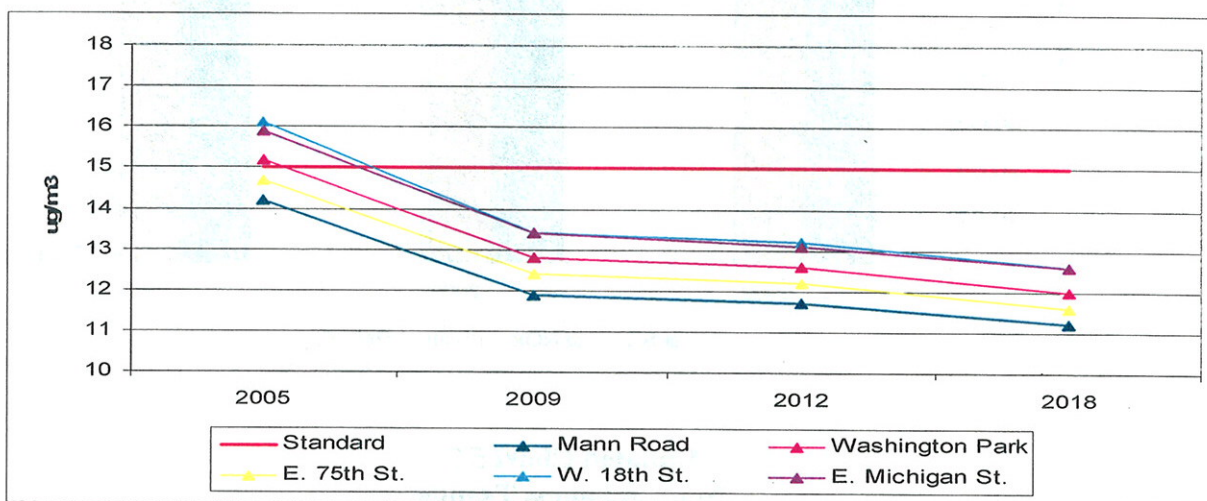
**Updated Table 3.7
Modeling Results for Central Indiana PM_{2.5} Monitors for 2009, 2012 and 2018**

Monitor	Site	County	2005 Base Year	2009 Future Year	2012 Future Year	2018 Future Year
18-065-0003	Shenandoah H.S.	Henry	13.3	11.2	11.0	10.5
18-067-0003	Kokomo	Howard	13.9	12.0	11.7	11.3
18-095-0009	Anderson	Madison	14.0	11.7	11.5	11.0
18-097-0042	Mann Road	Marion	14.2	11.9	11.7	11.2
18-097-0078	Washington Park	Marion	15.3	12.8	12.6	12.0
18-097-0079	E. 75th St.	Marion	14.7	12.4	12.2	11.6
18-097-0081	W. 18th St.	Marion	16.1	13.4	13.2	12.6
18-097-0083	E. Michigan St.	Marion	15.9	13.4	13.1	12.6
18-157-0008	Lafayette	Tippecanoe	13.7	11.7	11.5	11.1
18-167-0018	Terre Haute	Vigo	14.0	11.7	11.6	11.2
18-167-0023	Devaney School	Vigo	13.5	11.3	11.1	10.7

Updated Table 7.1
LADCO's Round 5 Non-CAIR Modeling Results

Monitor ID	Monitor Name	County	Design Value 2003-2007	Base-case without CAIR – 2009	Base-case without CAIR – 2012	Base-case without CAIR – 2018
			($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
18-097-0042	Mann Road	Marion	14.2	11.9	11.7	11.2
18-097-0078	Washington Park	Marion	15.3	12.8	12.6	12.0
18-097-0079	E. 75th St.	Marion	14.7	12.4	12.2	11.6
18-097-0081	W 18th St	Marion	16.1	13.4	13.2	12.6
18-097-0083	E. Michigan St.	Marion	15.9	13.4	13.1	12.6

Updated Figure 7.1
Graph of Modeling Results for Central Indiana PM_{2.5} Monitors for 2009, 2012 and 2018

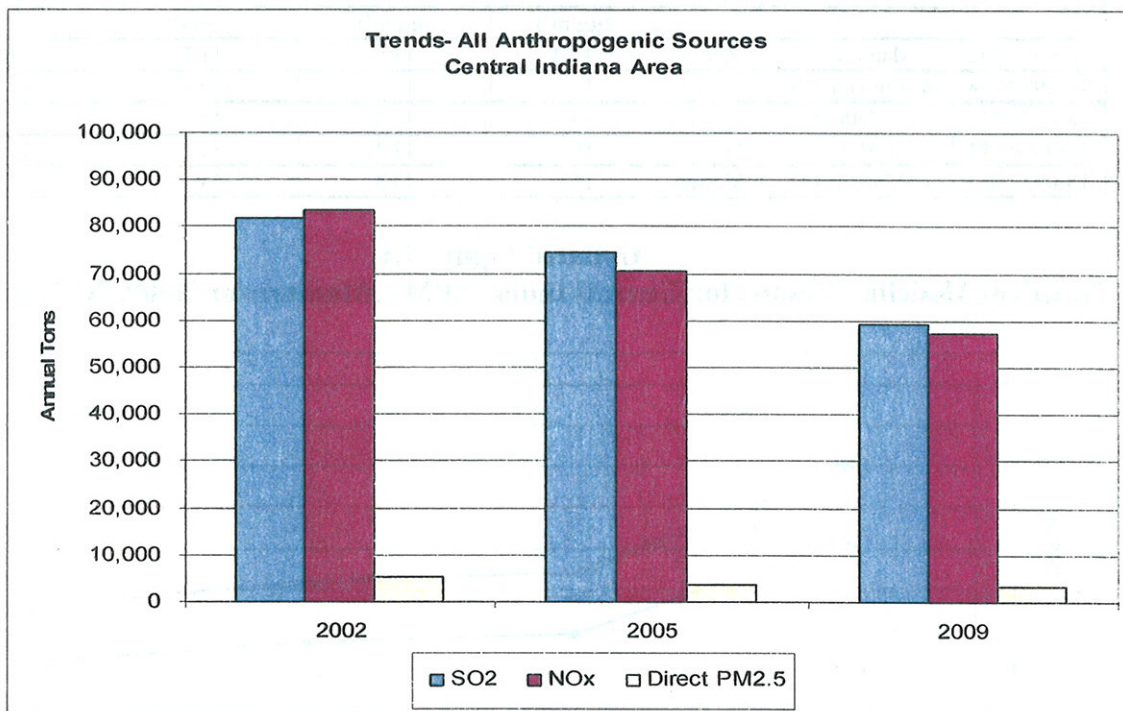


These modeling results validate the Attainment Demonstration because the SIP quality modeling still shows that future national and local emission control strategies to be phased-in or implemented in 2008 and 2009, will ensure that the area's air quality will achieve attainment of the NAAQS for annual fine particles by April 5, 2010 and provide an ample margin of safety. Enclosed for your information, please find a copy of LADCO's Regional Air Quality Analyses for Ozone, PM_{2.5}, and Regional Haze: Final Technical Support Document (Supplement), September 12, 2008.

