APPENDIX I

Lake Michigan Air Directors Consortium (LADCO) Round 5 Modeling Technical Support Document (Round 5 Photochemical Modeling Based on “Base M” Emission Inventory, revised version of “Base K”)

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Base M Strategy Modeling: Emissions (Revised)

The purpose of this document is to summarize the emission estimates prepared for LADCO's latest (Base M) 2005 base year and 2008, 2009, 2012, and 2018 future year modeling. Base year emissions by state and source sector for Base K (2002) and Base M (2005) are compared in Figure 1. A more detailed state and source sector summary is provided in Attachment 1. Additional emission reports are available on the LADCO website: http://www.ladco.org/tech/emis/r5/round5_reports.htm.

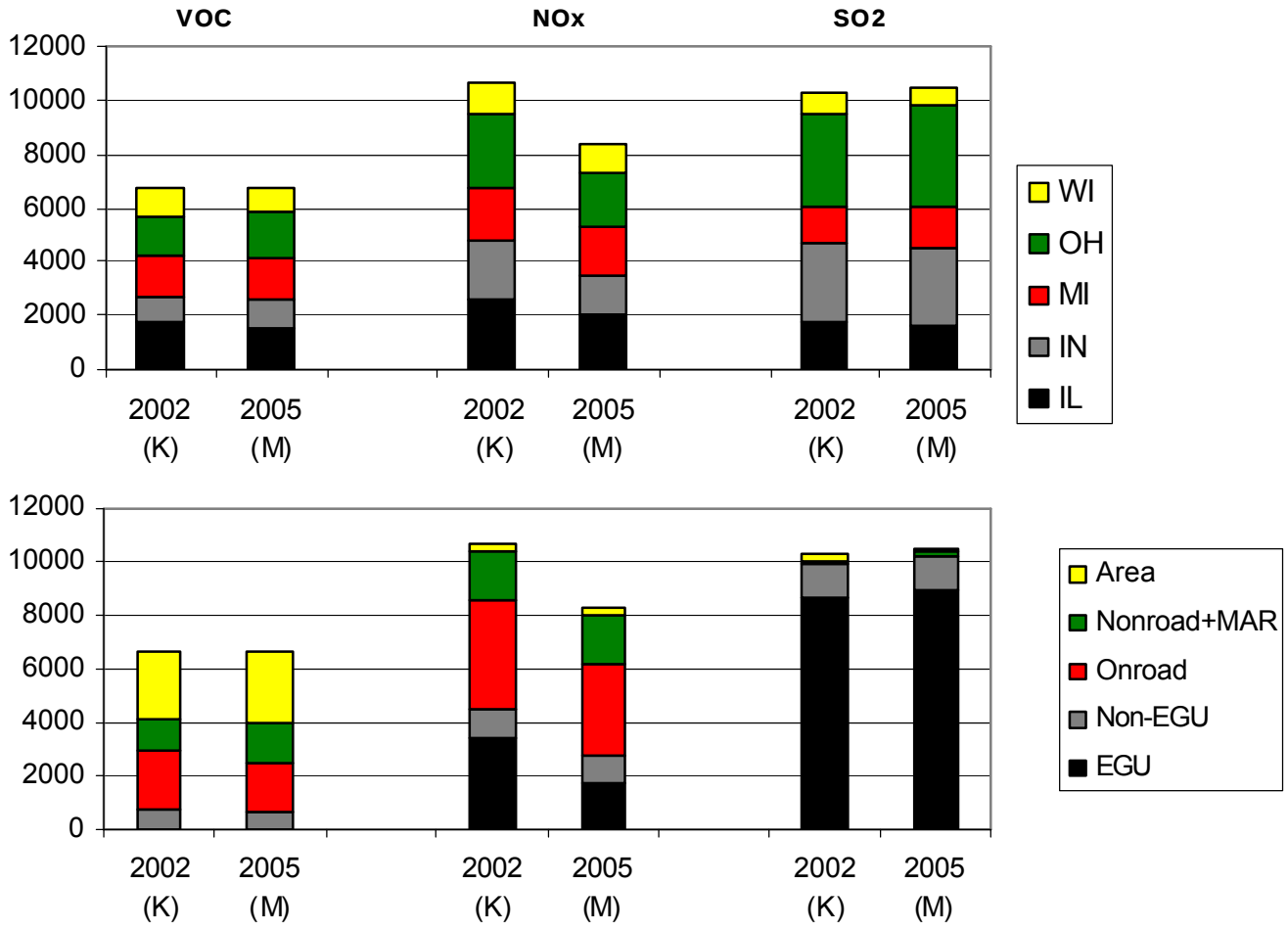


Figure 1. Base K and Base M Emissions for 5-State LADCO Region: VOC, NOx, and SO2 (TPD, July weekday)

Base Year Emissions

In mid-2006, LADCO completed modeling analyses for a 2002 base year and several future year control strategies (LADCO, 2006a and LADCO, 2006b). Following those analyses, a decision was made to conduct additional modeling using a more current base year (2005). Examination of multiple base years provides for a more complete technical assessment. All modeling was conducted in accordance with USEPA modeling guidelines (USEPA, 2007).

For on-road, ammonia, and biogenic sources, 2005 emissions were estimated by emission models. For other sectors in the LADCO States, 2005 emissions were either supplied by a contractor (railroads and commercial marine) or by the States (point sources, area sources, and aircraft). For other sectors in non-LADCO States, a contractor obtained the latest base (2002) and future year emission files (2009, 2018) from the other Regional Planning Organizations (RPOs) (Alpine, 2007a). Specifically, the following versions of these emissions files were used: MANE-VU: Version 3.1, WRAP: Pre2002d, CENRAP: Base F, and VISTAS: Base F. The 2005 emissions were then estimated by linearly interpolating between the 2002 and 2009 emissions.

Further discussion of the development of the 2005 base year emissions is provided below:

On-Road: CONCEPT was run by a contractor using transportation data (e.g., VMT and vehicle speeds) for 24 networks supplied by the state and local planning agencies in the LADCO States and Minnesota (Environ, 2008). These data were first processed with T3 (Travel Demand Modeling [TDM] Transformation Tool) to provide input files for CONCEPT. For some networks, the VMT outputs from T3 were adjusted to match 2005 HPMS data. CONCEPT was then run with meteorological data for a July and January weekday, Saturday, and Sunday (July 15 – 17 and January 16 – 18) to produce link-specific, hourly emission estimates. A spatial plots of emissions for July 15 are provided in Figure 2.

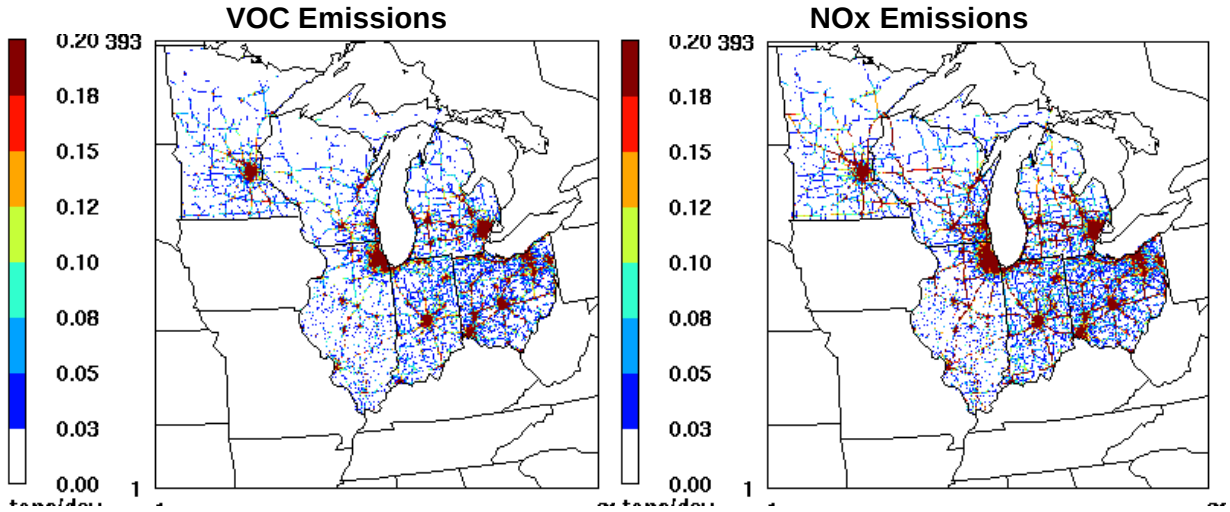


Figure 2. July 15, 2005 motor vehicle emissions for VOC (left) and NOx (right)

For the non-LADCO States, CONCEPT was run by a contractor using RPO-based HPMS county-level data (2002 and 2009) and MOBILE6 inputs (2002) compiled by another contractor (Environ, 2008). HPMS VMT for 2005 were generated by linearly interpolating between the 2002 and 2009 data. The 2002 MOBILE6 inputs were used for the 2005 modeling, with a few adjustments (e.g., fuel sulfur content was set to 30 ppm, as required by the Tier 2/low sulfur regulations). Meteorological data for a July and January weekday, Saturday, and Sunday (July 15 – 17 and January 16 – 18) were used.

For other months (for both LADCO and non-LADCO States), weekday, Saturday, and Sunday emissions were linearly interpolated based on the January and July emissions.

Off-Road: NMIM2005 was run by Grant Hetherington (Wisconsin DNR) to produce emissions for most off-road sectors for the LADCO States plus Minnesota, Iowa, and Missouri. Improved model inputs included local data for construction and agricultural equipment prepared by a contractor were incorporated (E.H. Pechan, 2004), and 2005 gasoline parameters. (Note, model updates prepared by AIR to address evaporative emissions were not included.)

EMS was run by LADCO using Grant Hetherington's NMIM2005 data and, for the non-LADCO States, using emission files supplied by Alpine based on data from the other RPOs to produce weekday, Saturday, and Sunday emissions for each month.

Additional off-road sectors (i.e., commercial marine, aircraft, and railroads [MAR]) were handled separately. Aircraft emissions were supplied by the LADCO States. Updated information for railroads and commercial marine for the LADCO States was prepared by a contractor (Environ, 2007a and Environ 2007b). Table 1 compares the new 2005 emissions with the previous 2002 emission estimates. The new 2005 emissions reflect substantially lower commercial marine emissions and lower locomotive NOx emissions.

EMS was run by LADCO using the contractor and state data and, for the non-LADCO States, using emission files supplied by Alpine based on data from the other RPOs to produce weekday, Saturday, and Sunday emissions for each month.

Table 1. Locomotive and Commercial Marine Emissions for 2002 and 2005 Base Year

	Railroads (TPY)			Commercial Marine (TPY)	
	2002	**2005**		**2002**	**2005**
VOC	7,890	7,625		1,562	828
CO	20,121	20,017		8,823	6,727
NOx	182,226	145,132		64,441	42,336
PM	5,049	4,845		3,113	1,413
SO2	12,274	12,173		25,929	8,637
NH3	86	85		----	----

Area: EMS was run by LADCO using 2005 data supplied by the LADCO States and, for the non-LADCO States, using emission files supplied by Alpine based on data from the other RPOs to produce weekday, Saturday, and Sunday emissions for each month. Special attention was given to two source categories: industrial adhesive and sealant solvent emissions and outdoor wood boilers.

> Industrial Adhesives and Sealants: The NEI shows this to be a large VOC emissions category in the LADCO States (i.e.., 50,000 TPY) USEPA subsequently determined that "(f)or the Region V states, we no longer believe that there are any activities in the Industrial Adhesives and Sealants category (SCC 2440020000) that have not been inventoried either in the point source Industrial Adhesives and Sealants category or under the Consumer and Commercial Adhesives and Sealants nonpoint category (SCC 2460600000 - all adhesives and sealants)." (USEPA, 2007b) Consequently, this category was omitted from the 2005 regional emissions inventory.

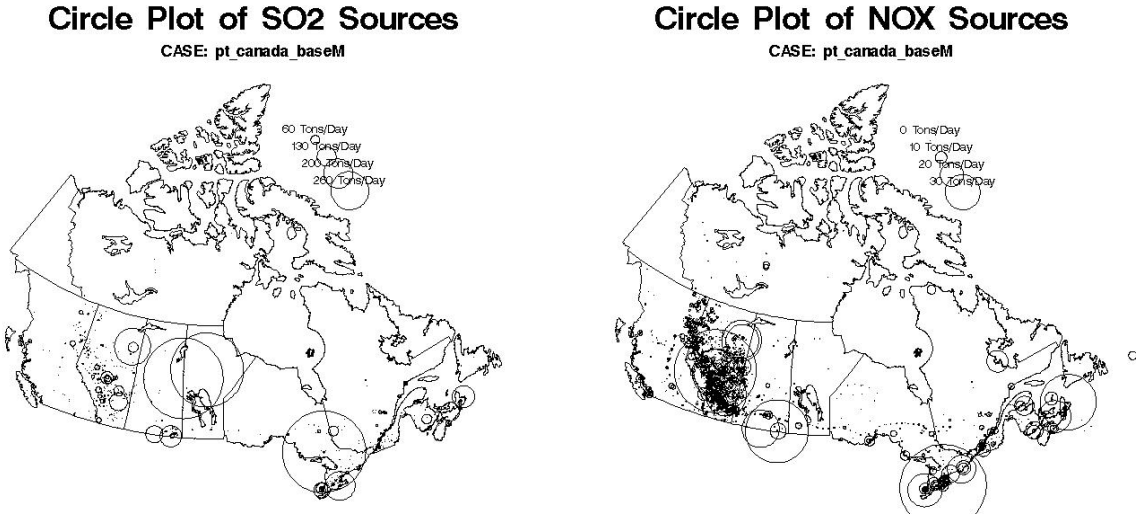
Outdoor Wood Boilers: Over the past several years, the installation and operation of outdoor wood boilers for residential use has increased dramatically in many northern states. Relying on an emission estimation methodology prepared by Bart Sponseller (WDNR, 2006), emissions were calculated by the other states for this category.

EGU Point:EMS was run by LADCO using 2005 data supplied by the LADCO States and, for the non-LADCO States, using emission files supplied by Alpine based on data from the other RPOs to produce weekday, Saturday, and Sunday emissions for each month. 2005 EGU emissions were temporalized for modeling purposes using profiles prepared by Scott Edick (Michigan DEQ) based on CEM data for the period 2004-2006. Profiles were generated for monthly weekday/Saturday/Sunday based on the median hourly emissions for that month, day, and hour of the day for the three years. Over 90% of NOX and SO2 emissions from EGUs in the LADCO states were assigned profiles. In non-Ladco states, the annual EGUs emissions were replaced with the 2005 sum of hourly emissions for all 365 days.

Non-EGU Point: EMS was run by LADCO using 2005 data supplied by the LADCO States and, for the non-LADCO States, using emission files supplied by Alpine based on data from the other RPOs to produce weekday, Saturday, and Sunday emissions for each month. EGUs were removed from this point source file.

Other improvements to the base year inventory included:

Canadian Emissions: Previous modeling inventories for Canadian sources were flawed due to problems with emissions (e.g., LADCO inventories omitted ammonia emissions) or stack parameters (e.g., VISTAS inventories failed to include proper stack parameters, resulting in emissions getting dumped in the surface layer of the model). For Base M, Scott Edick (Michigan DEQ) processed the 2005 Canadian National Pollutant Release Inventory (NPRI – see http://www.ec.gc.ca/pdb/npri/). Specifically, a subset of the NPRI data which are relevant to the air quality modeling were reformatted. A number of emission reports are available on the LADCO website (http://www.ladco.org/tech/emis/basem/canada/index.htm). Circle plot of point source emissions are presented in Figure 3.