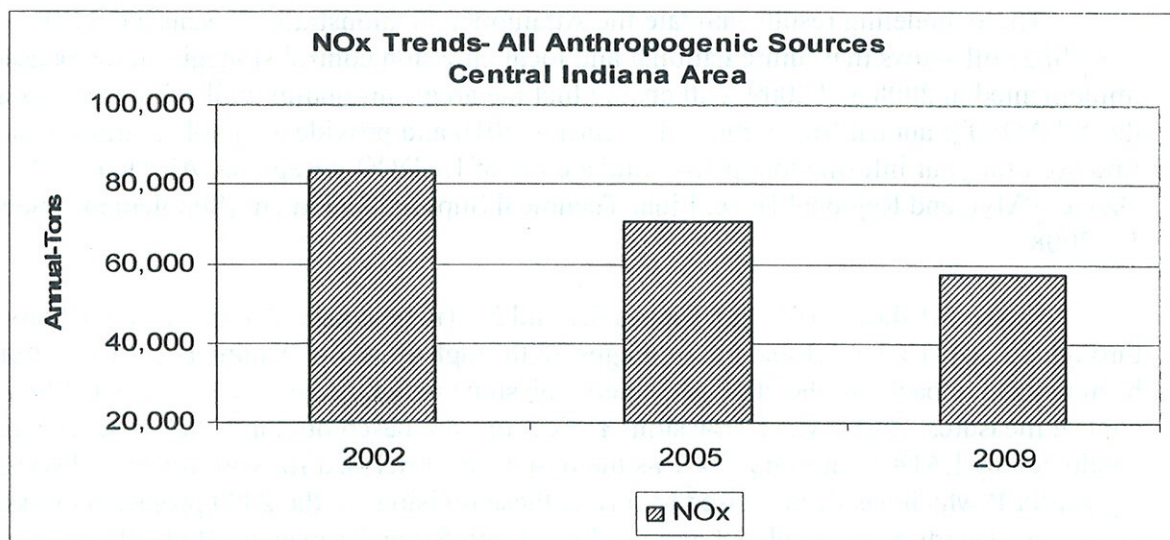
Charts 5.1 through 5.3 and Tables 5.1 and 5.2 (to be considered updates to Charts 5.1 through 5.3 and Tables 5.1 and 5.2 on Pages 38 through 40 of the Attainment Demonstration) have been revised to back out the 2009 projected emissions reductions associated with CAIR EGU control measures. The revised emissions projections are based on non-CAIR modeling recently conducted by LADCO utilizing 2007 as the base year. Enclosed for your review, please also find Appendix B which has been revised to reflect these revisions to the 2009 projected emissions inventory. Charts 5.1 through 5.3 and Tables 5.1 and 5.2 and Appendix B clearly illustrate that

regional NO_x and SO₂ emissions will continue to decline even without CAIR control measures in place leading to local reductions between 2005 (base year) and 2009 (attainment year). This revised emissions data also reaffirms the adequacy of the transportation conformity budget outlined in Table 8.2 of Section 8.0 on Page 56 of the Attainment Demonstration.

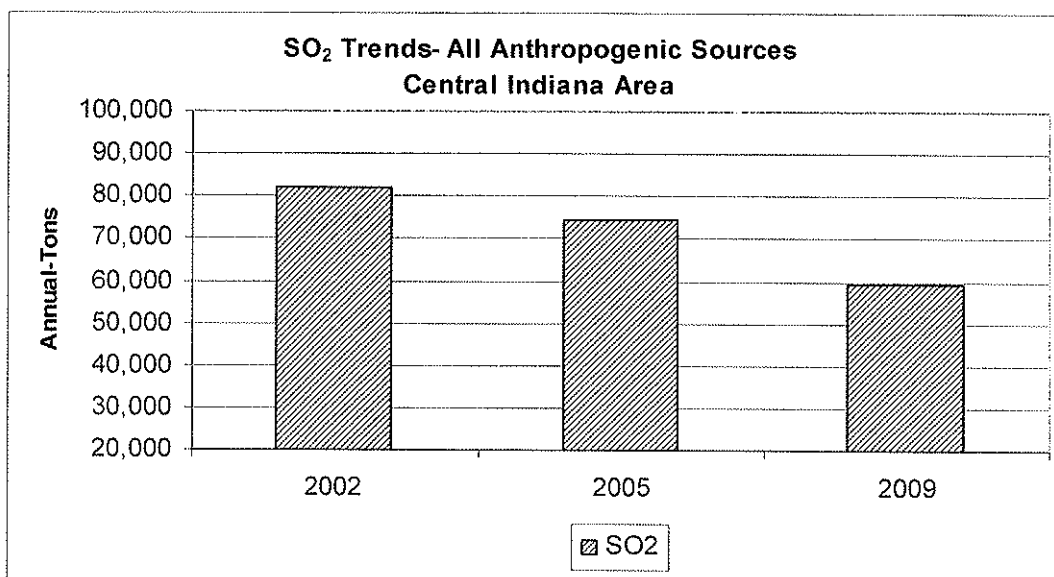
Updated Chart 5.1
Emissions Trends – All Anthropogenic Sources



Updated Chart 5.2
NO_x Emissions Trends



Updated Chart 5.3
SO₂ Emissions Trends



Updated Table 5.1
NO_x Emissions Inventory
(tons per year)

Sector	NO _x 2002	NO _x 2005	NO _x 2009	% Change 2002-2009	% Change 2005-2009
Area	5,518.12	5,155.20	5,253.80	-4.8%	1.9%
Non-road	11,973.65	11,237.76	9,198.65	-23.2%	-18.2%
On-road	47,815.51	37,796.08	27,178.31	-43.2%	-28.1%
Point	18,003.69	16,492.75	15,763.44	-12.4%	-4.4%
Total	83,310.97	70,681.79	57,394.20	-31.1%	-18.8%

Updated Table 5.2
SO₂ Emissions Inventory
(tons per year)

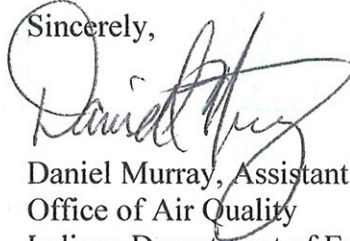
Sector	SO ₂ 2002	SO ₂ 2005	SO ₂ 2009	% Change 2002 - 2009	% Change 2005 - 2009
Area	8,676.35	2,066.89	2,087.56	-75.9%	1.0%
Non-road	1,121.00	1,298.08	199.47	-82.2%	-84.6%
On-road	1,533.99	506.46	158.30	-89.7%	-68.7%
Point	70,602.62	70,578.22	56,750.81	-19.6%	-19.6%
Total	81,933.95	74,449.65	59,196.14	-27.8%	-20.5%

Ms. Lynn Buhl
Page 6

IDEM believes that this technical addendum in conjunction with the Attainment Demonstration satisfies Indiana's obligation under Section 172(c) of the 1990 Amendments to the Clean Air Act to demonstrate how the area will attain the annual NAAQS for fine particles by the attainment date.

Therefore, IDEM hereby respectfully requests that the U.S. EPA proceed with final review and approval of the Attainment Demonstration and Technical Support Document for the Central Indiana Fine Particle Nonattainment Area. If you have any questions or need additional information, please contact Mr. Scott Deloney, Chief, Air Programs Branch, at (317) 233-5694 or sdeloney@idem.IN.gov or Ms. Christine Pedersen, Chief, Air Planning Section, at (317) 233-5684 or cpederse@idem.IN.gov.