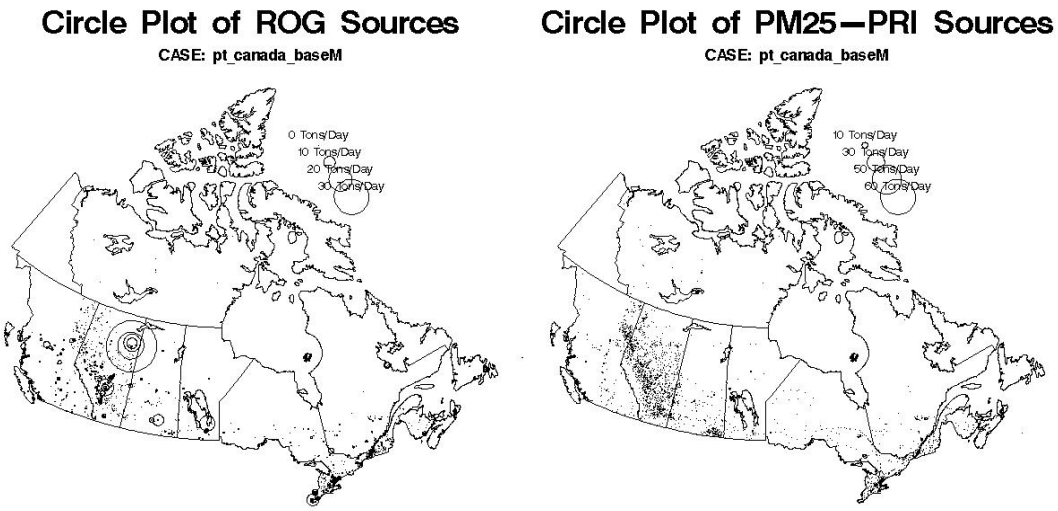


Figure 3. Base year emission plots for Canada

Biogenic Emissions: A contractor provided an updated version of the CONCEPT/MEGAN (Model of Emissions of Gases and Aerosols from Nature – see http://bai.acd.ucar.edu/Megan/) biogenics model, which was used to produce base year biogenic emission estimates (Alpine, 2007b). MEGAN includes functions for soil moisture plant stress, a more complete canopy model, full plant growth cycle emissions calculations, and state of the science emission rates.

Subsequent to deliver of the updated CONCEPT/MEGAN code, it was found that more recent data sets and model formulations were available. For the purposes of the Round 5 modeling, LADCO simply scaled the emission estimates from the updated code to reflect these newer data. This resulted in lower emissions for several organic aerosol species and NOx

Compared to the EMS/BIOME emissions used for Base K, there is more regional isoprene with MEGAN (see Figure 4). Also, with the secondary organic aerosol updates to the CAMx air quality model, Base M includes emissions for monoterpenes and sesquiterpenes, which are precursors of secondary $PM_{2.5}$ organic carbon mass.

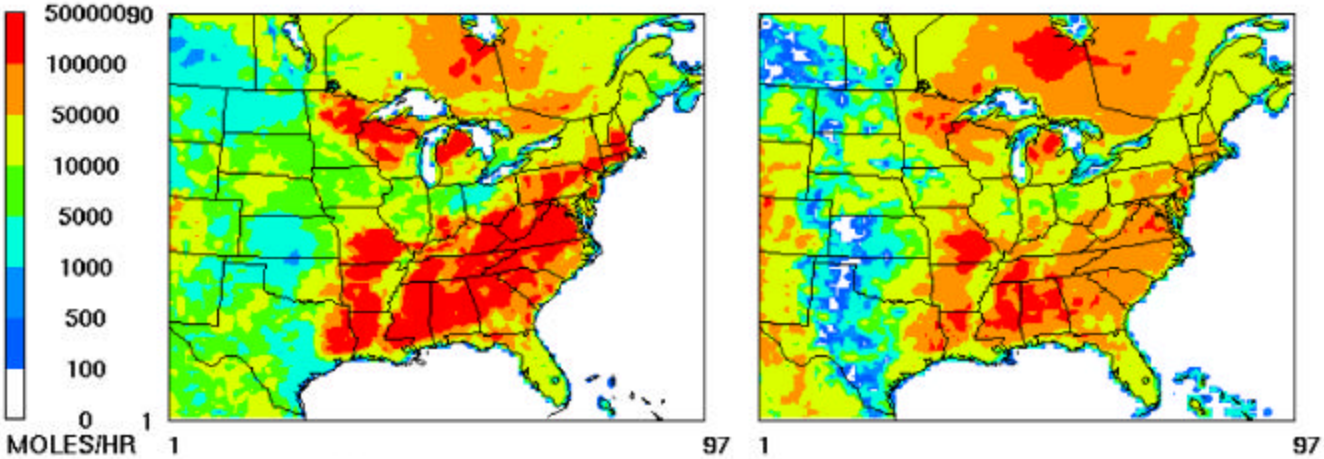


Figure 4. Isoprene emissions for Base M (left) v. Base K (right)

Ammonia Emissions: The CMU-based 2002 (Base K) annual ammonia emissions were projected to 2005 using growth factors from the Round 4 emissions modeling. These annual emissions were then adjusted by applying monthly temporal factors based on the process-based ammonia emissions model (http://www.conceptmodel.org/nh3/nh3_index.html). The model was run for the following list of model farms using 2002 meteorological data: Dairy (California, Wisconsin), Swine (Iowa, Wisconsin), and Beef (Texas, Washington, Wisconsin). Because the model was not complete for the poultry housing model, swine was use in its place given that both use confined operations.

Each model farms' emissions were used to generate monthly average day emissions and a monthly profile. The profiles were applied to geographies most associated with that farm type (e.g., all LADCO states used the Wisconsin farm results). The following figure shows the daily variation in emissions for the model farms.

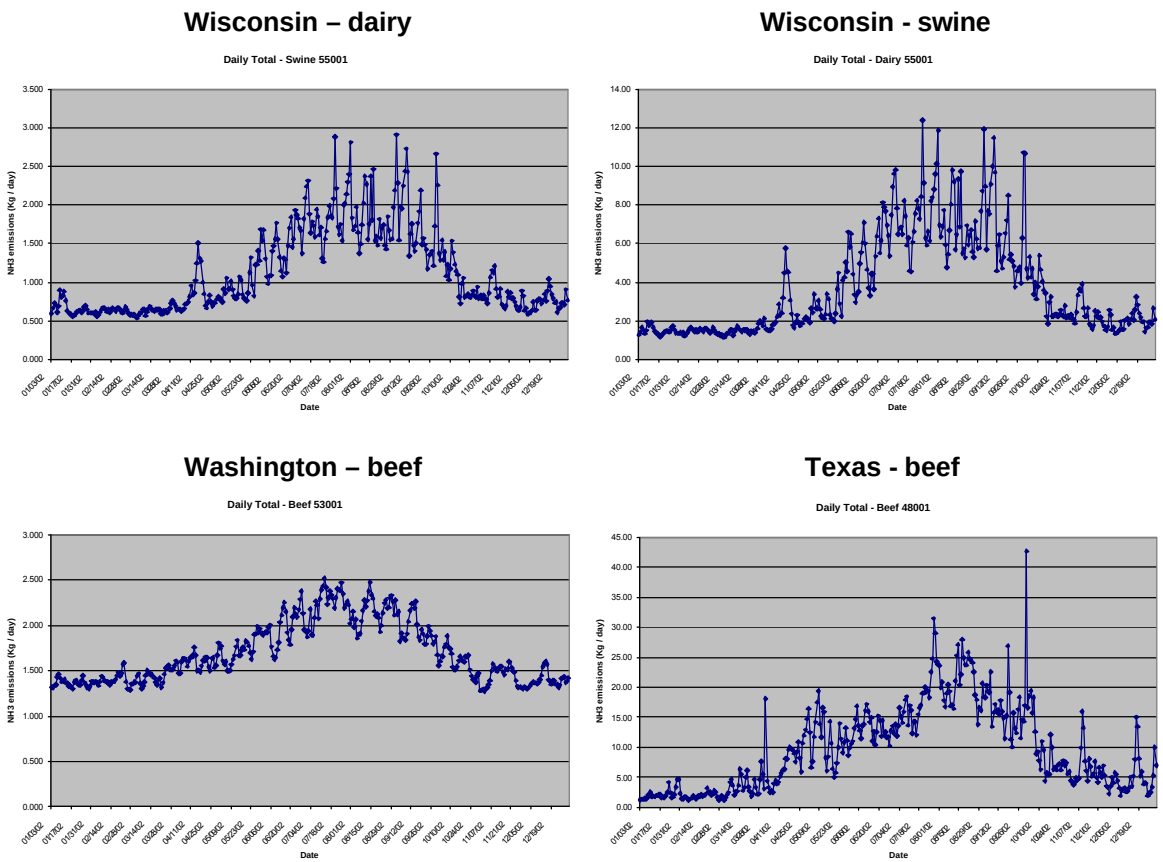


Figure 5. Daily emissions for 2002 for various model farms

A plot of the resulting average daily emissions by state and month is provided in Figure 6.

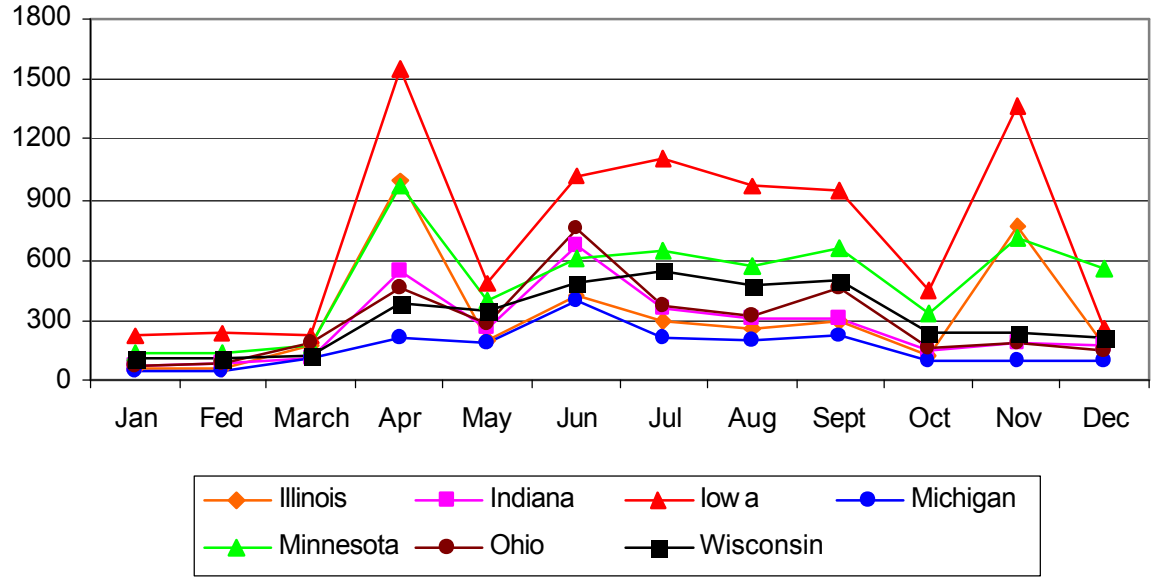


Figure 6. Average daily ammonia emissions for Midwest States by month for 2005

Fires: For Base K, a contractor (EC/R, 2004) developed a 2001, 2002, and 2003 fire emissions inventory for eight Midwest States (five LADCO states plus Iowa, Minnesota, and Missouri), including emissions from wild fires, prescribed fires, and agricultural burns. Projected emissions were also developed for 2010 and 2018 assuming "no smoke management" and "optimal smoke management" scenarios. An early model sensitivity run showed very little difference in modeled $PM_{2.5}$ concentrations. Consequently, the fire emissions were not included in subsequent modeling runs (i.e., they were not in the Base K or Base M modeling inventories).

Future Year Emissions

Complete emission inventories were developed for two future years: 2009 and 2018[1]. Source sector emission summaries for the base years (2002 – Base K and 2005 – Base M) and future years are shown in Figure 7. A more detailed state and source sector summary is provided in Attachment 1. Additional emission reports are available on the LADCO website (http://64.27.125.175/tech/emis/r5/round5_reports.htm.

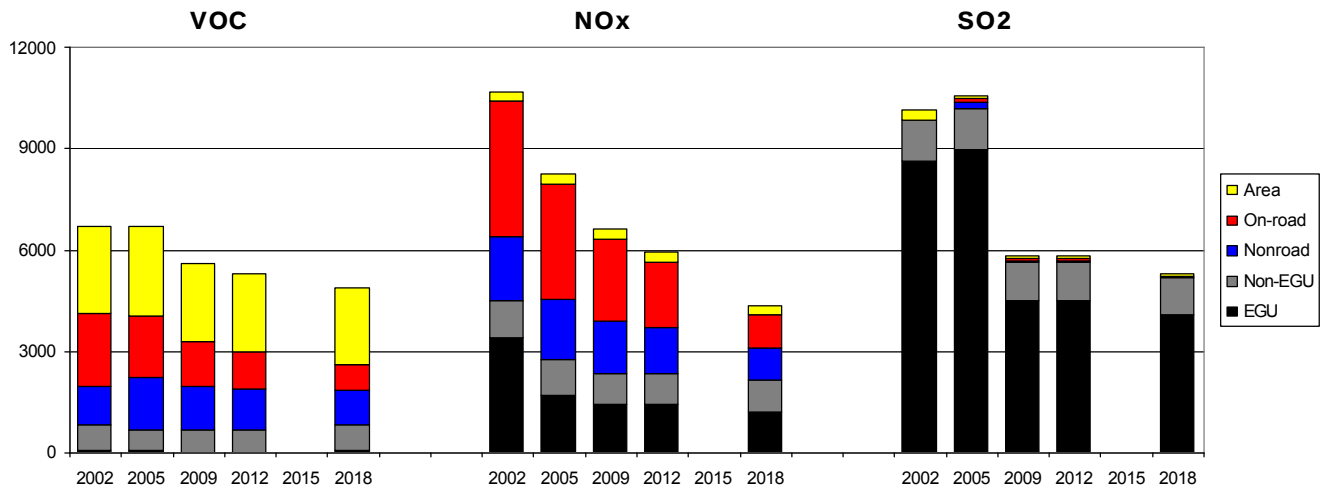


Figure 7. Base year and future year emissions for 5-State LADCO Region (TPD, July weekday)

[1] A 2008 proxy inventory was prepared to support a preliminary 2008 modeling analysis to assess attainment for the basic nonattainment areas (i.e, for areas with a 2009 attainment date, the appropriate panning year is 2008). This inventory reflects the following assumptions:

On-road: scale 2005 base year emissions using the Base K 2002 – 2009 trend (except for the Cincinnati-Dayton area, where 2008 emissions were generated using CONCEPT and 2008 data supplied by the local planning agency)

Off-road and area: scale 2005 base year emissions using the Base K 2002-2009 trend

Point – EGU: use 2005 base year emissions, with slight adjustment (-10%)

Point – Non-EGU: use 2005 base year emissions (note: Base K 2002-2009 trend suggests little change)

Biogenics: use new 2005 base year emissions

A 2012 proxy inventory was prepared to support a preliminary 2012 modeling analysis to assess the effect of further emission reductions from existing controls. This inventory was derived by interpolating between 2009 and 2018 emissions for all sectors, except point sources (for which, the 2009 emissions were used).

For on-road, off-road, and EGU sources, the future year emissions were estimated by models (i.e., CONCEPT, NMIM2005, and IPM, respectively) and then processed by LADCO with EMS. For other sectors (area, MAR, and non-EGU point sources), the future year emissions for the LADCO States were derived by applying growth and control factors to the base year inventory. These factors were developed by a contractor (E.H. Pechan, 2007). Growth factors were based initially on EGAS (version 5.0), and were subsequently modified (for select, priority categories) by examining emissions activity data. For the non-LADCO States, future year emission files were supplied by Alpine based on data from the other RPOs. Due to a lack of information on future year conditions, the biogenic VOC and NOx emissions, and all Canadian emissions were assumed to remain constant between the base year and future years.

A "base" control scenario was prepared for each future year based on the following "on the books" controls (E.H. Pechan, 2007):

On-Highway Mobile Sources

- Federal motor vehicle emission control program, low sulfur gasoline, and ultra-low sulfur diesel fuel
- Inspection/Maintenance programs (nonattainment areas)
- Reformulated gasoline (nonattainment areas)

Off-Highway Mobile Sources

- Federal control programs incorporated into NONROAD model (e.g., nonroad diesel rule), plus the evaporative Large Spark Ignition and Recreational Vehicle standards
- Heavy-duty diesel (2007) engine standard/Low sulfur fuel
- Federal railroad/locomotive standards
- Federal commercial marine vessel engine standards

Area Sources

- Consumer solvents
- AIM coatings
- Aerosol coatings
- Portable fuel containers

Power Plants

- Title IV (Phases I and II)
- NOx SIP Call
- Clean Air Interstate Rule
- Clean Air Mercury Rule

Other Point Sources

- VOC 2-, 4-, 7-, and 10-year MACT standards[2]
- Combustion turbine MACT
- Consent decrees (refineries, ethanol plants, and ALCOA)[3]

[2] E.H. Pechan's original control file included EPA-default control factor information. Alternative control factors were developed by Wisconsin for a few MACT categories, and were also applied to the other four LADCO States.

- Other (Illinois and Ohio NOx RACT[4], and BART in IN and WI)

Further discussion of the development of the future year emissions is provided below:

On-Road: Similar to the base year modeling, CONCEPT was run using transportation data (e.g., VMT and vehicle speeds) supplied by the state and local planning agencies for 2009 and 2018 (Environ, 2008). CONCEPT was only run with meteorological data for a July weekday (July 15). The emissions for Saturday and Sunday were derived by using scaling factors based on the 2005 emissions. The state-level emissions for the five LADCO States plus Minnesota are summarized in Table 2[5].

For the non-LADCO States, CONCEPT was run by Environ using HPMS county-level data and MOBILE6 inputs compiled by another contractor for VISTAS. Note, the emissions modeling for IA, MO, and OK was redone for 2009 to reflect the state-developed registration distribution data. (The initial modeling for 2009 used national default values for registration distribution assumed by VISTAS' contractor. CENRAP's contractor developed emissions inventories for 2002 and 2018 using the state-developed data. For consistency, Environ's remodeling for these three states for 2009 also used the state-developed data.) Meteorological data for a July weekday (July 15) were used. The emissions for Saturday and Sunday were derived by using scaling factors based on the 2005 emissions.

For other months (for both LADCO and non-LADCO States), January weekday, Saturday, and Sunday emissions were derived based on the July:January ratios for 2005, and then the weekday, Saturday, and Sunday emissions for other months were linearly interpolated based on the January and July emissions.

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[3] E.H. Pechan's original control file included control factors for three sources in Wayne County, MI. These control factors were not applied in the regional-scale modeling to avoid double-counting with the State's local-scale analysis for PM2.5.

[4] WI believes that NOx RACT for their sources is already included in the 2005 basecase and EGU "will do" scenario, and IN provided NOx RACT information for inclusion as a no-EGU "may do" scenario.

[5] For northeastern IL (CATS region), 2009 and 2018 emissions were increases by 9% and 8%, respectively, to reflect newer transportation modeling by CATS.

Table 2. Summary of On-road Emissions (TPD – July 15, 2005)

Year	State	CO-tpd	TOG-tpd	NOx-tpd	PM2.5-tpd	SO2-tpd	NH3-tpd	Sum of VMT
2005	IL	3,684.3	341.5	748.2	12.9	9.6	35.9	344,087,819.6
	IN	3,384.9	282.0	541.1	8.9	11.1	25.7	245,537,231.9
	MI	4,210.3	351.9	722.0	12.4	13.9	35.3	340,834,025.9
	MN	2,569.1	218.7	380.5	6.3	7.6	17.7	170,024,599.7
	OH	6,113.4	679.8	933.6	16.2	18.8	36.5	360,521,068.6
	WI	2,206.0	175.1	457.5	7.8	9.2	19.7	189,123,964.3
Total		22,168.0	2,049.0	3,782.9	64.5	70.2	170.8	1,650,128,709.9
2009	IL	2,824.4	268.0	527.8	10.1	4.2	38.9	372,132,591.1
	IN	2,839.5	234.9	401.9	6.7	2.8	26.1	249,817,026.3
	MI	3,172.0	269.2	500.9	9.2	4.0	37.1	356,347,010.5
	MN	2,256.8	206.3	307.5	5.1	2.3	21.5	204,443,017.8
	OH	4,619.2	423.7	693.5	11.8	4.7	39.5	387,428,127.2
	WI	1,673.4	119.4	322.1	5.7	2.3	20.6	197,729,964.9
Total		17,385.3	1,521.5	2,753.6	48.7	20.3	183.6	1,767,897,737.8
2018	IL	2,084.7	151.5	200.7	6.3	3.7	43.1	413,887,887.3
	IN	2,217.3	138.4	173.0	4.4	2.6	30.2	288,042,232.1
	MI	2,434.3	163.5	204.1	5.9	3.6	40.5	388,128,431.8
	MN	1,799.6	123.1	137.1	3.6	2.2	24.9	237,022,213.7
	OH	3,361.5	242.5	274.1	6.8	4.0	43.1	421,694,093.4
	WI	1,255.5	68.4	138.5	3.9	2.0	22.2	218,277,167.5
Total		13,152.9	887.5	1,127.5	30.8	18.1	203.9	1,967,052,025.8

EGU Point: Future year emissions were based on EPA's IPM3.0 modeling[6]. Three CAIR scenarios were addressed:

> 5a: EPA's IPM3.0 was assumed as the future year base for EGUs.
>
> 5b: EPA's IPM3.0, with several "will do" adjustments identified by the States. These adjustments should reflect a legally binding commitment (e.g., signed contract, consent decree, or operating permit).[7]
>
> 5c: EPA's IPM3.0, with several "may do" adjustments identified by the States. These adjustments reflect less rigorous criteria, but should still be some type of public reality (e.g., BART determination or press announcement).

Table 3 summarizes the SO2 and NOx emissions for the three scenarios. The individual facilities affected by the "will do" and "may do" adjustments are identified in Attachment 2. The net effect of these adjustments is a small increase in regional SO2 and NOx emissions.

Based on initial discussions with USEPA, a decision was made to use the 2010 IPM emissions in the 2009 modeling. USEPA subsequently insisted that 2009 modeling must represent 2009 conditions. Because 2009 and 2010 EGU NOx emissions are expected to be similar (note: CAIR Phase I compliance date for NOx is 2009), the Round 5.1 ozone modeling was not redone.

USEPA believes that 2009 and 2010 EGU SO2 emissions may be significantly different (note: CAIR Phase I compliance date for SO2 is 2010). In particular, USEPA noted that information on projected scrubber installations identifies several facilities are not expected to be completed until 2010. A model sensitivity run was conducted with adjusted (higher) EGU SO2 emissions.

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[6] The second set of new IPM runs by EPA were used. These runs were performed at the request of the RPOs and reflect the addition of run years 2012 and 2018, and the use of four load segments for 2032 to decrease model size (instead of six segments). Comparing the results in this run with EPA's initial v3.0, showed small differences Below is a quick summary of the run year differences.

EPA Base Case for IPM v.3.0
2010: 2009-2012
2015: 2013-2017
2020: 2018-2022
2025: 2023-2027
2032: 2028-2035

Base Case RPO Run for IPM v3.0 (added 2012 and 2018 run years, 2020 run year merged with the 2025 run year, and four load segments used for the 2032 run year)
2010: 2009-2011
2012: 2012-2012
2015: 2013-2017
2018: 2018-2019
2025: 2020-2028
2032: 2029-2035

[7] Scenario 5b and 5c also reflect changes in Minnesota, Missouri, and North Dakota.

Table 4 provides information from USEPAs Clean Air Markets Division (CAMD) on scrubber installation dates. This information is based on various sources, including company announcements, consent decrees, vendors, and organizations that track scrubber installations. While there may be uncertainty in any projection of control installations, USEPA considers these adequate projections for SIP planning purposes.

USEPA identified six plants which: (1) are projected in IPM3.0 to have scrubbers in place by 2010 (or 2011), but will not be completed by 2009, and (2) are most likely to impact $PM_{2.5}$ air quality in the upper Midwest (see highlighting in Table 4). To reflect uncontrolled (2009) emissions for those facilities (and units), LADCO substituted actual 2005 emissions for the IPM3.0 projected 2010 emissions. The revised (2009) SO2 emissions for the six facilities (see Table 5) represent a 5-6% increase in domainwide SO2 emissions.

Table 3. Comparison of EGU Emissions for Base (5a), Will Do (5b), and Will Do (5c) Scenarios

	2010				2018		
SO2	**5a**	**5b**	**5c**		**5a**	**5b**	**5c**
IL	958	881	881		869	433	433
IN	1033	1318	1318		1036	1194	1194
MI	667	667	667		725	725	725
OH	1326	1410	1410		983	1127	1127
WI	460	460	421		435	499	235
	4444	4736	4697		4048	3978	3714
MN	162	148	148		187	167	157
NOx	**5a**	**5b**	**5c**		**5a**	**5b**	**5c**
IL	275	247	247		224	195	195
IN	370	372	372		255	266	266
MI	242	242	242		243	243	243
OH	281	305	305		285	310	310
WI	165	164	155		176	172	145
	1333	1330	1321		1183	1186	1159
MN	116	142	142		132	157	125

Table 4. Facilities Anticipating SO2 Controls in 2009 and 2010

State Name	Plant Name	UniqueID_Final	ORIS Code	Unit ID	Capacity MW	Scrubber OnlineYear	Scrubber OnlineMonth
Alabama	Barry	3_B_5	3	5	768	2010	
Alabama	E C Gaston	26_B_5	26	5	861	2010	
Arizona	Cholla	113_B_3	113	3	271	2009	
Florida	Crystal River	628_B_4	628	4	720	2010	
Florida	Crist	641_B_6	641	6	302	2010	
Florida	Crist	641_B_7	641	7	477	2010	
Florida	Crystal River	628_B_5	628	5	717	2009	5
Florida	Deerhaven Generating Station	663_B_B2	663	B2	228	2009	5
Georgia	Bowen	703_B_1BLR	703	1BLR	713	2010	
Georgia	Wansley	6052_B_2	6052	2	892	2009	5
Georgia	Bowen	703_B_2BLR	703	2BLR	718	2009	4
Indiana	Clifty Creek	983_B_1	983	1	217	2010	
Indiana	Clifty Creek	983_B_2	983	2	217	2010	
Indiana	Clifty Creek	983_B_3	983	3	217	2010	
Indiana	Clifty Creek	983_B_4	983	4	217	2010	
Indiana	Clifty Creek	983_B_5	983	5	217	2010	
Indiana	Clifty Creek	983_B_6	983	6	217	2010	
Indiana	Warrick	6705_B_4	6705	4	300	2010	
Kentucky	Big Sandy	1353_B_BSU2	1353	BSU2	800	2009	11
Kentucky	E W Brown	1355_B_1	1355	1	94	2009	1
Kentucky	E W Brown	1355_B_2	1355	2	160	2009	1
Kentucky	E W Brown	1355_B_3	1355	3	422	2009	1
Kentucky	H L Spurlock	6041_B_1	6041	1	315	2009	
Maryland	Brandon Shores	602_B_1	602	1	643	2010	
Maryland	Brandon Shores	602_B_2	602	2	643	2010	
Maryland	Chalk Point LLC	1571_B_1	1571	1	341	2010	
Maryland	Chalk Point LLC	1571_B_2	1571	2	342	2010	
Maryland	Dickerson	1572_B_1	1572	1	182	2010	
Maryland	Dickerson	1572_B_2	1572	2	182	2010	
Maryland	Dickerson	1572_B_3	1572	3	182	2010	
Maryland	Morgantown Generating Plant	1573_B_1	1573	1	624	2009	
Maryland	Morgantown Generating Plant	1573_B_2	1573	2	620	2009	
Michigan	Monroe	1733_B_4	1733	4	775	2009 (2010?)	
Missouri	Sioux	2107_B_1	2107	1	497	2010	
Missouri	Sioux	2107_B_2	2107	2	497	2010	
New Jersey	PSEG Mercer Gen. Station	2408_B_1	2408	1	315.3	2010	
New Jersey	PSEG Mercer Gen. Station	2408_B_2	2408	2	309.9	2010	
New York	AES Westover	2526_B_11	2526	11	21.85	2010	
New York	AES Westover	2526_B_12	2526	12	21.85	2010	
New York	AES Westover	2526_B_13	2526	13	84	2010	
New York	AES Greenidge LLC	2527_B_4	2527	4	26.5	2010	
New York	AES Greenidge LLC	2527_B_5	2527	5	26.5	2010	
NorthCarolina	Cliffside	2721_B_1	2721	1	38	2010	

NorthCarolina	Cliffside	2721_B_2	2721	2	38	2010	
NorthCarolina	Cliffside	2721_B_3	2721	3	61	2010	
NorthCarolina	Cliffside	2721_B_4	2721	4	61	2010	
NorthCarolina	Cliffside	2721_B_5	2721	5	550	2010	
NorthCarolina	G G Allen	2718_B_1	2718	1	161.73	2009	5
NorthCarolina	Roxboro	2712_B_1	2712	1	369	2009	
NorthCarolina	G G Allen	2718_B_2	2718	2	161.73	2009	
NorthCarolina	G G Allen	2718_B_3	2718	3	259.77	2009	
NorthCarolina	G G Allen	2718_B_4	2718	4	274.77	2009	
NorthCarolina	G G Allen	2718_B_5	2718	5	265	2009	
NorthCarolina	Mayo	6250_B_1A	6250	1A	361.5	2009	
NorthCarolina	Mayo	6250_B_1B	6250	1B	361.5	2009	
Ohio	W H Sammis	2866_B_6	2866	6	630	2011	
Ohio	W H Sammis	2866_B_7	2866	7	630	2011	
Ohio	R E Burger	2864_B_7	2864	7	156	2010	
Ohio	R E Burger	2864_B_8	2864	8	156	2010	
Ohio	Kyger Creek	2876_B_1	2876	1	217	2010	
Ohio	Kyger Creek	2876_B_2	2876	2	217	2010	
Ohio	Kyger Creek	2876_B_3	2876	3	217	2010	
Ohio	Kyger Creek	2876_B_4	2876	4	217	2010	
Ohio	Kyger Creek	2876_B_5	2876	5	217	2010	
Ohio	Conesville	2840_B_4	2840	4	780	2009	4
Ohio	Bay Shore	2878_B_4	2878	4	215	2009	
Pennsylvania	Cheswick Power Plant	8226_B_1	8226	1	580	2010	
Pennsylvania	Hatfields Ferry Power Station	3179_B_1	3179	1	530	2009	1
Pennsylvania	Hatfields Ferry Power Station	3179_B_2	3179	2	530	2009	1
Pennsylvania	Hatfields Ferry Power Station	3179_B_3	3179	3	530	2009	1
Pennsylvania	Keystone	3136_B_1	3136	1	850	2009	
Pennsylvania	Keystone	3136_B_2	3136	2	850	2009	
Pennsylvania	PPL Brunner Island	3140_B_1	3140	1	321	2009	
Pennsylvania	PPL Brunner Island	3140_B_2	3140	2	378	2009	
Tennessee	Kingston	3407_B_1	3407	1	135	2010	
Tennessee	Kingston	3407_B_2	3407	2	135	2010	
Tennessee	Kingston	3407_B_3	3407	3	135	2010	
Tennessee	Kingston	3407_B_4	3407	4	135	2010	
Tennessee	Kingston	3407_B_5	3407	5	177	2010	
Tennessee	Kingston	3407_B_6	3407	6	177	2010	
Tennessee	Kingston	3407_B_7	3407	7	177	2010	
Tennessee	Kingston	3407_B_8	3407	8	177	2010	
Tennessee	Kingston	3407_B_9	3407	9	178	2010	
Tennessee	Bull Run	3396_B_1	3396	1	881	2009	1
Texas	Fayette Power Project	6179_B_1	6179	1	598	2009	
Texas	Fayette Power Project	6179_B_2	6179	2	598	2009	
Virginia	Chesterfield	3797_B_5	3797	5	310	2010	
Virginia	Yorktown	3809_B_1	3809	1	159	2010	

Table 5. Summary of Adjusted EGU SO2 Emissions (TPD)

State	Plant	2010 IPM	2005 BY
Indiana	Clifty Creek	41.41	225.32
Missouri	Ameren Sioux	22.25	141.92
Ohio	Kyger Creek	21.53	197.68
Ohio	Sammis	147.97	305.90
Pennsylvania	Cheswick	11.53	103.98
Tennessee	Kingston	41.15	155.20