Sincerely,



Daniel Murray, Assistant Commissioner
Office of Air Quality
Indiana Department of Environmental Management

DM/sad/ghf

Attachments: Revised Appendix B, Emissions Inventory
LADCO Regional Air Quality Analyses for Ozone, PM_{2.5}, and Regional Haze:
Final Technical Support Document (Supplement), September 12, 2008

cc: John Summerhays, U.S. EPA Region 5 (w/enclosures)
John Mooney, U.S. EPA Region 5 (no enclosures)
Cheryl Newton, U.S. EPA Region 5 (no enclosures)
Pat Morris, U.S. EPA Region 5 (w/enclosures)
Scott Deloney, IDEM
Christine Pedersen, IDEM
Gale Ferris, IDEM

Appendix B

Emissions Inventory (Annual/Tons)

Revised 10/2008

**Central Indiana Fine Particle Nonattainment Area
2005 Point Source Emissions Inventory**

HAMILTON 2005			
Facility Name	NO_x	PM_{2.5}	SO₂
FIRESTONE INDUSTRIAL PRODUCTS	6.10	3.81	0.05
INDIANA DUCTILE LLC	0.02	5.11	0.03
INDUSTRIAL DIELECTRICS, INC.		0.02	
PSI ENERGY-NOBLESVILLE	28.51	12.91	1.84
Total – Annual Tons	34.63	21.85	1.92
HENDRICKS 2005			
Facility Name	NO_x	PM_{2.5}	SO₂
PHOENIX FABRICATOR AND ERECTORS		3.37	
STEEL DYNAMICS, INC (SDI) BAR PRODUCTS	97.83	26.77	87.38
TWIN BRIDGES RECYCLING & DISPOSAL FACIL	197.87	4.23	18.22
Total	295.7	34.37	105.6
JOHNSON 2005			
Facility Name	NO_x	PM_{2.5}	SO₂
ESSEX GROUP, INC.	0	0	0
SONOCO FLEXIBLE PACKAGING	6.48	0.52	0.04
Total	6.48	0.52	0.04

MARION 2005			
Facility Name	NO_x	PM_{2.5}	SO₂
ALLISON TRANSMISSION GENERAL MOTORS CORP	276.17	15.05	13.38
ASPHALT MATERIALS, INC.	7.30	0.56	2.28
C.C. PERRY K STEAM PLANT	1,481.51	18.12	3,195.79
CARGILL DRY CORN INGREDIENTS	3.83	9.78	0.02
CITIZENS GAS & COKE	780.58	108.68	193.1
CITIZENS GAS & COKE UTILITY - LNG SOUTH	44.65	0.36	0.01
CMW, INC.	0	0	0
COMMERCIAL FINISHING	0.45	0.03	0
COVANTA INDIANAPOLIS, INC.	1,087.24	8.23	55.02
CRYOVAC RIGID PACKAGING CRYOVAC, INC.		0.02	
DAIMLER CHRYSLER CORPORATION FOUNDRY	24.15	23.37	16.6
DORSEY PAVING INC	0.03	0.04	0
ELI LILLY AND COMPANY (LCC)	0.18	0.29	0.15
EPS (D/B/A/ VALSPAR COATINGS)	1.82	0.22	0.01
FEDERAL EXPRESS	5.32	0.15	0.67
FIBERGLAS & PLASTIC FABRICATING INC.		0	
GEORGETOWN SUBSTATION GENERATING PLANT	2.53	0.58	0.05
INDIANAPOLIS BELMONT WWTP	141.24	3.08	12.70
INDY RAILWAY SERVICE CORP.		2.85	
INTERNATIONAL TRUCK AND ENGINE CORP.	15.58	204.11	4.99
INTERSTATE BRANDS CORP.	5.17	0.39	0.03
INTERSTATE CASTINGS	0.02	10.84	0.04
IPL HARDING STREET STATION	4,601.77	117.64	49,350.93
IVC INDUSTRIAL COATING		0.25	
NATIONAL STARCH & CHEMICAL CORPORATION	66.41	107.59	8.82
PARTS CLEANING TECHNOLOGIES, LLC	0.47	0.02	0
PEPL - ZIONSVILLE COMPRESSOR STATION	2,527.63	21.44	0.33
QUEMETCO, INC.	263.66	13.94	104.5
QWEST - T1	0.66	0	0.14
QWEST - POP	0.31	0	0.01
ROLLS-ROYCE CORPORATION. PLANT 5 & 8	142.28	26.86	211.39
ST VINCENT HOSPITAL	1.64	0.54	0.03
SOUTH SIDE LANDFILL, INC.	5.43	1.98	7.75
UNITED AIRLINES INDPLS MAINTENANCE CENTR	4.62	0.53	0.05
VERTELLUS SPECIALTIES	142.42	12.51	37.81
WEYERHAEUSER	2.01	0.15	0.01
WISHARD MEMORIAL HOSPITAL	8.40	2.37	2.18
Total	11,645.48	712.57	53,218.79

MORGAN 2005			
Facility Name	NO_x	PM_{2.5}	SO₂
GENERAL SHALE BRICK, INC. - PLANTS 20/32	53.65	91.53	396.60
HYDRAULIC PRESS BRICK CO.	166.09	51.35	428.18
IPL EAGLE VALLEY STATION	4,290.72	31.86	16,427.09
TOTAL	4,510.46	174.74	17,251.87
	NO_x	PM_{2.5}	SO₂
CENTRAL INDIANA TOTAL	16,492.75	944.05	70,578.22

2005				
COUNTY	Sector	NO_x	PM_{2.5}	SO₂
HAMILTON	AREA	609.25	116.47	242.04
HAMILTON	NONROAD	2,767.53	236.39	350.31
HAMILTON	POINT	34.63	21.85	1.92
HENDRICKS	AREA	299.49	93.62	125.13
HENDRICKS	NONROAD	1,537.28	131.50	205.19
HENDRICKS	POINT	295.70	34.37	105.60
JOHNSON	AREA	426.96	119.98	157.37
JOHNSON	NONROAD	955.90	80.88	109.70
JOHNSON	POINT	6.48	0.52	0.04
MARION	AREA	3,615.29	471.04	1,448.16
MARION	NONROAD	5,525.38	416.47	583.59
MARION	POINT	11,645.48	712.57	53,218.79
MORGAN	AREA	204.21	211.13	94.19
MORGAN	NONROAD	451.67	44.31	49.28
MORGAN	POINT	4,510.46	174.74	17,251.87
MPO 5-COUNTY TOTAL	ON-ROAD	37,796.08	668.53	506.46

2009				
County	Sector	NO_x	PM_{2.5}	SO₂
HAMILTON	AREA	624.82	129.26	247.06
HAMILTON	NONROAD	2,307.04	189.45	53.62
HAMILTON	POINT	34.67	25.76	1.92
HENDRICKS	AREA	307.64	106.27	127.07
HENDRICKS	NONROAD	1,281.05	102.59	31.32
HENDRICKS	POINT	311.54	33.18	106.51
JOHNSON	AREA	435.74	135.37	160.09
JOHNSON	NONROAD	787.93	64.57	16.96
JOHNSON	POINT	6.07	0.49	0.04
MARION	AREA	3,674.89	486.12	1,456.67
MARION	NONROAD	4,436.10	338.43	89.83
MARION	POINT	10,903.83	768.36	39,740.00
MORGAN	AREA	210.72	248.18	96.67
MORGAN	NONROAD	386.53	36.65	7.74
MORGAN	POINT	4,507.33	187.81	16,902.34
MPO 5-COUNTY TOTAL	ON-ROAD	27,178.31	493.74	158.30

2002 Emissions Inventory				
Location	Sector	NO_x	PM_{2.5}	SO₂
CENTRAL INDIANA AREA	AREA	5,518.12	2,934.95	8,676.35
CENTRAL INDIANA AREA	NON-ROAD	11,973.65	847.73	1,121.00
CENTRAL INDIANA AREA	ON-ROAD	47,815.51	842.37	1,533.99
CENTRAL INDIANA AREA	POINT	18,003.69	764.22	70,602.62
	Total	83,310.97	5,389.27	81,933.95

2005 Emissions Inventory				
Location	Sector	NO_x	PM_{2.5}	SO₂
CENTRAL INDIANA AREA	AREA	5,155.20	1,012.25	2,066.89
CENTRAL INDIANA AREA	NON-ROAD	11,237.76	909.54	1,298.08
CENTRAL INDIANA AREA	ON-ROAD	37,796.08	668.53	506.46
CENTRAL INDIANA AREA	POINT	16,492.75	944.05	70,578.22
	Total	70,681.79	3,534.37	74,449.65