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ATTACHMENT 1

Emissions Summaries

	VOC	Base M	BaseK	Base M	BaseK	BaseK	Base M	NOx	Base M	BaseK	Base M	BaseK	BaseK	Base M	SOX	Base M	BaseK	Base M	BaseK	BaseK	Base M	PM2.5	Base M	BaseK	Base M	BaseK	BaseK	Base M
July	2002	2005	2009	2009	2012	2018	2018	2002	2005	2009	2009	2012	2018	2018	2002	2005	2009	2009	2012	2018	2018	2002	2005	2009	2009	2012	2018	2018
Nonroad																												
IL	224	321	164	257	149	130	213	324	333	263	275	224	154	155	31	33	5	5	0.6	0.4	0.4		30		24			14
IN	125	195	94	160	95	95	128	178	191	142	158	141	141	89	17	19	3	3	3	0.3	0.2		17		13			7
MI	348	414	307	350	276	222	271	205	239	159	197	133	93	112	19	22	3	3	0.5	0.3	0.3		22		18			11
OH	222	356	161	294	145	126	238	253	304	195	246	162	109	135	23	29	4	5	0.5	0.3	0.4		27		22			13
WI	214	238	194	203	175	140	157	145	157	114	129	97	69	77	13	15	2	2	0.3	0.2	0.2		14		12			7
5-State Total	1133	1524	920	1264	840	713	1007	1105	1224	873	1005	757	566	568	103	118	17	18	4.9	1.5	1.5		110		89			52
U.S. Total	8463	9815	5442	8448		5244	6581	6041	9060	6057	8120		5832	5100	505	654	117	153		104	13		573		750			475
MAR																												
IL	10	11	10	10	10	10	6	277	246	201	228	195	186	165	0	22	0	19	0	0	17		7		6			4
IN	5	5	5	5	5	5	3	123	93	89	87	87	84	65	0.2	8	0.2	7	0.2	0.2	6		2		2			2
MI	7	7	7	7	7	8	7	114	87	112	82	111	110	65	0.6	21	0.7	14	0.7	0.8	8		3		3			2
OH	8	7	8	7	8	8	5	177	134	128	126	126	122	94	0.4	14	0.3	12	0.3	0.3	10		4		4			2
WI	4	4	4	4	4	4	3	79	58	59	54	59	57	41	12.7	8	9.5	6	9.5	8.7	5		2		2			1
5-State Total	34	34	34	33	34	35	24	770	618	589	577	578	559	430	13.9	73	10.7	58	10.7	10	46		18		17			11
U.S. Total	307	317	321	157	329	346	334	4968	4515	4002	1813	3964	3919	3812	620	512	509	122	509	503	290		147		57			165
OtherArea																												
IL	679	675	688	594	700	738	582	62	48	68	48	70	73	49	11	11	12	16	12	13	16		40		64			69
IN	354	391	365	358	373	398	384	62	56	65	58	67	69	59	158	32	150	32	151	153	32		2		2			2
MI	518	652	516	562	520	541	549	49	49	52	50	53	54	51	71	29	68	29	68	68	28		111		114			120
OH	546	604	550	506	558	593	487	50	93	59	108	60	62	108	22	6	34	15	35	35	14		19		35			34
WI	458	315	467	290	474	506	293	32	37	34	37	34	35	37	9	17	9	13	10	10	13		11		12			12
5-State Total	2555	2637	2586	2310	2625	2776	2295	255	283	278	301	284	293	304	271	95	273	105	276	279	103		183		227			237
U.S. Total	17876	21093	18638	18683		20512	24300	3856	4899	4100	4220		4418	5357	2075	2947	2062	2559		2189	2709		2735		2621			2570
On-Road																												
IL	446	341	314	268	260	197	151	890	748	578	528	474	300	201		9		4			3		13		10			6
IN	405	282	237	235	193	150	138	703	541	425	402	313	187	173		11		3			2		9		7			2
MI	522	351	335	269	303	217	163	926	722	680	501	619	385	204		14		4			3		12		9			3
OH	574	680	365	424	340	238	242	1035	934	609	693	512	270	274		18		4			4		16		12			4
WI	238	175	144	119	117	88	68	481	457	303	322	226	118	138		9		2			2		8		6			2
5-State Total	2185	1829	1395	1315	1213	890	762	4035	3402	2595	2446	2144	1260	990		61		17			14		58		44			17
U.S. Total	14263				7825			23499				13170																
EGU																												
IL	9	7	8	6	8	9	7	712	305	227	275	244	231	224	1310	1158	944	958	789	810	869		13		34			77
IN	6	6	6	6	7	6	6	830	393	406	370	424	283	255	2499	2614	1267	1033	1263	1048	1036		16		73			74
MI	12	6	11	4	11	12	4	448	393	218	242	219	247	243	1103	1251	1022	667	1031	1058	725		15		25			29
OH	5	4	6	5	7	7	6	1139	408	330	280	322	271	285	3131	3405	1463	1326	994	701	983		28		94			80
WI	3	5	3	2	4	4	3	293	213	146	165	139	147	177	602	545	512	460	492	500	435		0		22			25
5-State Total	35	28	34	23	37	38	26	3422	1712	1327	1332	1348	1179	1184	8645	8973	5208	4444	4569	4117	4048		72		248			285
U.S. Total	214	140	195	124	197	215	138	14371	10316	7746	7274	7721	7007	6095	31839	34545	20163	16903	17629	14727	14133		685		1131			1571
Non-EGU																												
IL	313	221	286	218	305	350	258	356	330	334	218	338	343	235	373	423	251	335	257	249	346		16		17			19
IN	150	130	160	137	170	199	167	238	179	212	175	216	225	178	292	218	270	216	274	290	180		35		36			44
MI	123	116	115	119	122	139	140	216	240	208	242	214	229	271	162	158	166	148	171	185	163		20		21			25
OH	77	84	75	87	79	90	104	177	175	157	166	160	167	178	240	289	231	288	210	216	293		27		28			33
WI	88	84	97	87	104	120	106	98	97	91	93	92	94	81	163	156	154	152	155	156	85		0		0.1			0.1
5-State Total	751	635	733	648	780	898	775	1085	1021	1002	894	1020	1058	943	1230	1244	1072	1139	1067	1096	1067		98		102			121
U.S. Total	4087	3877	4409		4700	5378		6446	6730	6129		6435	6952		5759	5630	6093		6340	6970					1444			1777
IL	1681	1576	1470	1353	1432	1434	1217	2621	2010	1671	1572	1545	1287	1029	1725	1656	1212	1337	1059	1072	1251		119		155			189
IN	1045	1009	867	901	843	853	826	2134	1453	1339	1250	1248	989	819	2966	2902	1690	1294	1691	1492	1256		81		133			131
MI	1530	1546	1291	1311	1239	1139	1134	1958	1730	1429	1314	1349	1118	946	1356	1495	1260	865	1271	1312	927		183		190			190
OH	1432	1735	1165	1323	1137	1062	1082	2831	2048	1478	1619	1342	1001	1074	3416	3761	1732	1650	1240	953	1304		121		195			166
WI	1005	821	909	705	878	862	630	1128	1019	747	800	647	520	551	800	750	687	635	667	675	540		35		54			47
5-State Total	6693	6687	5702	5593	5529	5350	4889	10672	8260	6664	6555	6131	4915	4319	10263	10564	6581	5781	5928	5504	5280		539		727			723

ATTACHMENT 2

"Will Do" and "May Do" EGU Facility Emissions

2009 – Difference between base (5a) and "will do" (5b) scenarios

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---------- polid=NOX ----------

Obs	cntryid	stid	cyid	fcid	name	polid	aceebase	aceenew	diff
1	US	17	97	097190AAC	MIDWEST GENERAT	NOX	11.54	6.28	-5.266
2	US	17	197	197810AAK	MIDWEST GENERAT	NOX	21.11	9.46	-11.652
3	US	18	73	00008	NIPSCO - R.M. S	NOX	26.50	24.81	-1.691
4	US	18	77	00001	IKEC - CLIFTY C	NOX	11.58	16.42	4.836
5	US	18	89	00117	NIPSCO - DEAN H	NOX	20.51	19.13	-1.384
6	US	27	37	2703700003	NSP dba Xcel En	NOX	8.03	26.74	18.709
7	US	27	61	2706100004	Minnesota Power	NOX	15.43	18.40	2.969
8	US	27	163	2716300005	Xcel Energy - A	NOX	4.21	5.92	1.718
9	US	29	183	0001	AMERENUE-SIOUX	NOX	28.47	12.81	-15.658
10	US	38	55	126	Coal Creek Stat	NOX	30.49	30.36	-0.132
11	US	38	57	12	Leland Olds Sta	NOX	11.32	36.67	25.348
12	US	38	57	125	Stanton Station	NOX	6.11	6.11	0.002
13	US	38	57	13	Antelope Valley	NOX	33.00	36.39	3.385
14	US	38	57	289	Coyote	NOX	35.12	36.95	1.839
15	US	38	59	172	RM Heskett Stat	NOX	5.45	4.72	-0.727
16	US	38	65	165	M R Young Stati	NOX	6.02	71.10	65.081
17	US	39	93	0247030013	AVON LAKE POWER	NOX	3.98	20.54	16.561
18	US	39	129	0165000006		NOX	.	1.69	.
19	US	55	11	606034110	DAIRYLAND POWER	NOX	19.24	18.96	-0.279
20	US	55	21	111003090	Alliant Energy-	NOX	14.23	17.16	2.927
21	US	55	43	122014530	Alliant Energy-	NOX	7.61	7.77	0.160
22	US	55	59	230006260	WIS ELECTRIC PO	NOX	7.39	14.03	6.647
23	US	55	71	436035930	MANITOWOC PUBLI	NOX	2.06	1.80	-0.259
24	US	55	79	241007690	WIS ELECTRIC PO	NOX	15.25	15.41	0.166
25	US	55	79	241007800	WIS ELECTRIC PO	NOX	7.87	6.07	-1.801
26	US	55	117	460033090	WP & L Alliant	NOX	19.06	11.85	-7.215
27	US	55	123	663020930	DAIRYLAND POWER	NOX	10.47	8.52	-1.955
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polid							382.05	486.07	102.327

---------- polid=SO2 ----------

Obs	cntryid	stid	cyid	fcid	name	polid	aceebase	aceenew	diff
28	US	17	97	097190AAC	MIDWEST GENERAT	SO2	49.91	29.27	-20.636
29	US	17	197	197810AAK	MIDWEST GENERAT	SO2	91.90	62.70	-29.198
30	US	18	29	00002	AMERICAN ELECTR	SO2	66.34	102.72	36.389
31	US	18	43	00004	PSI ENERGY - GA	SO2	25.53	66.01	40.488
32	US	18	73	00008	NIPSCO - R.M. S	SO2	82.52	63.71	-18.817
33	US	18	147	00020	INDIANA MICHIGA	SO2	71.67	198.71	127.042
34	US	18	167	00021	PSI ENERGY - WA	SO2	76.09	175.87	99.786
35	US	27	31	2703100001	Minnesota Power	SO2	12.27	5.75	-6.512
36	US	27	61	2706100004	Minnesota Power	SO2	30.76	20.79	-9.968
37	US	27	163	2716300005	Xcel Energy - A	SO2	5.33	7.11	1.777
38	US	29	183	0001	AMERENUE-SIOUX	SO2	22.25	8.34	-13.903
39	US	38	55	126	Coal Creek Stat	SO2	27.45	75.37	47.926
40	US	38	57	12	Leland Olds Sta	SO2	108.15	126.06	17.906
41	US	38	57	125	Stanton Station	SO2	25.29	12.37	-12.922
42	US	38	57	13	Antelope Valley	SO2	26.60	43.72	17.128
43	US	38	57	289	Coyote	SO2	19.26	53.19	33.932
44	US	38	59	172	RM Heskett Stat	SO2	9.23	30.11	20.872
45	US	38	65	165	M R Young Stati	SO2	27.98	82.23	54.249
46	US	39	81	0641160017	W. H. SAMMIS PL	SO2	147.97	55.61	-92.363
47	US	39	93	0247030013	AVON LAKE POWER	SO2	7.62	127.04	119.417
48	US	39	129	0165000006		SO2	.	16.55	.
49	US	55	21	111003090	Alliant Energy-	SO2	61.97	74.80	12.822
50	US	55	43	122014530	Alliant Energy-	SO2	11.49	42.60	31.111
51	US	55	59	230006260	WIS ELECTRIC PO	SO2	7.39	12.34	4.949
52	US	55	71	436035930	MANITOWOC PUBLI	SO2	5.90	9.95	4.050
53	US	55	79	241007690	WIS ELECTRIC PO	SO2	59.72	41.19	-18.535
54	US	55	79	241007800	WIS ELECTRIC PO	SO2	38.79	21.36	-17.433
55	US	55	123	663020930	DAIRYLAND POWER	SO2	19.56	3.79	-15.772
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polid							1138.93	1569.26	413.785
							========	=======	========
							1520.97	2055.32	516.112

2009 – Difference between “will do” (5b) and “may do” (5c) scenarios

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---------- polid=NOX ----------

Obs	cntryid	stid	cyid	fcid	name	polid	aceebase	aceenew	diff
1	US	19	139	70-01-011	MUSCATINE POWER	NOX	5.649	3.926	-1.7226
2	US	55	9	405031990	WI PUBLIC SERVI	NOX	9.234	7.786	-1.4476
3	US	55	11	606034110	DAIRYLAND POWER	NOX	18.957	18.994	0.0377
4	US	55	21	111003090	Alliant Energy-	NOX	17.158	17.156	-0.0021
5	US	55	25	113004430	MADISON GAS & E	NOX	3.886	2.639	-1.2470
6	US	55	43	122014530	Alliant Energy-	NOX	7.765	7.756	-0.0091
7	US	55	59	230006260	WIS ELECTRIC PO	NOX	14.034	9.826	-4.2074
8	US	55	71	436035930	MANITOWOC PUBLI	NOX	1.800	0.439	-1.3610
9	US	55	79	241007690	WIS ELECTRIC PO	NOX	15.413	15.435	0.0219
10	US	55	79	241007800	WIS ELECTRIC PO	NOX	6.068	6.072	0.0041
11	US	55	117	460033090	WP & L Alliant	NOX	11.847	11.892	0.0456
12	US	55	123	663020930	DAIRYLAND POWER	NOX	8.517	8.482	-0.0343
-----							--------	-------	--------
polid							120.325	110.404	-9.9218

---------- polid=SO2 ----------

Obs	cntryid	stid	cyid	fcid	name	polid	aceebase	aceenew	diff
13	US	19	139	70-01-011	MUSCATINE POWER	SO2	6.237	11.178	4.9415
14	US	55	9	405031990	WI PUBLIC SERVI	SO2	21.750	18.074	-3.6753
15	US	55	21	111003090	Alliant Energy-	SO2	74.796	74.988	0.1924
16	US	55	25	113004430	MADISON GAS & E	SO2	16.331	0.063	-16.2672
17	US	55	43	122014530	Alliant Energy-	SO2	42.604	42.640	0.0362
18	US	55	59	230006260	WIS ELECTRIC PO	SO2	12.336	9.850	-2.4867
19	US	55	71	436035930	MANITOWOC PUBLI	SO2	9.949	3.001	-6.9477
20	US	55	79	241007690	WIS ELECTRIC PO	SO2	41.189	41.210	0.0207
21	US	55	79	241007800	WIS ELECTRIC PO	SO2	21.360	21.430	0.0699
22	US	55	123	663020930	DAIRYLAND POWER	SO2	3.785	3.716	-0.0694
-----							--------	-------	--------
polid							250.336	226.151	-24.1856
							========	=======	========
							370.662	336.554	-34.1074

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APPENDIX J

Modeling Summary

- **$PM_{2.5}$ Design Value Trends**
- **Regional/Emission Sector Particulate Source Apportionment Technology (PSAT) Test Results, Jeffersonville, Indiana – Walnut Street $PM_{2.5}$ Monitor**
- **Speciated Contributions to $PM_{2.5}$ Concentrations, Louisville Area**
- **Distribution of $PM_{2.5}$ Concentration Days using Air Quality Index (AQI) Levels**