2009 Emissions Inventory				
Location	Sector	NO_x	PM_{2.5}	SO₂
CENTRAL INDIANA AREA	AREA	5,253.80	1,105.19	2,087.56
CENTRAL INDIANA AREA	NON-ROAD	9,198.65	731.69	199.47
CENTRAL INDIANA AREA	ON-ROAD	27,178.31	493.74	158.30
CENTRAL INDIANA AREA	POINT	15,763.44	1,015.60	56,750.81
	Total	57,394.20	3,346.22	59,196.14

Emissions Inventory Totals				
Location	Sector	NO_x 2002	NO_x 2005	NO_x 2009
CENTRAL INDIANA AREA	AREA	5,518.12	5,155.20	5,253.80
CENTRAL INDIANA AREA	NON-ROAD	11,973.65	11,237.76	9,198.65
CENTRAL INDIANA AREA	ON-ROAD	47,815.51	37,796.08	27,178.31
CENTRAL INDIANA AREA	POINT	18,003.69	16,492.75	15,763.44
	Total	83,310.97	70,681.79	57,394.20
Location	Sector	PM_{2.5} 2002	PM_{2.5} 2005	PM_{2.5} 2009
CENTRAL INDIANA AREA	AREA	2,934.95	1,012.25	1,105.19
CENTRAL INDIANA AREA	NON-ROAD	847.73	909.54	731.69
CENTRAL INDIANA AREA	ON-ROAD	842.37	668.53	493.74
CENTRAL INDIANA AREA	POINT	764.22	944.05	1,015.60
	Total	5,389.27	3,534.37	3,346.22
Location	Sector	SO₂ 2002	SO₂ 2005	SO₂ 2009
CENTRAL INDIANA AREA	AREA	8,676.35	2,066.89	2,087.56
CENTRAL INDIANA AREA	NON-ROAD	1,121.00	1,298.08	199.47
CENTRAL INDIANA AREA	ON-ROAD	1,533.99	506.46	158.3
CENTRAL INDIANA AREA	POINT	70,602.62	70,578.22	56,750.81
	Total	81,933.96	74,449.65	59,196.14

Regional Air Quality Analyses for Ozone, PM2.5, and Regional Haze: Final Technical Support Document (Supplement), September 12, 2008

The purpose of this paper is to summarize a new modeling analysis performed by the Lake Michigan Air Directors Consortium (LADCO) to address the effect of the recent court decision vacating EPA's Clean Air Interstate Rule (CAIR). This new modeling is intended to supplement the LADCO Technical Support Document ("Regional Air Quality Analyses for Ozone, PM2.5, and Regional Haze: Final Technical Support Document", April 25, 2008), which summarizes the air quality analyses conducted by LADCO and its contractors to support the development of State Implementation Plans for ozone, PM2.5, and regional haze in the States of Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Compared to the previous LADCO modeling (Round 5.1), the new modeling shows similar results for ozone, but much more nonattainment for PM2.5 and higher visibility levels for regional haze. Specifically, the new modeling shows:

Ozone: Attainment of the 0.08 ppm standard by 2009 everywhere in the region, except Holland, MI, and nonattainment of the 0.075 ppm standard through at least 2018.

PM2.5: Widespread nonattainment of annual (15 ug/m^3) and daily (35 ug/m^3) standards.

Haze: Higher visibility levels on the 20% worst visibility days in 2018 in Class I areas in the eastern U.S., resulting in most areas being above the glide path.

Background: On July 11, 2008, the U.S. Court of Appeals for D.C. Circuit vacated EPA's CAIR rule (cite). The reductions in NOx and SO2 emissions associated with this rule were a key part of the LADCO States' attainment demonstrations for ozone and PM2.5 and the reasonable progress determinations for regional haze. LADCO's previous modeling (Round 5.1) relied on EGU emission projections from EPA's IPM3.0 analysis, which assumed implementation of Phases I and II of CAIR. For this new modeling, alternative EGU emission projections were developed, which did not rely on CAIR (or IPM).

Model Set-Up: The new modeling was performed consistent with LADCO's previous modeling (Round 5.1):

Model Version: CAMx v4.50beta_deposition

Future Years: 2009, 2012, 2018

Runs: (a) Ozone: Summer 2005 meteorology with 12 km grids

(b) PM2.5 and haze: Full year 2005 meteorology with 36 km grids

Emission Scenarios: The new modeling assumed the same set of "on the books" controls as in LADCO's previous modeling (Round 5.1) for all sectors, except EGUs. In light of the CAIR decision, three new EGU scenarios were prepared:

Scenario A: 2007 CEM-based emissions were projected for all states in the modeling domain based on EIA growth rates by state (NERC region) and fuel type. The assumed growth rates for the Midwest States were: MAIN (IL, IA, MO, WI): 8.8% (2007-2018); ECAR (IN, KY, MI, OH): 13.5% (2007-2018); and MAPP (MN): 15.1% (2007-2018). No control was applied. The annual emissions were temporalized based on profiles derived from 2004-2006 CEM data. (Note, these are the same temporal profiles used in Round 5.1.)

Scenario B. Scenario A emissions for the LADCO States and select neighboring states (e.g., MN, IA, MO, KY, TN, and WV) were adjusted by applying legally enforceable controls (i.e., emission reductions required by a Consent Decree, state rule, or permit). Only those legally enforceable controls identified (and justified) by the States were applied. The States also supplied the appropriate control factors. A table summarizing the Scenario B controls is provided in Appendix I.

Scenario C. For the years 2009 and 2012, Scenario A emissions for all states were adjusted by applying all planned SO₂ and NO_x controls based on the July 10 CAMD list (i.e., 90% reduction for scrubbers, 95% reduction for SCRs). Because the July 10 CAMD list only includes controls generally out to 2011, additional SO₂ and NO_x controls for the year 2018 were assumed for all BART-eligible EGUs in the five LADCO State plus MN, IA, MO, KY, TN, and MO list (i.e., 90% reduction for scrubbers, 95% reduction for SCRs).¹ All Scenario B controls were included in Scenario C. A table summarizing the Scenario C controls is provided in Appendix II.

Table 1 and Figure 1 provide a summary of the 5-state regional NO_x and SO₂ emissions for each scenario and future year. (Note, the CAIR emissions included here are based on EPA's IPM3.0 modeling.) Several comments on the emissions should be noted:

Summer NO_x

- There is little difference between the three alternative scenarios and CAIR. This suggests that summer ozone concentrations for the alternative scenarios are likely to be similar to those predicted with CAIR (i.e., Round 5.1).

Annual NO_x:

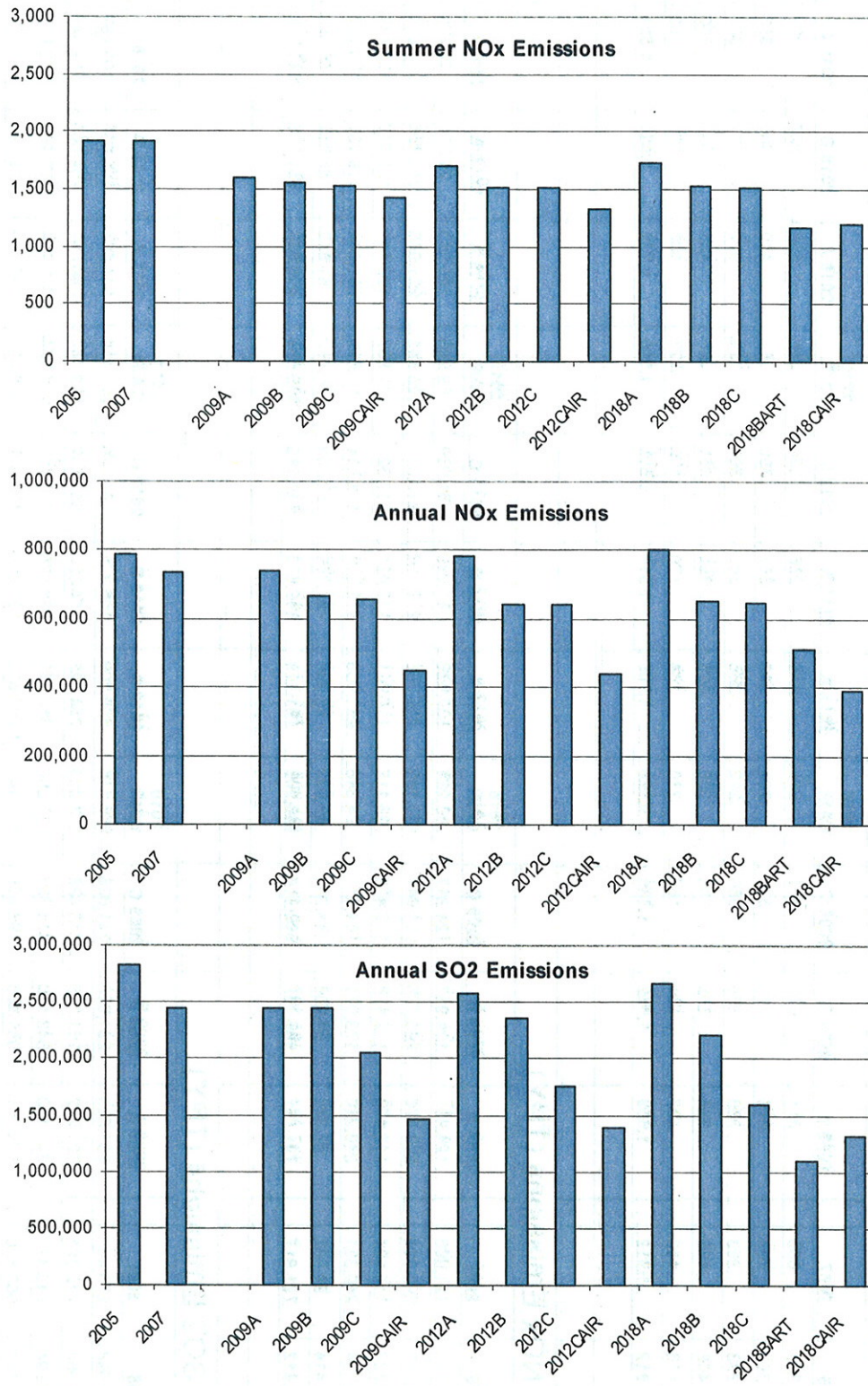
- There is a significant change in emissions between scenarios, mostly during the non-summer months.
- Scenario B reflects application of NO_x controls in several states (e.g., IL, OH, WI).
- Because there are relatively few SCRs (in the LADCO States) on the CAMD list, Scenario C results in only a small emissions decrease compared to Scenario B.
- Assumed BART controls result in a significant emissions decrease.

Annual SO₂

- There is a significant change in emissions between scenarios.
- Scenario B reflects application of SO₂ controls in several states (e.g., IL, OH, WI).
- Because there are several FGDs (in the LADCO States) on the CAMD list, Scenario C results in a large emissions decrease compared to Scenario B.
- Assumed BART controls result in a significant emissions decrease (i.e., even lower emissions than the IPM-estimated CAIR emissions).

¹ A subsequent analysis was conducted with the following inventory changes: (a) 95% reduction for scrubbers, 90% reduction for SCRs (consistent with EPA's default assumptions for IPM), and (b) revisions provided for a few plants in Indiana and Minnesota. The changes resulted in a relatively small difference in the regional NO_x and SO₂ emissions (e.g., about a 2% NO_x increase and about a 1-2% decrease in SO₂). To assess the impact of the changes, PM_{2.5} modeling was conducted with the new Scenario B and Scenario C emissions for 2012. The modeling showed little change in the predicted PM_{2.5} concentrations.

Figure 1. Regional NOx and SO2 Emissions



Modeling Results: Several tables summarizing the modeling results are provided:

Table 2 - future year ozone and PM2.5 concentrations for key monitors in the LADCO region

Table 3 - number of monitoring sites greater than the National Ambient Air Quality Standards (NNAQS)

Table 4 – visibility levels for Class I areas in the eastern U.S.

Note, given that Scenario B and BART controls were only applied in an 11-state Midwest region, the validity of the results for other Class I areas in the eastern U.S. may be questionable. The Scenario C controls, on the other hand, cover all states and are, thus, likely valid in other Class I areas.

Spatial plots of the future year ozone and PM2.5 concentrations are provided in Figures 2 – 4.

Based on these results, the following key findings should be noted:

Ozone

- There is little change from the previous LADCO modeling (Round 5.1 with CAIR)
- The modeling shows attainment of the 0.08 ppm (85 ppb) standard by 2009, except Holland. (Note, Holland does meet this standard by 2012.)
- The modeling shows nonattainment of the 0.075 ppm (75 ppb) standard through 2018.

PM2.5 - Annual

- There is a significant change from the previous LADCO modeling (Round 5.1 with CAIR)
- The modeling shows extensive nonattainment of the annual standard.

PM2.5 - Daily

- There is a significant change from the previous LADCO modeling (Round 5.1 with CAIR)
- The modeling shows extensive nonattainment of the daily standard.

Haze

- There is a significant change from the previous LADCO modeling (Round 5.1 with CAIR)
- The modeling shows higher visibility levels in 2018 for the 20% worst visibility days (average about 0.5 deciviews for the northern Class I areas). The resulting visibility levels in the northern Class I areas (except Voyageurs) are above the glide path.

Table 2a. Ozone Modeling Results

Site	Site ID	2005		2009				2012				2018			
		Base Year	Scen. A	Round 5 without CAIR			Round 5 with CAIR	Round 5 without CAIR			Round 5 with CAIR	Round 5 without CAIR			Round 5 with CAIR
				Scen. B	Scen. C	Scen. C		Scen. A	Scen. B	Scen. C		Scen. A	Scen. B	Scen. C	
Lake Michigan Area															
Chippewaukee	550590019	84.7	82.2	82.2	82.0	82.3	82.3	81.1	80.8	80.6	80.9	77.2	77.2	77.0	76.0
Racine	551070017	80.3	77.8	77.8	77.5	77.5	77.5	76.6	76.2	76.1	76.1	72.9	72.3	72.1	71.1
Milwaukee-Bayside	550890085	82.7	79.9	79.9	79.7	79.8	79.8	78.5	78.0	78.0	78.0	74.3	73.6	73.4	72.4
Harrington Beach	550890009	83.3	80.1	80.1	79.9	80.1	80.1	78.6	78.1	78.0	78.3	73.9	73.2	73.1	72.2
Manitowoc	550710007	85.0	80.8	80.8	80.7	80.8	80.8	79.0	78.5	78.4	78.6	73.9	73.2	73.1	72.5
Sheboygan	551170006	88.0	84.1	84.0	83.9	84.0	84.0	82.2	81.7	81.5	81.8	76.9	76.0	75.9	74.8
Kewaunee	550610002	82.7	78.2	78.2	78.0	78.1	78.1	76.4	75.9	75.7	75.9	71.3	70.7	70.5	69.4
Door County	550290004	88.7	84.1	84.1	83.9	83.9	83.9	82.0	81.4	81.3	81.5	76.5	75.6	75.5	74.2
Hammond	180892008	77.7	76.2	76.2	76.0	75.4	75.4	75.6	75.3	75.2	74.6	73.2	72.7	72.6	71.7
Whiting	180890030	79.3	77.8	77.8	77.7	77.0	77.0	77.2	76.9	76.8	76.2	74.8	74.3	74.2	73.1
Michigan City	180910005	77.0	74.5	74.5	74.3	73.9	73.9	73.3	72.9	72.8	72.5	69.7	69.2	69.1	68.1
Ogden Dunes	181270020	78.3	76.3	76.3	76.2	75.6	75.6	75.5	75.1	75.0	74.5	72.9	72.3	72.1	71.2
Holland	260050003	90.0	85.7	85.7	85.5	85.3	85.3	83.5	83.1	82.9	82.8	78.2	77.5	77.3	76.0
Jenison	261390005	82.0	76.8	76.8	76.7	76.0	76.0	75.1	74.6	74.5	74.5	70.2	69.6	69.5	67.9
Muskegon	261210039	85.0	80.6	80.6	80.5	80.5	80.5	78.6	78.2	78.1	78.0	73.5	72.8	72.8	71.5
Indianapolis Area															
Noblesville	189571001	82.7	78.3	78.3	78.1	78.1	78.1	76.1	75.9	75.7	75.6	70.2	69.9	69.8	68.9
Fortville	180590003	78.0	74.1	74.1	73.9	73.9	73.9	71.9	71.8	71.7	71.4	66.7	66.5	66.3	65.4
Fort B. Harrison	180970050	78.7	75.4	75.3	75.2	75.1	75.1	73.8	73.6	73.6	73.2	70.6	70.3	70.2	69.3
Detroit Area															
New Haven	260990009	85.0	82.4	82.3	82.1	81.4	81.4	81.4	81.2	81.1	80.2	78.1	77.8	77.7	76.5
Warren	260991003	84.0	82.4	82.3	82.2	81.3	81.3	82.1	81.8	81.7	80.7	79.7	79.4	79.3	78.0
Port Huron	261470005	82.7	78.2	78.2	78.1	77.5	77.5	76.5	76.3	76.2	75.5	72.6	72.5	72.3	70.9
Cleveland Area															
Ashtabula	390071001	89.0	84.2	84.1	83.9	83.4	83.4	82.0	81.8	81.6	81.0	76.8	76.5	76.4	74.8
Geauga	390550004	79.3	75.8	75.8	75.6	74.7	74.7	74.0	73.8	73.7	72.7	69.5	69.2	69.1	67.6
Eastlake	390850003	86.3	83.1	83.1	82.9	81.9	81.9	81.8	81.6	81.5	80.5	78.2	78.0	77.8	76.5
Akron	391530020	83.7	79.1	79.1	79.0	78.1	78.1	76.9	76.7	76.6	75.6	70.9	70.6	70.4	68.7
Cincinnati Area															
Wilmington	390271002	82.3	77.3	77.4	77.1	77.5	77.5	76.3	75.2	74.8	74.9	70.1	69.9	69.5	67.1
Sycamore	390610006	84.7	81.5	81.4	81.1	81.9	81.9	80.4	80.2	79.8	80.3	76.4	76.0	75.7	73.5
Lebanon	391650007	87.7	82.8	82.8	82.4	83.0	83.0	80.8	80.7	80.3	80.7	75.4	75.1	74.8	72.6
Columbus Area															
London	390970007	79.7	75.0	75.0	74.8	75.0	75.0	73.0	72.8	72.7	72.6	68.1	67.8	67.6	65.9
New Albany	390490029	86.3	82.1	82.1	81.9	81.8	81.8	80.2	80.0	79.9	79.6	74.7	74.3	74.2	73.0
Franklin	290490028	80.3	76.7	76.6	76.5	75.9	75.9	75.1	74.9	74.8	74.1	70.5	70.2	70.1	70.2
St. Louis Area															
W. Alton (MO)	291831002	86.3	81.1	81.2	81.1	81.0	81.0	80.0	79.9	79.9	78.6	76.9	76.8	76.7	74.2
Orchard (MO)	291831004	87.0	82.1	82.1	82.0	82.0	82.0	80.9	80.8	80.7	80.0	77.7	77.6	77.4	75.2
Sunset Hills (MO)	291890004	82.3	79.2	79.2	79.1	78.7	78.7	78.3	78.1	78.1	77.1	75.3	75.2	75.1	73.0
Arnold (MO)	290990012	82.3	77.8	77.8	77.7	77.2	77.2	76.7	76.6	76.5	75.6	73.6	73.4	73.4	71.3
Margaretta (MO)	295100086	83.0	79.8	79.8	79.7	79.3	79.3	78.8	78.7	78.6	77.9	75.7	75.6	75.5	73.7
Maryland Heights (MO)	291890014	87.3	85.4	85.4	85.3	84.0	84.0	84.3	84.1	84.0	81.7	81.1	80.9	80.8	78.4

Table 2b. PM_{2.5} Modeling Results (Annual)