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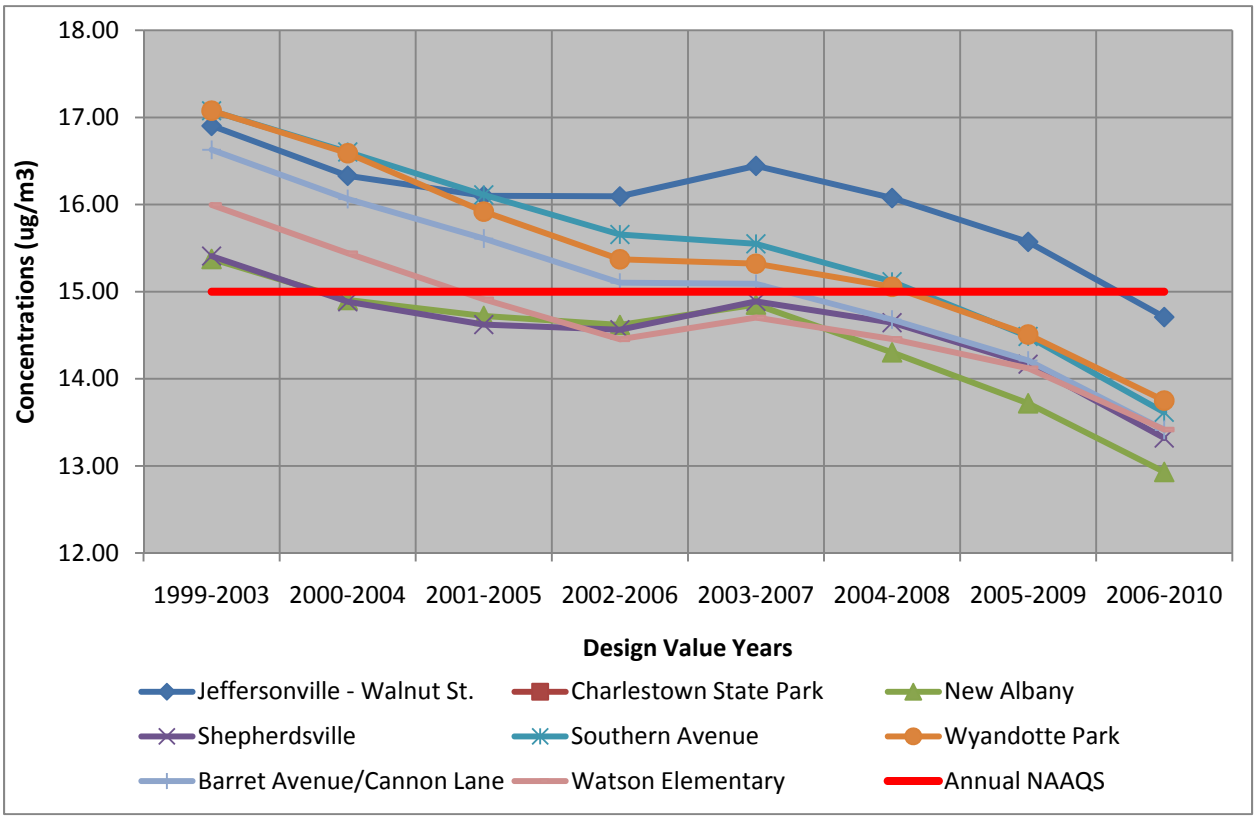
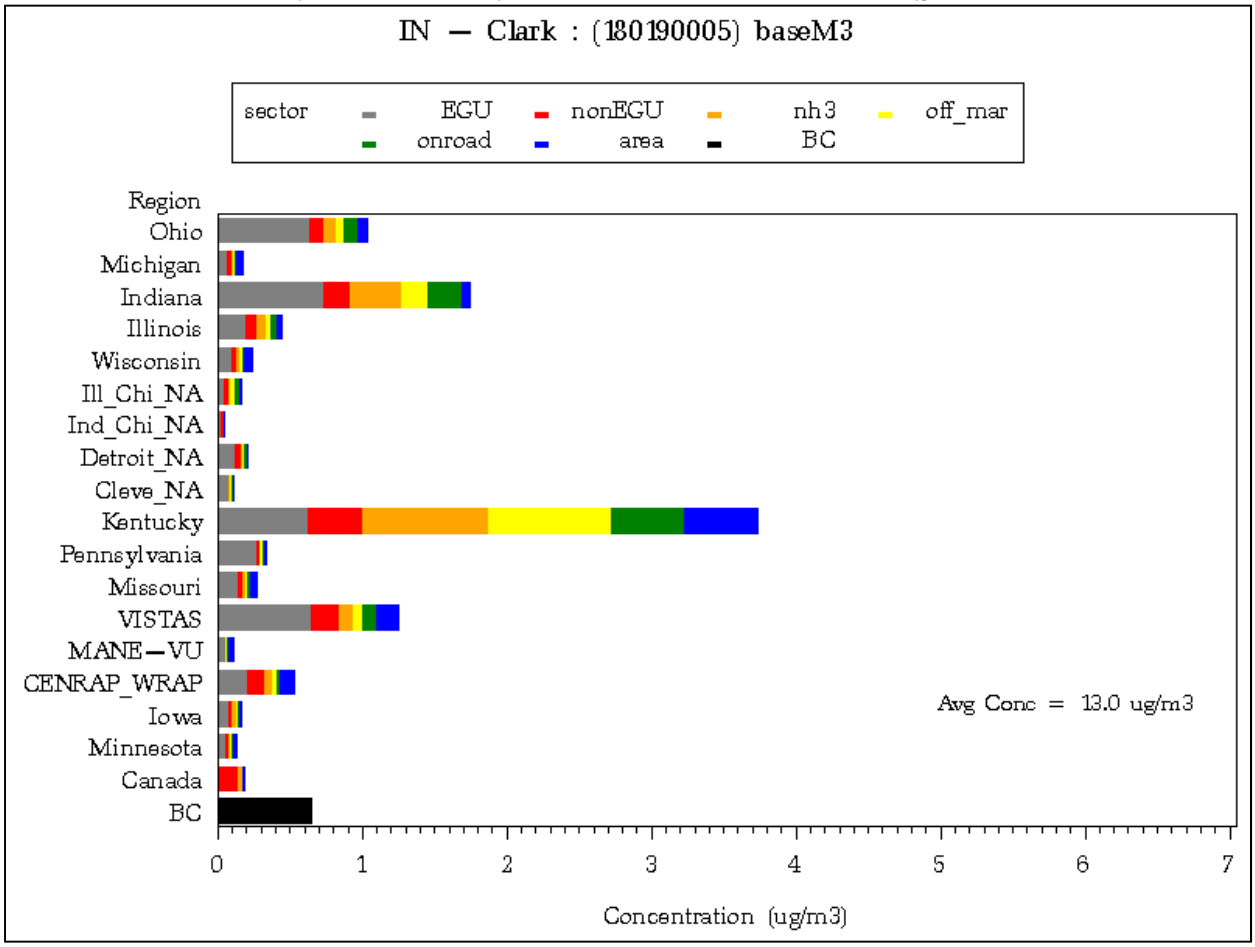
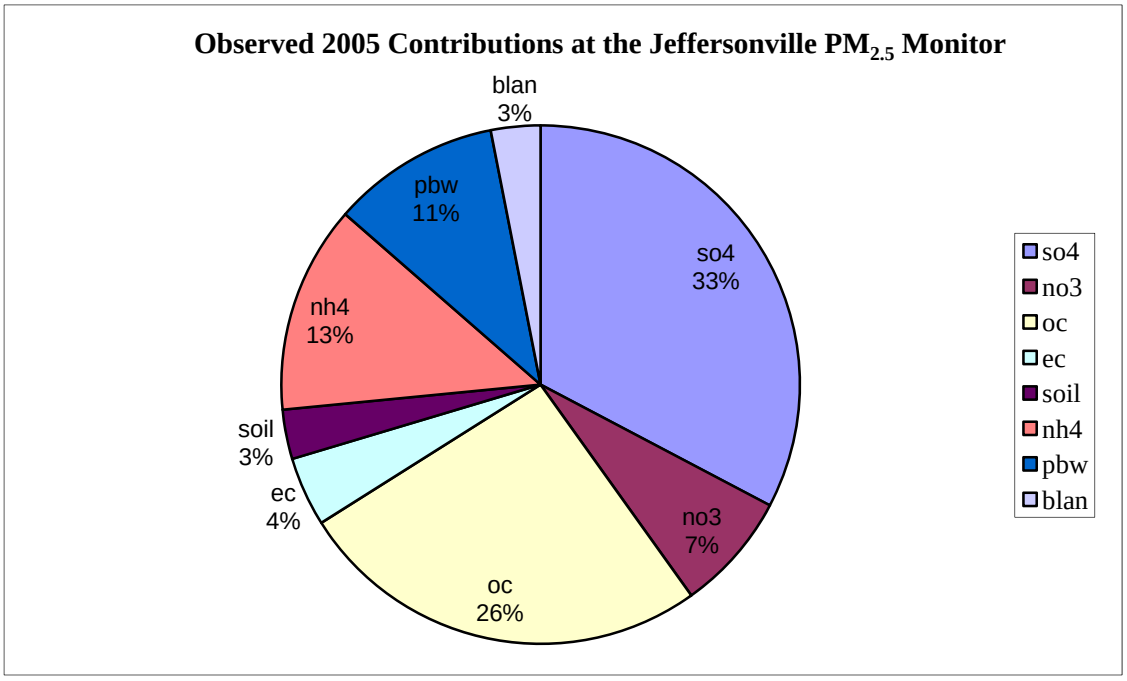
$PM_{2.5}$ Design Value Trends for the Louisville Area, 1999 to 2010

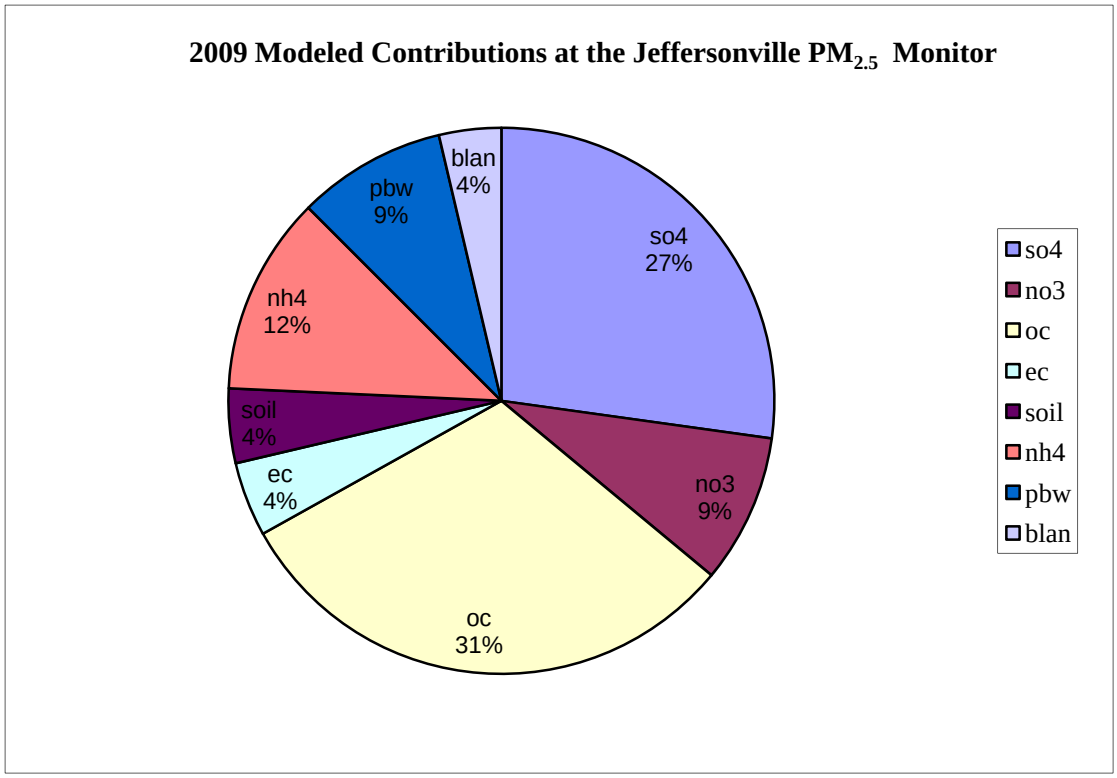


Regional/Emission Sector Particulate Source Apportionment Technology (PSAT) Test Results, Jeffersonville, Indiana – Walnut Street $PM_{2.5}$ Monitor

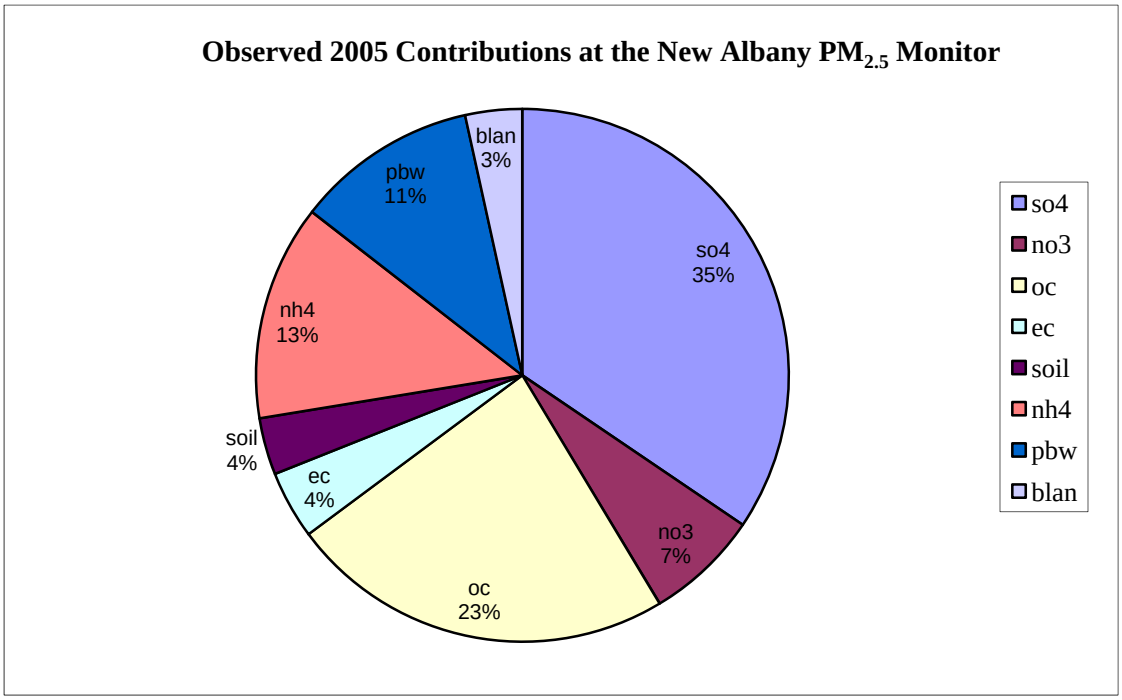


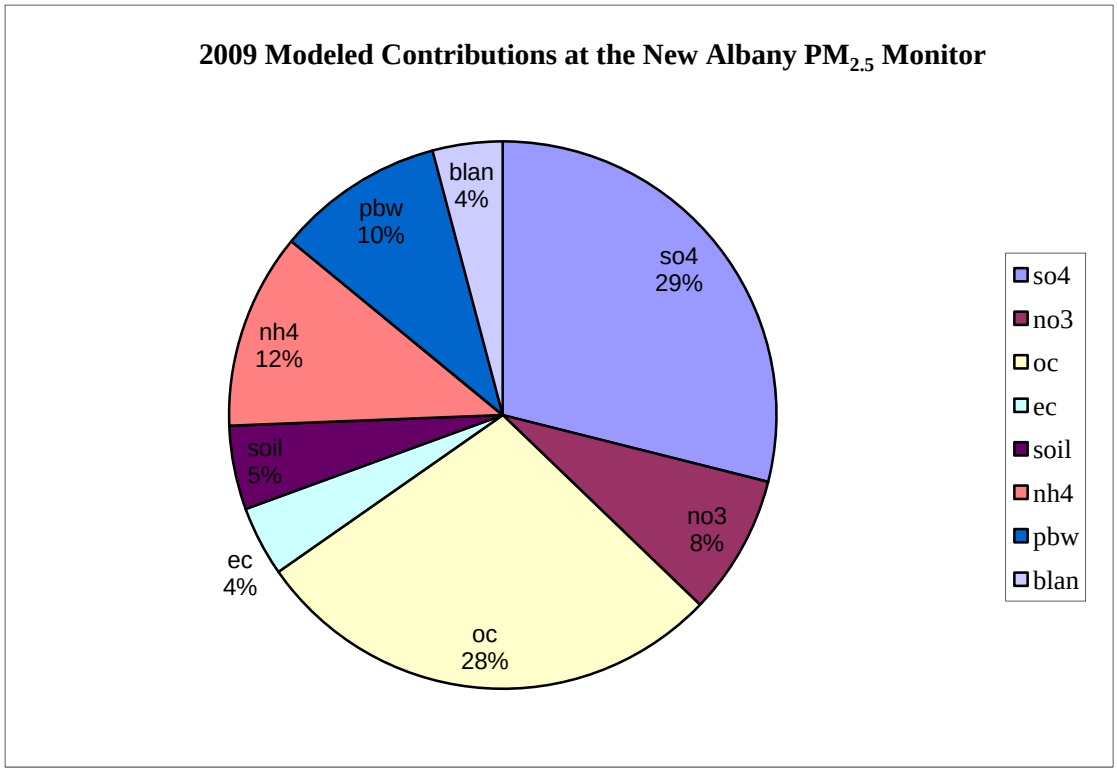
Modeled Contribution by Species at the Jeffersonville, Indiana Walnut Street PM $_{2.5}$ Monitor



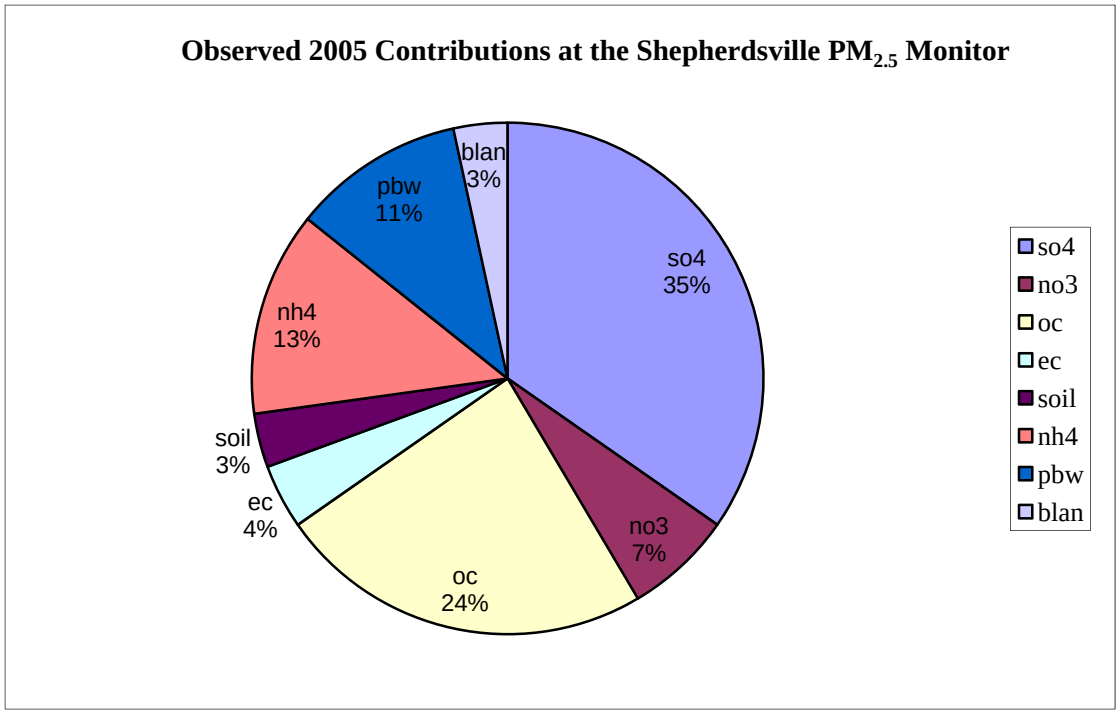


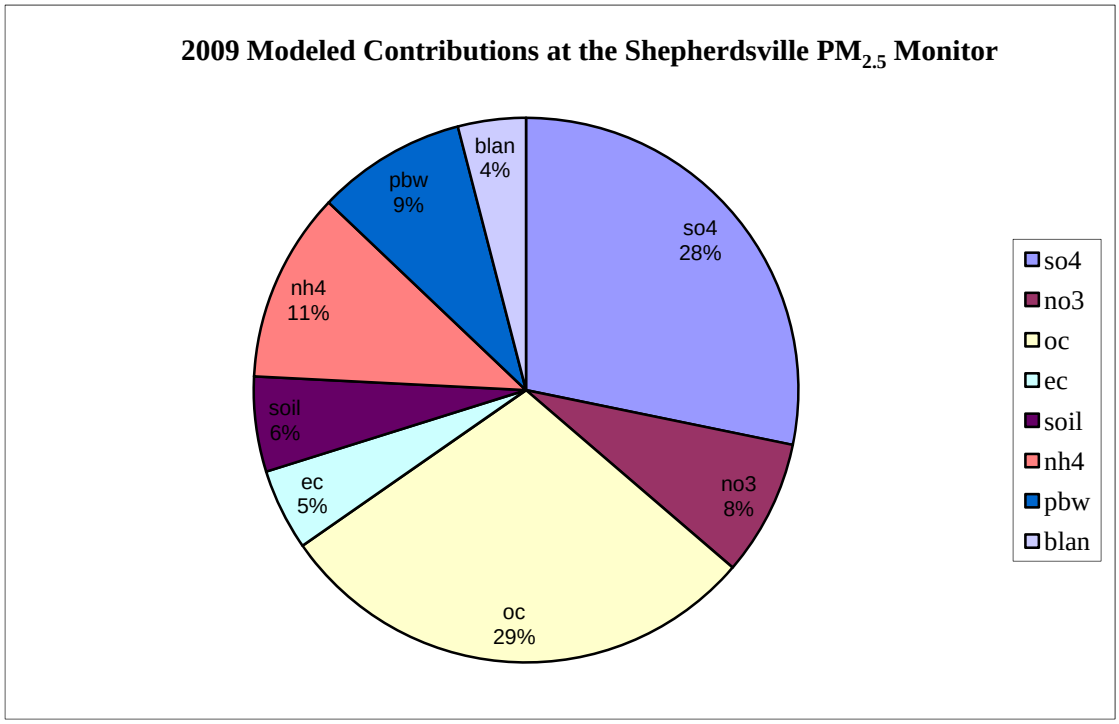
Modeled Contribution by Species at the New Albany, Indiana $PM_{2.5}$ Monitor



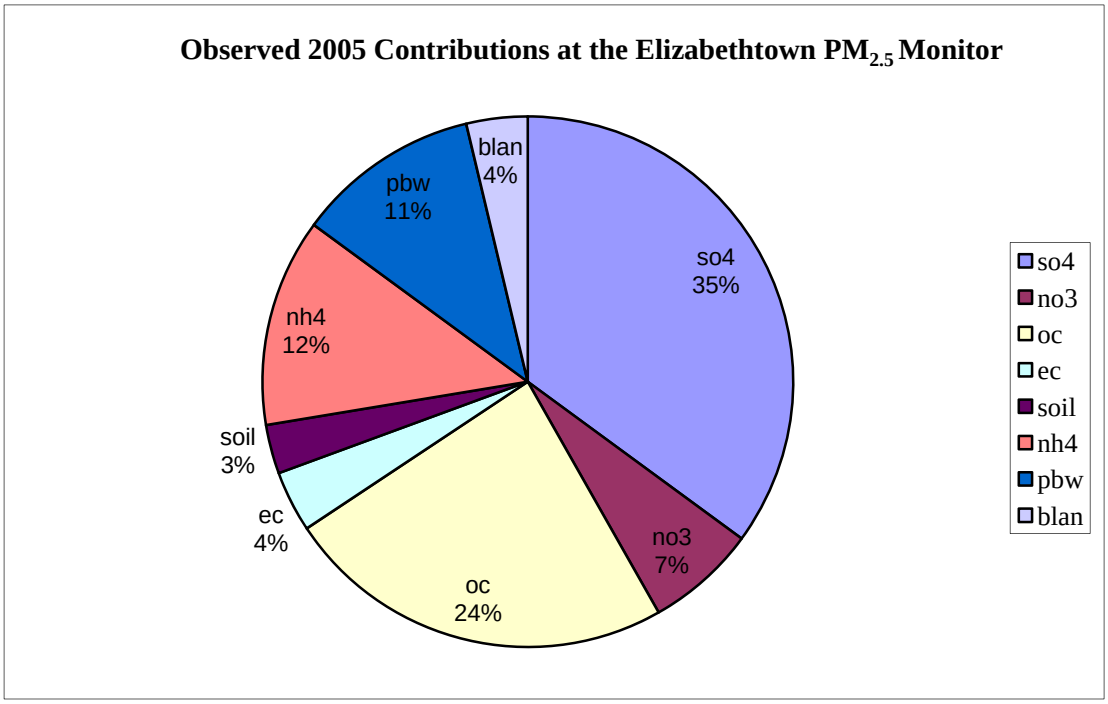


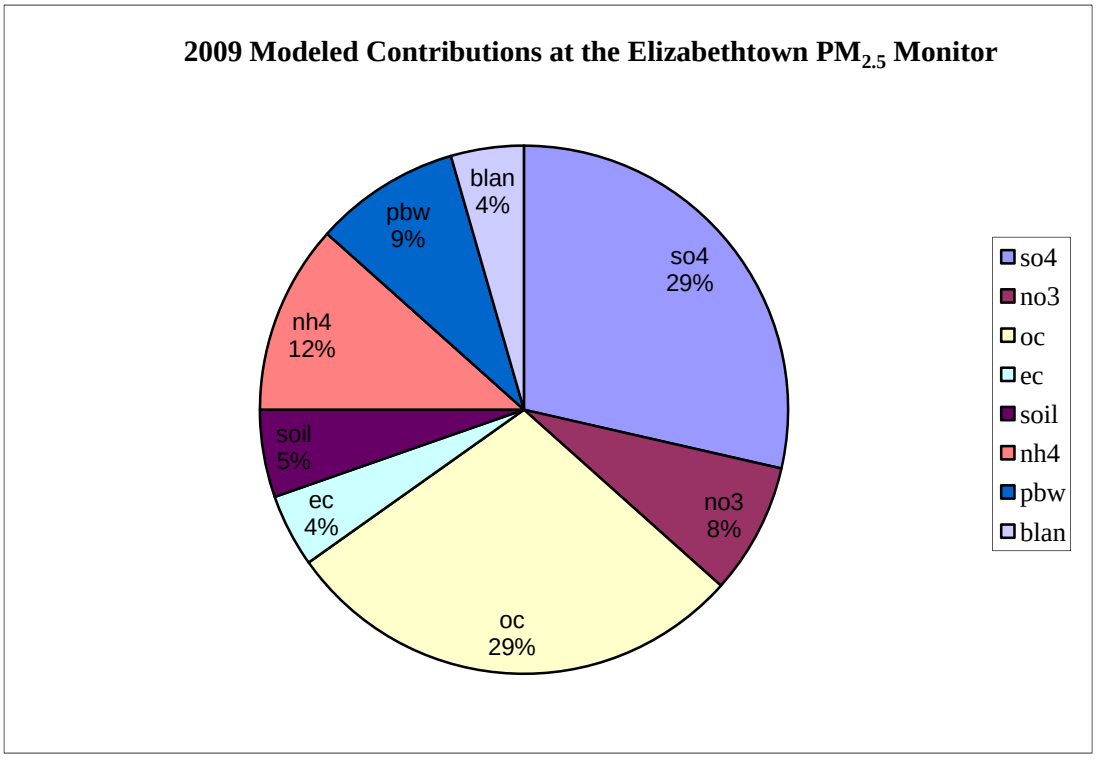
Modeled Contribution by Species at the Carpenter Street – Shepherdsville, Kentucky $PM_{2.5}$ Monitor



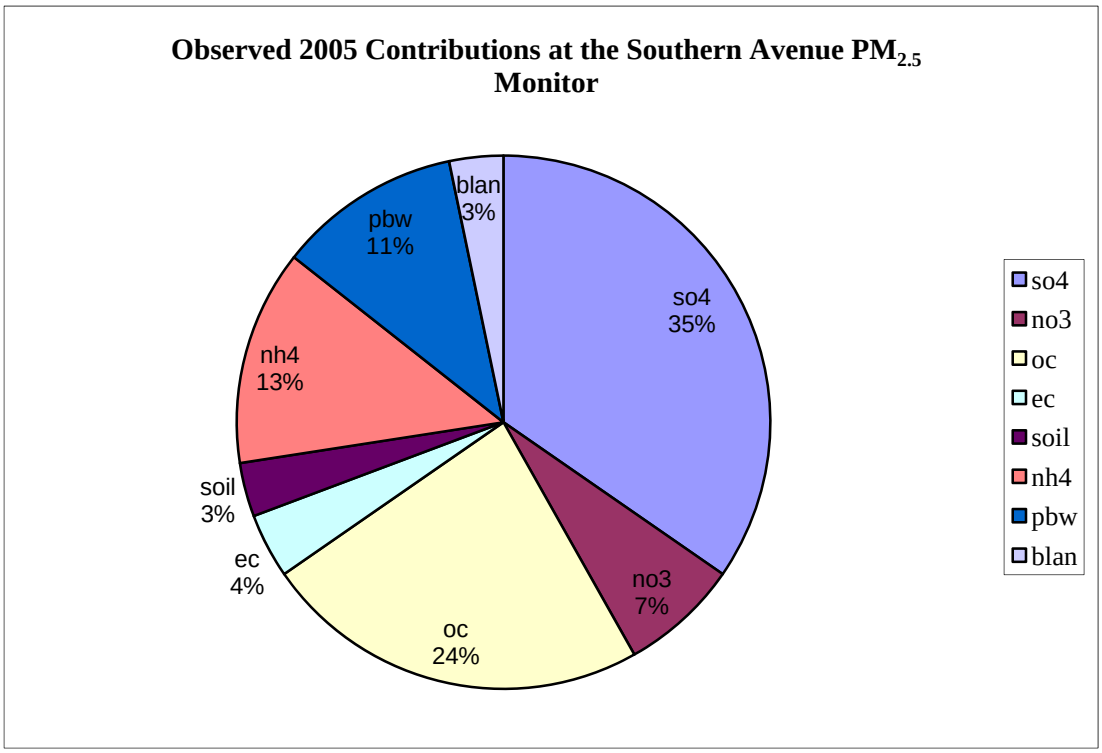


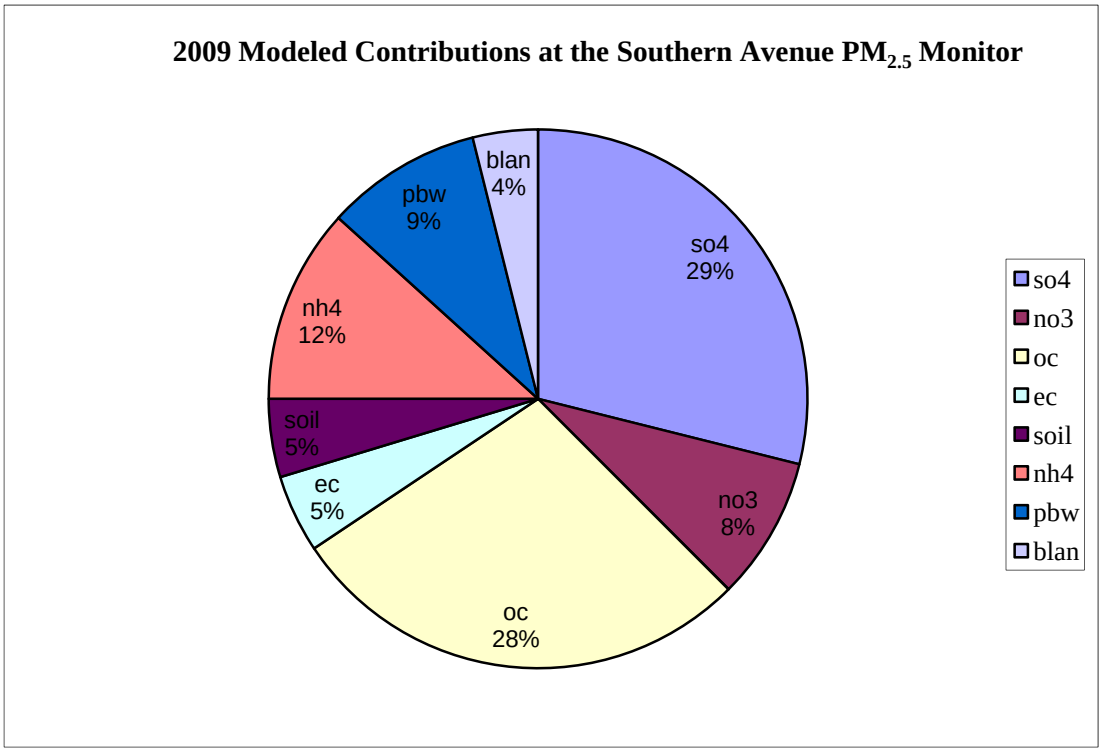
Modeled Contribution by Species at the Elizabethtown, Kentucky $PM_{2.5}$ Monitor