Site	Site ID	Base Year	2009				2012				2018			
			Round 5 without CAIR		Round 5 with CAIR		Round 5 without CAIR		Round 5 with CAIR		Round 5 without CAIR		Round 5 with CAIR	
			Scen. A	Scen. B	Scen. C	Scen. C	Scen. A	Scen. B	Scen. C	Scen. C	Scen. A	Scen. B	Scen. C	Scen. C-BART
Illinois														
Chicago - Washington HS	170310022	15.2	14.9	14.8	14.5	14.1	14.8	14.7	14.2	14.0	15.0	14.6	14.2	13.7
Chicago - Mayfair	170310052	15.8	15.1	15.1	14.8	14.4	15.1	14.9	14.5	14.2	15.1	14.7	14.3	13.7
Chicago - Springfield	170310057	15.0	14.6	14.6	14.3	13.9	14.6	14.4	14.0	13.8	14.8	14.4	14.0	13.4
Chicago - Lawndale	170310076	14.9	14.5	14.5	14.2	13.8	14.5	14.3	13.9	13.7	14.7	14.3	13.9	13.3
Blue Island	170312001	14.8	14.4	14.4	14.0	13.7	14.4	14.2	13.8	13.6	14.5	14.1	13.7	13.2
Summit	170313301	15.2	14.9	14.9	14.6	14.2	14.9	14.7	14.3	14.0	15.0	14.6	14.3	13.7
Cicero	170316005	15.5	15.1	15.1	14.8	14.4	15.1	14.9	14.5	14.3	15.2	14.9	14.4	13.9
Granite City	171191007	16.7	16.3	16.2	15.9	15.1	16.1	16.0	15.3	14.9	15.9	15.6	14.9	14.2
E. St. Louis	171630010	15.6	15.2	15.2	14.8	14.1	15.0	14.9	14.3	13.9	14.9	14.6	14.0	13.3
Indiana														
Jeffersonville	180190005	16.4	15.8	15.7	14.8	13.8	15.8	15.6	14.5	13.7	16.0	15.5	14.3	13.7
Jasper	180372001	15.2	14.3	14.2	13.4	12.4	14.2	14.0	13.0	12.2	14.3	13.9	12.8	12.1
Gary	180890031	15.6	13.9	13.9	13.5	13.0	13.8	13.6	13.1	12.8	13.7	13.4	12.9	12.3
Indy-Washington Park	180970078	15.3	14.4	14.4	13.6	12.8	14.3	14.2	13.2	12.6	14.3	13.9	12.9	12.2
Indy-W 18th Street	180970081	16.0	15.1	15.1	14.3		15.0	14.9	13.9		15.0	14.6	13.5	12.8
Indy- Michigan Street	180970083	15.9	15.0	15.0	14.2	13.4	14.9	14.8	13.8	13.1	14.9	14.5	13.5	12.8
Michigan														
Allen Park	261630001	14.5	11.0	14.0	13.5	13.0	14.0	13.8	13.2	12.8	13.9	13.6	13.0	12.4
Southwest HS	261630015	15.9	15.3	15.3	14.8	14.2	15.2	15.0	14.4	13.9	15.1	14.8	14.1	13.5
Linwood	261630016	14.6	14.1	14.1	13.6	13.1	14.0	13.9	13.3	12.8	13.9	13.6	13.0	12.5
Dearborn	261630033	17.5	17.0	17.0	16.4	15.8	16.9	16.7	16.0	15.5	16.8	16.4	15.7	15.1
Wyandotte	261630036	14.7	14.2	14.1	13.6	13.1	14.1	13.9	13.3	12.8	14.0	13.7	13.0	12.4
Ohio														
Middletown - Bonita	390170003	16.2	15.3	15.2	14.3	13.5	15.2	15.0	13.9	13.2	15.2	14.8	13.7	13.0
Fairfield	390170016	15.8	15.1	15.0	14.1	13.1	15.1	14.9	13.7	12.9	15.2	14.7	13.5	12.8
Cleveland-28th Street	390350027	15.4	14.9	14.9	14.3	13.5	14.7	14.5	13.9	13.2	14.6	14.2	13.5	12.7
Cleveland-St. Tikhon	390350038	17.4	16.7	16.7	16.0	15.2	16.5	16.3	15.6	14.8	16.3	16.0	15.2	14.4
Cleveland-Broadway	390350045	16.5	15.9	15.8	15.2	14.4	15.6	15.5	14.8	14.0	15.5	15.1	14.4	13.5
Cleveland-GT Craig	390350060	17.1	16.5	16.4	15.8	15.0	16.3	16.1	15.4	14.6	16.1	15.7	15.0	14.2
Newburg Hts - Harvard Ave	390350065	16.0	15.4	15.3	14.7	14.0	15.2	15.0	14.3	13.6	15.1	14.7	14.0	13.2
Columbus - Fairgrounds	390490024	15.3	14.6	14.5	13.7	12.9	14.4	14.1	13.2	12.6	14.2	13.8	12.8	12.2
Columbus - Ann Street	390490025	15.1	14.4	14.3	13.5	12.7	14.2	13.9	13.1	12.4	14.1	13.6	12.6	12.0
Cincinnati - Seymour	390610014	17.3	16.6	16.5	15.5	14.5	16.5	16.3	15.1	14.3	16.6	16.2	14.9	14.2
Cincinnati - Taft Ave	390610040	15.5	14.8	14.7	13.8	12.8	14.8	14.6	13.4	12.6	14.9	14.5	13.2	12.5
Cincinnati - 8th Ave	390610042	16.9	12.0	16.1	15.0	14.0	16.1	15.9	14.7	13.8	16.2	15.7	14.4	13.7
Sharonville	390610043	15.6	14.9	14.8	13.9	12.9	14.9	14.7	13.5	12.7	14.9	14.5	13.3	12.3
Norwood	390617001	16.2	15.5	15.4	14.4	13.4	15.4	15.2	14.0	13.2	15.5	15.1	13.8	12.8
St. Bernard	390618001	17.6	16.8	16.7	15.7	14.7	16.7	16.5	15.3	14.4	16.8	16.4	15.1	14.3
Steubenville	390810016	15.8	14.5	14.4	13.5	12.8	14.3	14.2	13.1	12.5	14.8	14.5	13.3	12.9
Mingo Junction	390811001	16.5	15.2	15.2	14.3	13.5	15.0	14.9	13.8	13.2	15.6	15.2	14.0	13.6
Ironton	390870010	15.2	14.8	14.6	13.6	12.8	14.8	14.4	13.2	12.5	14.8	14.1	12.8	12.4
Dayton	391130032	15.5	14.9	14.8	14.0	13.2	14.8	14.6	13.6	12.9	14.8	14.3	13.3	12.6
New Boston	391450013	14.7	12.0	14.0	13.0	12.1	14.1	13.8	12.5	11.9	14.2	13.6	12.2	11.6
Canton - Duerber	391510017	16.3	15.7	15.6	14.8	14.0	15.5	15.3	14.4	13.6	15.4	14.9	14.0	13.3
Canton - Market	391510020	14.6	11.0	14.1	13.3	12.6	13.9	13.7	12.9	12.3	13.9	13.5	12.6	12.0
Akron - Brittain	391530017	15.1	14.6	14.5	13.8	13.0	14.4	14.2	13.4	12.7	14.3	13.8	13.0	12.3
Akron - W. Exchange	391530023	14.3	13.7	13.7	13.0	12.3	13.6	13.3	12.6	12.0	13.4	13.0	12.2	11.6

Table 2c. PM_{2.5} Modeling Results (Daily)

Key Site	County	Site ID	Base Year	2009				2012				2018			
				Round 5 without CAIR		Round 5 with CAIR		Round 5 without CAIR		Round 5 with CAIR		Round 5 without CAIR		Round 5 with CAIR	
				Scen. A	Scen. B	Scen. C		Scen. A	Scen. B	Scen. C		Scen. A	Scen. B	Scen. C	
Illinois															
Chicago - Washington HS	Cook	170310022	36.6	36	36	36	36	36	36	37	36	37	36	37	37
Chicago - Mayfair	Cook	170310052	40.3	37	37	37	37	37	37	37	36	38	37	37	36
Chicago - Springfield	Cook	170310057	37.4	34	34	33	32	35	34	33	32	36	34	33	31
Chicago - Lawndale	Cook	170310076	38.1	35	35	35	35	36	35	36	35	36	35	36	34
McCook	Cook	170311016	43.0	39	39	39	39	40	39	40	39	40	40	41	38
Blue Island	Cook	170312001	37.7	35	35	35	34	36	35	36	34	36	35	36	33
Schiller Park	Cook	170313103	41.6	40	40	40	39	40	40	40	39	41	40	40	39
Summit	Cook	170313301	40.2	38	38	39	38	39	38	39	38	39	38	39	37
Maywood	Cook	170316005	39.2	38	38	38	38	38	38	39	38	39	38	39	37
Granite City	Madison	171191007	39.2	36	36	35	33	36	35	34	33	36	35	35	32
E. St. Louis	St. Clair	171630010	33.7	31	31	30	28	31	30	29	28	31	30	30	28
Indiana															
Jeffersonville	Clark	180190005	38.4	35	33	31	29	35	34	32	31	37	35	34	31
Jasper	Dubois	180372001	36.2	32	32	30	28	32	32	30	29	33	31	31	28
Gary - IITRI	Lake	180890022	39.0	35	35	35	34	35	34	35	34	36	36	35	35
Gary - Burr School	Lake	180890026	39.0	34	34	34	33	34	34	35	34	34	34	34	32
Gary	Lake	180890031	35.2	29	28	26	24	28	28	24	24	29	28	27	27
Indy-West Street	Marion	180970043	38.0	34	34	33	33	35	35	34	33	36	35	34	33
Indy-English Avenue	Marion	180970066	38.0	34	34	32	32	35	34	33	32	35	34	33	32
Indy-Washington Park	Marion	180970078	36.6	33	33	32	31	33	33	32	31	34	33	32	32
Indy-W 18th Street	Marion	180970081	38.3	33	33	31	31	33	33	32	31	34	33	32	31
Indy- Michigan Street	Marion	180970083	36.0	32	32	29	28	32	31	29	28	32	31	29	29
Michigan															
Luna Pier	Monroe	261150005	38.9	34	34	32	32	34	34	32	32	34	33	32	31
Oak Park	Oakland	261250001	39.9	38	38	37	36	38	37	37	36	38	37	37	35
Port Huron	St. Clair	261470005	39.6	36	35	35	34	35	35	35	34	35	35	34	33
Ypsilanti	Washtenaw	261610008	39.5	37	37	36	35	37	36	36	35	37	36	36	34
Allen Park	Wayne	261630001	38.6	36	36	36	35	36	35	35	34	36	35	35	33
Southwest HS	Wayne	261630015	40.1	36	36	36	35	36	35	35	35	36	35	35	33
Linwood	Wayne	261630016	43.0	40	40	40	39	40	40	40	39	40	39	39	38
E 7 Mile	Wayne	261630019	41.0	39	39	39	38	39	39	39	38	39	38	38	37
Dearborn	Wayne	261630033	43.9	41	41	41	40	41	41	41	40	41	40	40	39
Wyandotte	Wayne	261630036	37.2	36	36	36	35	35	35	35	35	35	35	35	34
Newberry	Wayne	261630038	42.7	39	39	39	38	39	38	38	37	39	38	38	36
FIA	Wayne	261630039	39.7	35	34	34	33	35	34	34	33	35	34	33	31
Ohio															
Middleton	Butler	390170003	39.3	33	32	29	28	33	33	29	28	34	32	29	27
Fairfield	Butler	390170016	37.1	32	31	29	27	31	30	28	28	32	30	29	28
	Butler	390170017	40.8	33	32	30	29	33	33	30	29	33	32	30	28
Cleveland-28th Street	Cuyahoga	390350027	36.9	34	34	33	32	34	33	33	32	34	33	33	31
Cleveland-St. Tikhon	Cuyahoga	390350038	44.2	40	40	37	36	40	39	36	35	40	38	36	34
Cleveland-Broadway	Cuyahoga	390350045	38.8	35	35	33	31	35	34	32	30	35	34	31	29
Cleveland-GT Craig	Cuyahoga	390350060	42.1	39	39	38	37	39	38	38	37	39	38	37	35
Newburg Hts - Harvard Ave	Cuyahoga	390350065	38.9	35	35	33	31	35	34	32	30	36	35	32	30
Columbus - Fairgrounds	Franklin	390490024	38.5	34	34	33	32	34	33	32	32	34	34	33	31
Columbus - Ann Street	Franklin	390490025	38.5	34	33	31	31	33	33	31	31	34	33	31	30
Cincinnati	Hamilton	390610006	40.6	33	33	30	27	33	32	29	28	34	32	29	27