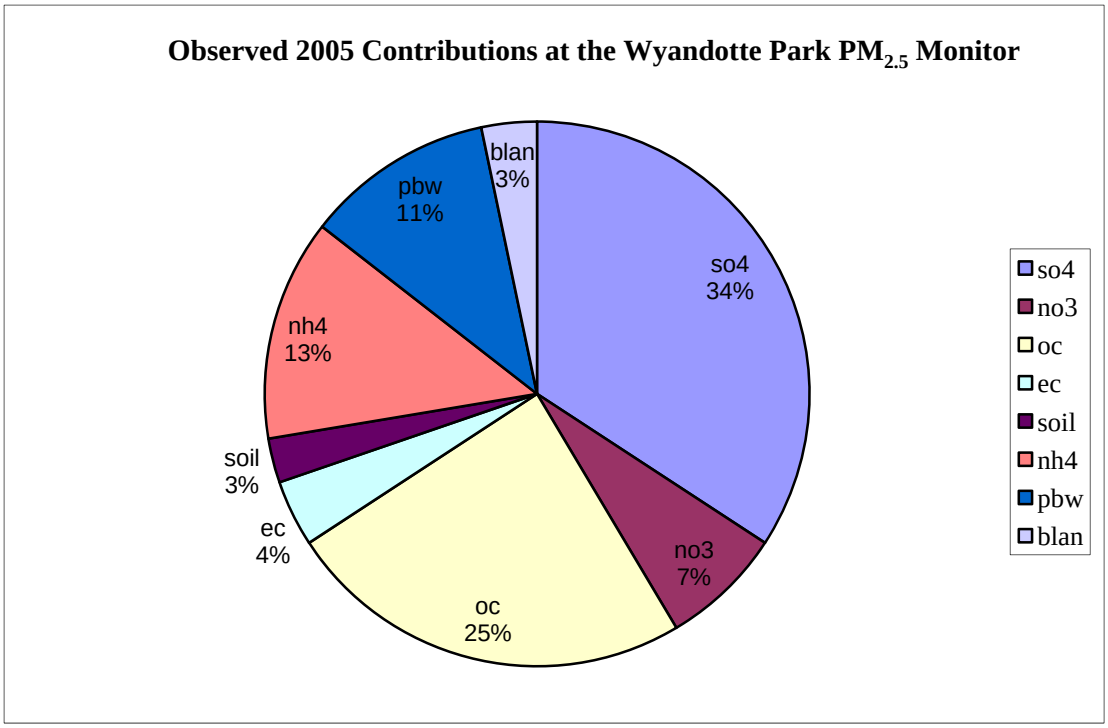


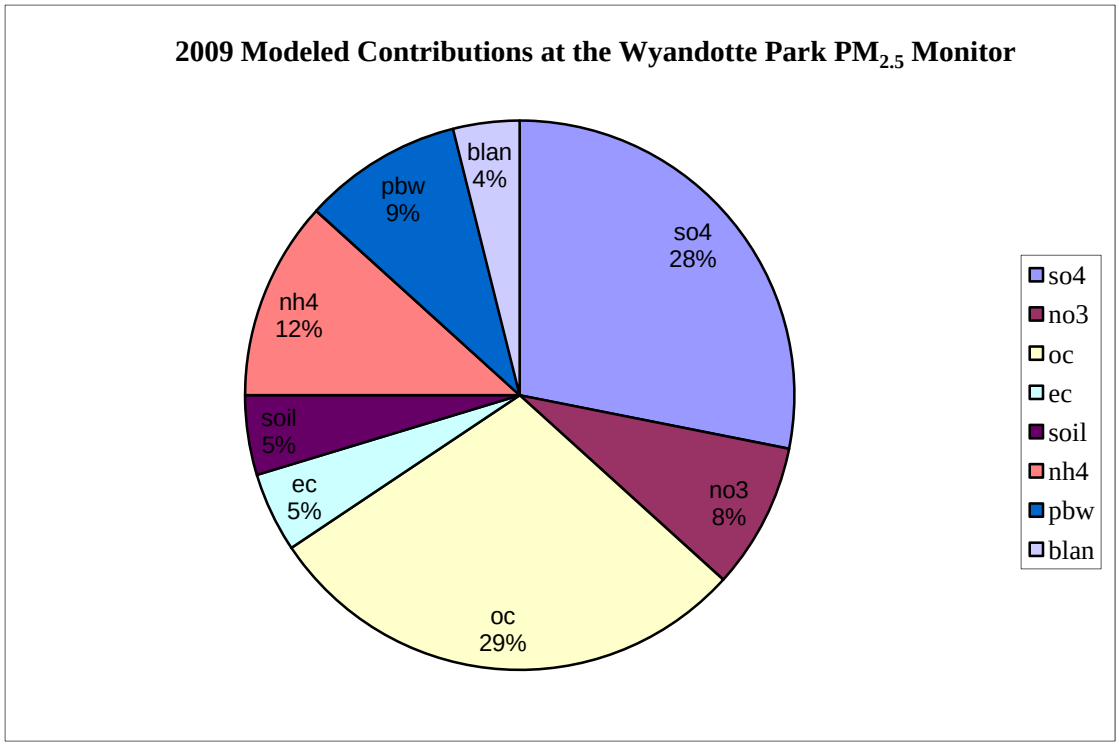
Modeled Contribution by Species at the Southern Avenue – Louisville, Kentucky $PM_{2.5}$ Monitor



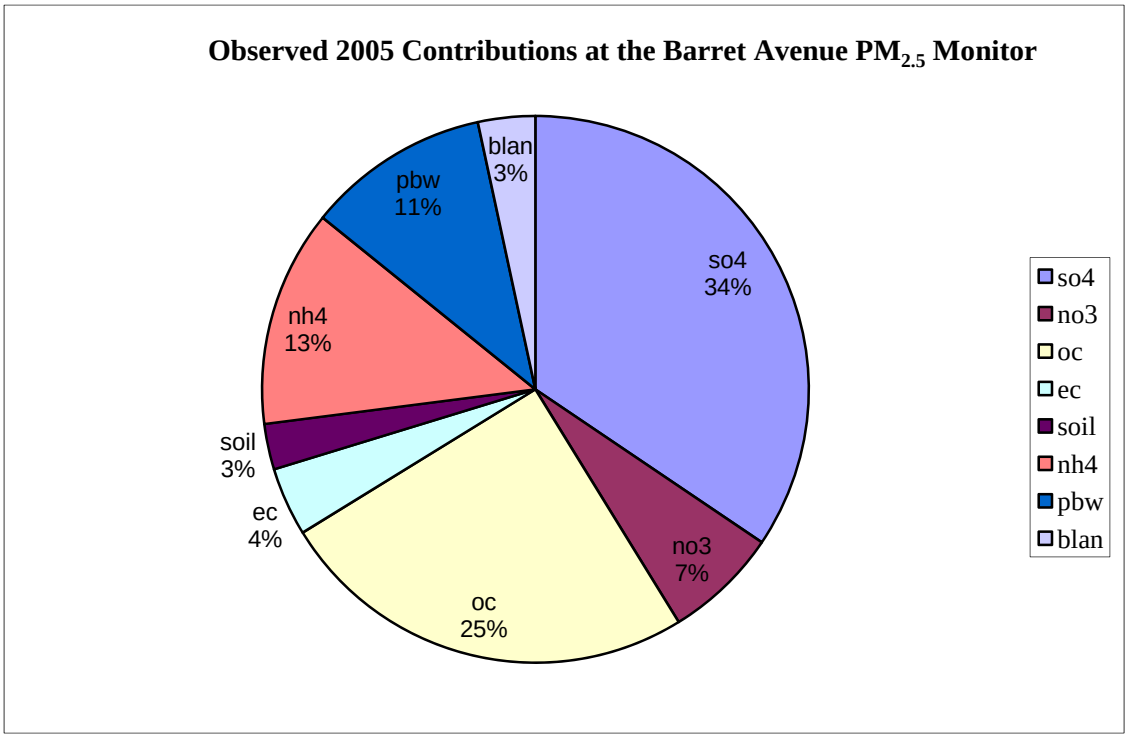


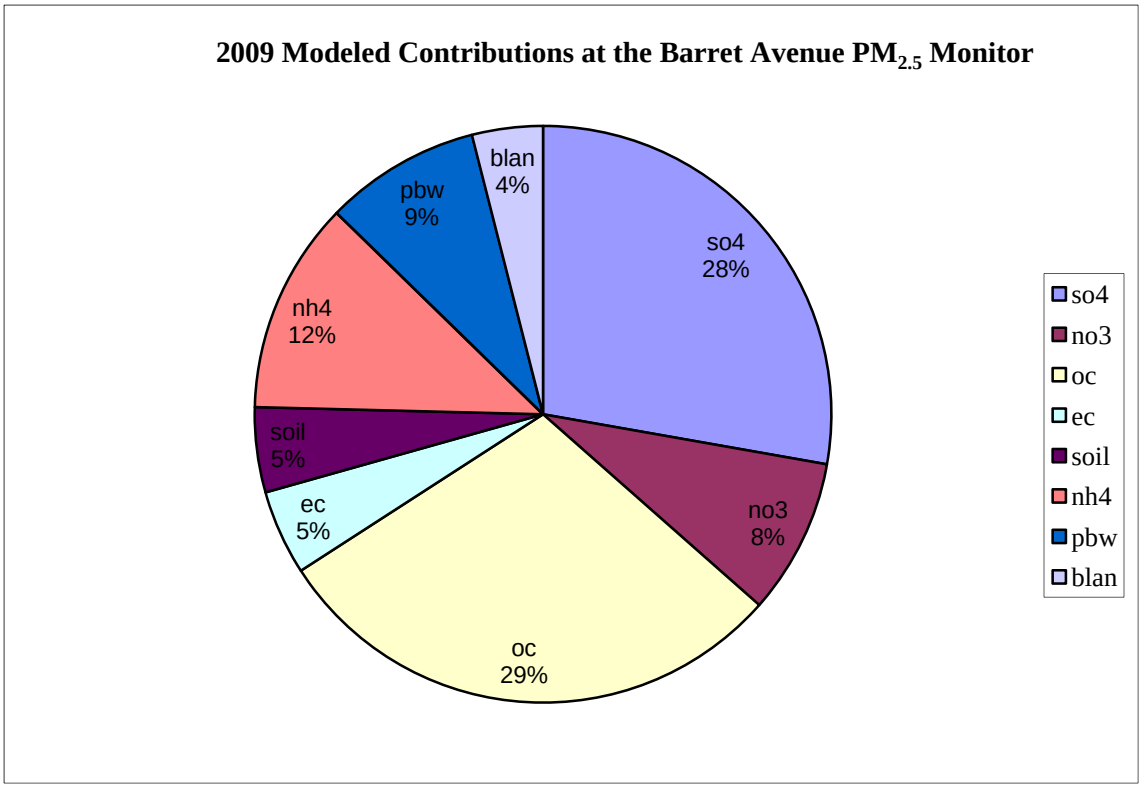
Modeled Contribution by Species at the Wyandotte Park – Louisville, Kentucky $PM_{2.5}$ Monitor



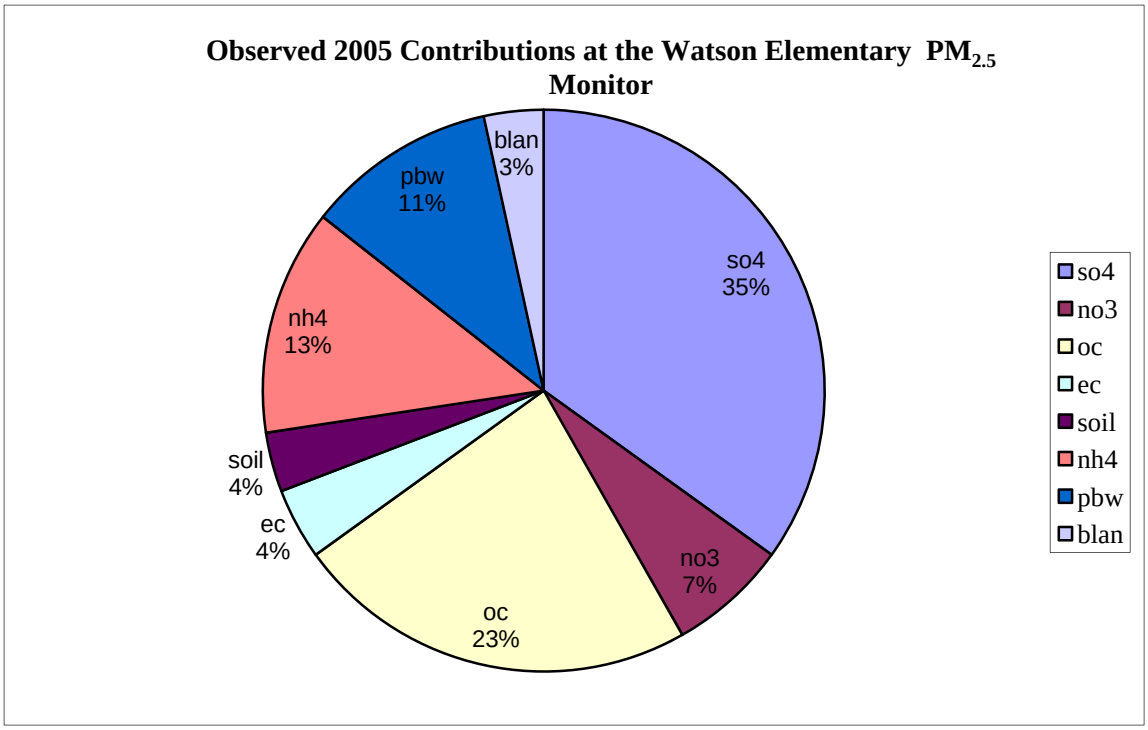


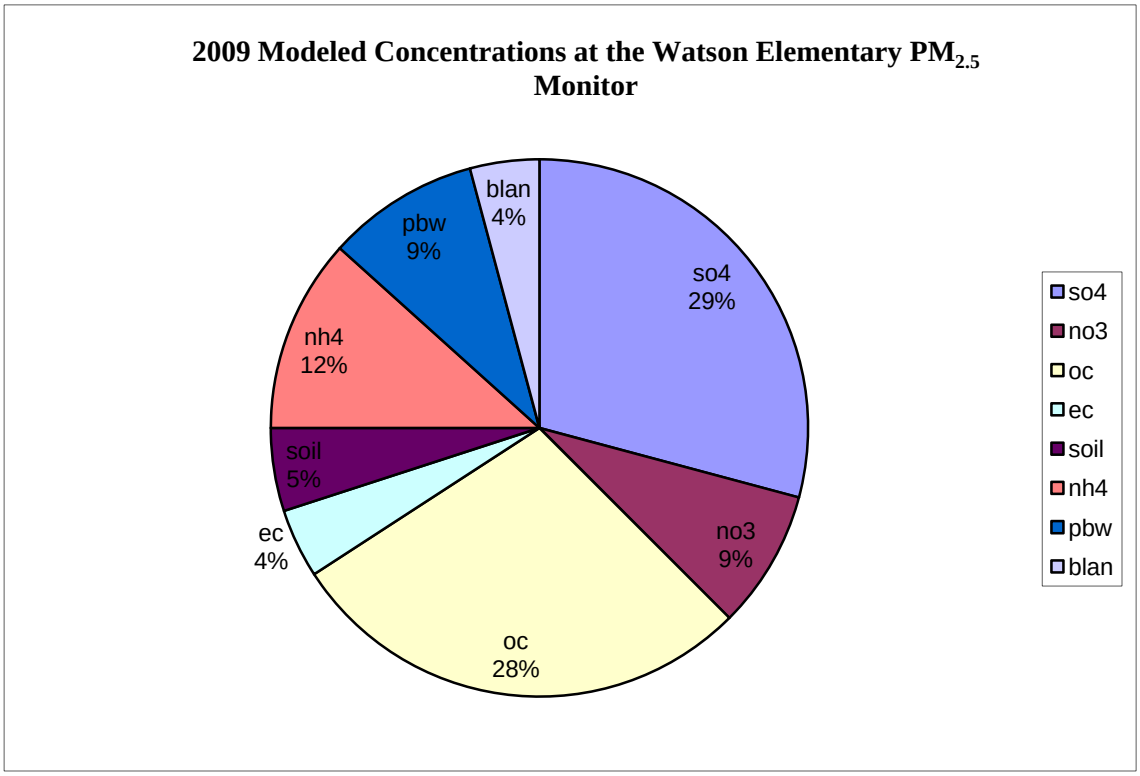
Modeled Contribution by Species at the Barret Avenue – Louisville, Kentucky $PM_{2.5}$ Monitor