Table 2c. PM_{2.5} Modeling Results (Daily)

Key Site	County	Site ID	2005		2009				2012				2018				Round 5 with CAIR
			Base Year	Scen. A	Round 5 without CAIR		Scen. C	Round 5 without CAIR		Scen. A	Round 5 without CAIR		Scen. C	Round 5 without CAIR			
					Scen. B	Scen. B		Scen. A	Scen. B		Scen. C	Scen. A		Scen. B	Scen. C	Scen. A	
Cincinnati - Seymour	Hamilton	390610014	38.4	33	33	28	26	33	32	27	25	33	31	29	25	24	
Cincinnati - Taft Ave	Hamilton	390610040	36.7	31	30	26	24	31	30	26	24	32	29	26	23	23	
Cincinnati - 8th Ave	Hamilton	390610042	37.3	32	32	30	28	32	31	29	28	33	31	29	28	27	
Sharonville	Hamilton	390610043	36.0	32	31	30	28	32	31	29	28	32	31	29	28	27	
Norwood	Hamilton	390617001	38.8	34	33	32	30	33	33	31	30	34	33	31	30	29	
St. Bernard	Hamilton	390618001	40.6	35	35	32	30	35	34	31	30	35	33	32	31	29	
Steubenville	Jefferson	390810016	40.7	36	35	32	29	35	34	30	28	37	35	31	29	28	
Mingo Junction	Jefferson	390811001	42.0	37	37	33	30	37	36	32	30	38	36	32	30	30	
Dayton	Montgomery	391130032	37.8	34	33	31	30	33	33	31	30	34	33	31	31	30	
Canton - Dueber	Stark	391510017	38.6	33	32	30	28	33	31	30	28	33	30	29	28	27	
Akron - Brittain	Summit	391530017	38.1	33	33	31	30	33	32	31	30	33	32	30	29	29	
Wisconsin																	
Green Bay - Est High	Brown	550090005	37.1	35	34	35	35	34	35	35	34	33	33	33	32	32	
Madison	Dane	550250047	36.4	33	33	32	32	33	32	32	31	32	31	30	29	29	
Milwaukee-Health Center	Milwaukee	550790010	38.7	35	35	35	35	35	35	35	34	35	34	34	34	33	
Milwaukee-SER Hdqs	Milwaukee	550790026	37.4	34	34	34	34	34	34	34	34	34	34	34	34	33	
Milwaukee-Virginia FS	Milwaukee	550790043	39.9	37	37	37	36	37	36	37	36	36	36	37	36	36	
Milwaukee- Fire Dept Hdqs	Milwaukee	550790089	37.8	34	34	33	33	34	33	33	32	34	33	33	33	32	
Waukesha	Waukesha	551330027	35.5	32	32	32	31	32	32	32	31	32	31	31	30	29	

Table 3. Modeling Results: Number of Sites > NAAQS

Ozone (85 ppb)		Round 5 without CAIR				Round 5 w/ CAIR
2009	Baseyear	Scen. A	Scen. B	Scen. C	Scen. C-BART	
IL	0	0	0	0	----	0
IN	0	0	0	0	----	0
MI	3	1	1	1	----	1
OH	4	0	0	0	----	0
WI	2	0	0	0	----	0
Total	9	1	1	1		1
2012						
IL	0	0	0	0	----	0
IN	0	0	0	0	----	0
MI	3	0	0	0	----	0
OH	4	0	0	0	----	0
WI	2	0	0	0	----	0
Total	9	0	0	0		0
2018						
IL	0	0	0	0	0	0
IN	0	0	0	0	0	0
MI	3	0	0	0	0	0
OH	4	0	0	0	0	0
WI	2	0	0	0	0	0
Total	9	0	0	0	0	0
Ozone (75 ppb)		Round 5 without CAIR				Round5 w/ CAIR
2009	Baseyear	Scen. A	Scen. B	Scen. C	Scen. C-BART	
IL	12	6	6	6	----	4
IN	26	10	9	8	----	5
MI	21	12	12	12	----	12
OH	45	27	25	24	----	21
WI	12	10	10	10	----	10
Total	116	65	62	60	----	52
2012						
IL	12	3	3	3	----	1
IN	26	5	4	4	----	3
MI	21	9	8	8	----	6
OH	45	18	14	12	----	11
WI	12	10	9	9	----	9
Total	116	45	38	36		30
2018						
IL	12	0	0	0	0	0
IN	26	0	0	0	0	0
MI	21	3	3	3	3	3
OH	45	3	3	2	1	1
WI	12	3	2	1	1	1
Total	116	9	8	6	5	5

PM2.5 - Annual		Round 5 without CAIR				Round 5 w/ CAIR
2009	Baseyear	Scen. A	Scen. B	Scen. C	Scen. C-BART	
IL	7	4	4	1	----	1
IN	6	2	2	0	----	0
MI	2	2	2	1	----	1
OH	26	13	12	5	----	1
WI	0	0	0	0	----	0
Total	41	21	20	7		3
2012						
IL	7	3	1	1	----	0
IN	6	1	1	0	----	0
MI	2	2	1	1	----	1
OH	26	12	9	4	----	0
WI	0	0	0	0	----	0
Total	41	18	12	6		1
2018						
IL	7	3	1	0	0	0
IN	6	1	1	0	0	0
MI	2	2	1	1	1	1
OH	26	13	8	2	0	0
WI	0	0	0	0	0	0
Total	41	19	11	3	1	1
PM2.5 - Daily		Round 5 without CAIR				Round 5 w/ CAIR
2009	Baseyear	Scen. A	Scen. B	Scen. C	Scen. C-BART	
IL	16	7	7	6	----	6
IN	13	0	0	0	----	0
MI	14	10	9	9	----	5
OH	31	4	3	2	----	2
WI	8	1	1	1	----	1
Total	82	22	20	18	----	14
2012						
IL	16	9	6	8	----	6
IN	13	0	0	0	----	0
MI	14	8	6	6	----	5
OH	31	3	3	2	----	1
WI	8	1	1	1	----	1
Total	82	21	16	17		13
2018						
IL	16	10	6	8	8	5
IN	13	4	1	1	0	0
MI	14	8	6	6	5	4
OH	31	5	3	2	1	0
WI	8	1	1	1	1	1
Total	82	28	17	18	15	10