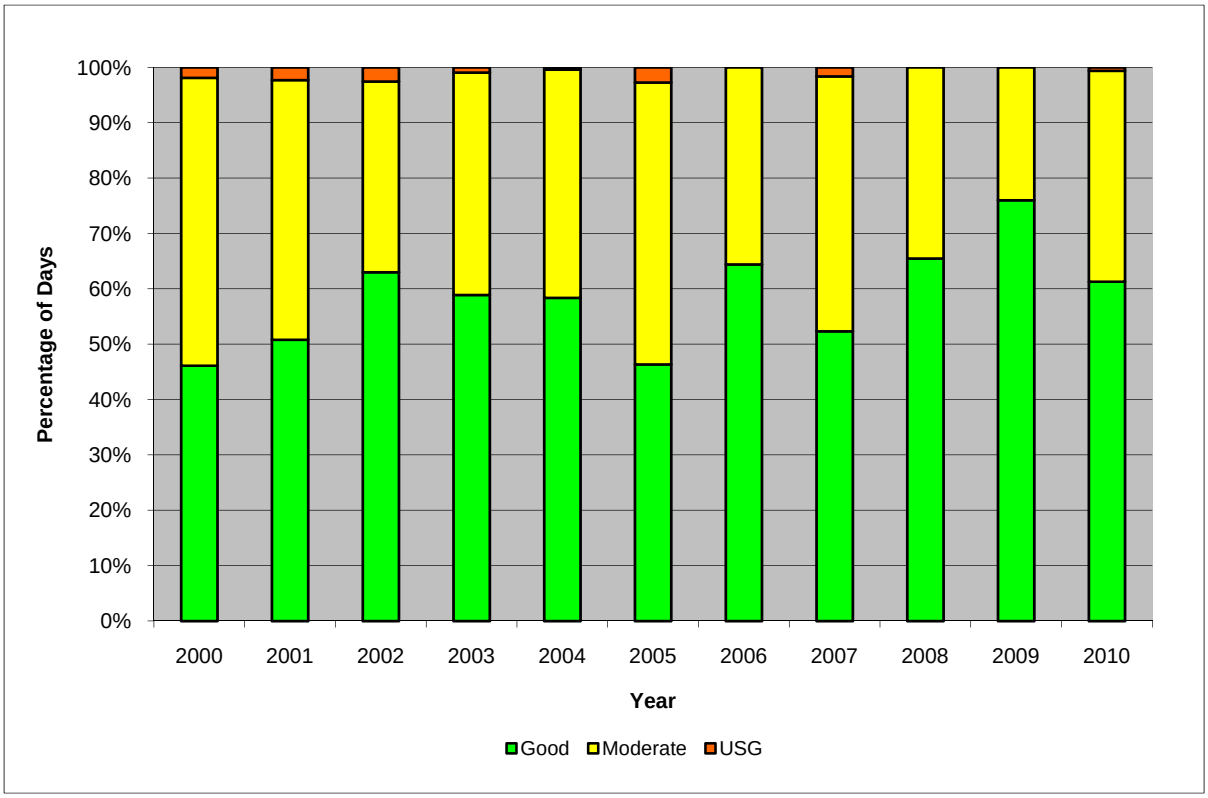


Modeled Contribution by Species at the Watson Elementary – Louisville, Kentucky $PM_{2.5}$ Monitor





Distribution of $PM_{2.5}$ Concentration Days on the AQI Levels of Health Concern for the Louisville Area



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APPENDIX K

Public Participation Process Documents

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LEGAL NOTICE OF PUBLIC HEARING

Redesignation Petition and Maintenance Plan
In Association with the Annual Fine Particle ($PM_{2.5}$) Standard

Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana

Notice is hereby given under 40 CFR 51.102 that the Indiana Department of Environmental Management (IDEM) will hold a public hearing on May 26, 2011. The purpose of this hearing is to receive public comment on the Draft Redesignation Petition and Maintenance Plan in association with the Annual Fine Particle ($PM_{2.5}$) Standard, for Jefferson County (Madison Township) and Clark and Floyd counties, Indiana. The meeting will convene at 5:30 p.m. (local time) in the Program Room at the Jeffersonville Township Public Library, 1312 Eastern Boulevard, Clarksville, Indiana. All interested persons are invited and will be given opportunity to express their views concerning the draft documents.

Jefferson County (Madison Township) and Clark and Floyd counties, Indiana are part of the Louisville KY-IN Nonattainment Area for Fine Particles. This area was designated as nonattainment for the annual standard for fine particles and subject to the requirements of Section 172 of the Clean Air Act (CAA). One of the compliance requirements mandated by Section 172(c) of the CAA, is the development of a plan demonstrating that the area will continue to meet the annual standard for fine particles. This Redesignation Petition and Maintenance Plan is being drafted and submitted consistent with United States Environmental Protection Agency (U.S. EPA) guidance.

Copies of the draft documents will be available on or before May 26, 2011 to any person upon request and at the following locations:

- Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, 100 North Senate, Room N1003, Indianapolis, Indiana.
- Clarksville Branch Library, 1312 Eastern Boulevard, Clarksville, Indiana.
- Floyd County Public Library, 180 West Spring Street, New Albany, Indiana.
- Jeffersonville Township Public Library, 211 East Court Avenue, Jeffersonville, Indiana.
- Madison-Jefferson County Public Library, 420 West Main Street, Madison, Indiana.

The draft documents will also be available on the following web page:

http://www.in.gov/idem/4658.htm

Oral statements will be heard, but for the accuracy of the record, statements should be submitted in writing. Written statements may be submitted to the attendant designated to receive written comments at the public hearing.

IDEM will also accept written comments through May 29, 2011. Mailed comments should be addressed to:

Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana Fine Particle ($PM_{2.5}$) Redesignation Petition and Maintenance Plan
Scott Deloney, Chief
Air Programs Branch
Indiana Department of Environmental Management
Office of Air Quality – Mail Code 61-50
100 North Senate Avenue
Indianapolis, IN 46206-2251

A transcript of the hearing and all written submissions provided at the public hearing shall be open to public inspection at IDEM and copies may be made available to any person upon payment of reproduction costs. Any person heard or represented at the hearing or requesting notice shall be given written notice of actions resulting from the hearing.

For additional information contact Mr. Gale Ferris, at the Indiana Department of Environmental Management, Air Programs Branch, Office of Air Quality, Room 1001, Indiana Government Center North, 100 North Senate Avenue, Indianapolis or call (317) 234-3653 or (800) 451-6027 ext. 4-3653 (in Indiana).

****

Individuals requiring reasonable accommodations for participation in this hearing should contact the IDEM Americans with Disabilities Act (ADA) coordinator at:

Attn: ADA Coordinator
Indiana Department of Environmental Management – Mail Code 50-10
100 North Senate Avenue
Indianapolis, IN 46204-2251

Or call (317) 233-1785 (voice) or (317) 232-6565 (TDD). Please provide a minimum of 72 hours notification.

ATTACH COPY OF ADVERTISEMENT HERE

Prescribed by State Board of Accounts

IDEM
(Governmental Unit)

Clark County, Indiana

To:
NEWS AND TRIBUNE
221 SPRING STREET
PO BOX 867
JEFFERSONVILLE, IN 47130

RECEIVED
MAY 12 2011
State of Indiana
Department of Environmental Management
Office of Air Quality

PUBLISHER'S CLAIM

LINE COUNT

Display Master (Must not exceed two actual lines, neither of which shall total more than four solid lines of the type in which the body of the advertisement is set) -- number of equivalent lines

Head -- number of lines 82

Body -- number of lines .....

Tail -- number of lines .....

Total number of lines in notice 82

COMPUTATION OF CHARGES

82 lines, 3 columns wide equals 246 equivalent lines at .2674 cents per line ..... $ 65.78

Additional charges for notices containing rule or tabular work (50 per cent of above amount) .....

Charge for extra proofs of publication ($1.00 for each proof in excess of two) .....

TOTAL AMOUNT OF CLAIM ..... $ 65.78

DATA FOR COMPUTING COST

Width of single column in picas 6 Size of type 7 point.

Number of insertions 1

Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same colunm width and type size, which was duly published in said paper 1 times. The dates of publication being as follows:

4-26-11

Additionally, the statement checked below is true and correct:

..... Newspaper does not have a Web site.

✓ Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper.

..... Newspaper has a Web site, but due to technical problem or error, public notice was posted on .....

..... Newpaper has a Web site but refuses to post the public notice.

Kelly J Wells
Legal Clerk

Date 5-6-11

Ref # 06526906

See table of legal rates in the applicable State Board of Accounts Bulletin

Claim No. _____ Warrant No. _____

IN FAVOR OF

_____

$_____

ON ACCOUNT OF APPROPRIATION FOR

_____

Appropriation No. _____

ALLOWED _____, _____

IN THE SUM OF $_____

_____

_____

_____

_____

_____

I have examined the within claim and hereby certify as follows:

That it is in proper form.

That it is duly authenticated as required by law.

That it is based upon statutory authority.

That it is apparently correct / incorrect

_____

I certify that the within claim is true and correct; that the services there in itemized and for which charge is made were ordered by me and were necessary to the public business

_____

_____, _____

LEGAL NOTICE OF PUBLIC HEARING
Redesignation Petition and Maintenance Plan
In Association with the Annual Fine Particle (PM2.5) Standard

Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana

Notice is hereby given under 40 CFR 51.102 that the Indiana Department of Environmental Management (IDEM) will hold a public hearing on May 26, 2011. The purpose of this hearing is to receive public comment on the Draft Redesignation Petition and Maintenance Plan in association with the Annual Fine Particle (PM2.5) Standard, for Jefferson County (Madison Township) and Clark and Floyd counties, Indiana. The meeting will convene at 5:30 p.m. (local time) in the Program Room at the Jeffersonville Township Public Library, 1312 Eastern Boulevard, Clarksville, Indiana. All interested persons are invited and will be given opportunity to express their views concerning the draft documents.

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"Are" instead of "Area"

HIGHLIGHTED LINE IS A REPEAT

Copies of the draft documents will be available on or before May 26, 2011 to any person upon request and at the following locations:

•Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, 100 North Senate, Room N1003, Indianapolis, Indiana.

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Fire Particle (PM2.5) Redesignation Petition and Maintenance Plan.
Scott Deloney, Chief
Air Programs Branch
Indiana Department of Environmental Management
Office of Air Quality - Mail Code 61-50
100 North Senate Avenue
Indianapolis, IN 46206-2251

SHOULD BE "FINE"

A transcript of the hearing and all written submissions provided at the public hearing shall be open to public inspection at IDEM and copies may be made available to any person upon payment of reproduction costs. Any person heard or represented at the hearing or requesting notice shall be given written notice of actions resulting from the hearing.

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****

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Attn: ADA Coordinator
Indiana Department of Environmental Management - Mail Code 50-10
100 North Senate Avenue
Indianapolis, IN 46204-2251

Or call (317) 233-1785 (voice) or (317) 232-6565 (TDD). Please provide a minimum of 72 hours notification.

ATTACH COPY OF ADVERTISEMENT HERE

Prescribed by State Board of Accounts

General Form No. 99P (Rev. 2009A)

Indiana Dept. of Enviromental Mgmt
(Governmental Unit)

Jefferson County, Indiana

To Madison Courier

Madison, IN 47250

PUBLISHER'S CLAIM

LINE COUNT

Display Master (Must not exceed two actual lines, neither of which shall total more than four solid lines of the type in which the body of the advertisement is set) -- number of equivalent lines .....

Head -- number of lines .....

Body -- number of lines .....

Tail -- number of lines .....

Total number of lines in notice 139

COMPUTATION OF CHARGES

139 lines, 1 columns wide equals 139 equivalent lines at 28.49 cents per line ..... $ 39.60

Additional charges for notices containing rule or tabular work (50 per cent of above amount) .....

Charge for extra proofs of publication ($1.00 for each proof in excess of two) 39.60

TOTAL AMOUNT OF CLAIM ..... $ .....

DATA FOR COMPUTING COST

Width of single column in picas 7.6 Size of type 7 point.

Number of insertions 1

Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper 1 times. The dates of publication being as follows:

April 22nd, 2011

Additionally, the statement checked below is true and correct:

..... Newspaper does not have a Web site.

..x.. Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper.

..... Newspaper has a Web site, but due to technical problem or error, public notice was posted on .....

..... Newspaper has a Web site but refuses to post the public notice.

Date April 22nd, 2011

Title Publisher

Claim No. _____ Warrant No._____

IN FAVOR OF

$_____

ON ACCOUNT OF APPROPRIATION FOR

ALLOWED _____ 20 _____

In the sum of $_____

I have examined the within claim and hereby certify as follows:

That it is in proper form.

That is duly authenticated as required by law.

That is based upon statutory authority.

That is apparently correct. / incorrect.

I certify that the within claims true and correct; that the services therein itemized and for which charge is made were ordered by me and were necessary to the public business.

_____, 20_____

THE MADISON COURIER, MADISON, IN

LEGAL NOTICE
OF PUBLIC HEARING

**Redesignation Petition and Maintenance Plan
In Association with the Annual Fine Particle (PM2.5) Standard
Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana.**

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- Jeffersonville Township Public Library, 211 East Court Avenue, Jeffersonville, Indiana.
- Madison-Jefferson County Public Library, 420 West Main Street, Madison, Indiana.

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http://www.in.gov/idem/4658.htm

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Scott Deloney, Chief
Air Programs Branch
Indiana Department
of Environmental Management
Office of Air Quality –
Mail Code 61-50
100 North Senate Avenue
Indianapolis, IN 46206-2251

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* * *

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Attn: ADA Coordinator
Indiana Department
of Environmental Management –
Mail Code 50-10
100 North Senate Avenue
Indianapolis, IN 46204-2251

Or call (317) 233-1785 (voice) or (317) 232-6565 (TDD).

Please provide a minimum of 72 hours notification.

C4-22

A 5/5/11

Prescribed by State Board of Accounts **80315-5801966** General Form No. 99P (Rev. 2009A)

IND DEPT OF ENVIRONMENTAL MANA

MARION COUNTY, INDIANA

To: INDIANAPOLIS NEWSPAPERS
307 N PENNSYLVANIA ST - PO BOX 145
INDIANAPOLIS, IN 46206-0145

PUBLISHER'S CLAIM

LINE COUNT

Display Matter - (Must not exceed two actual lines, neither of which shall total more than four solid lines of the type in which the body of the advertisement is set). - number of equivalent lines _____

Head - Number of lines _____

Body - Number of lines _____

Tail - Number of lines _____

Total number of lines in notice _____

COMPUTATION OF CHARGES

117.0 lines 2.0 columns wide equals 234.0 equivalent lines at .458 cents per line $ 107.17

Additional charge for notices containing rule and figure work (50 per cent of above amount) _____

Charges for extra proofs of publication ($1.00 for each proof in excess of two) .00

TOTAL AMOUNT OF CLAIM $ 107.17

DATA FOR COMPUTING COST

Width of single column 5.8 ems Size of type 7

Number of insertions 1.0

Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper 1 times. The dates of publication being between the dates of:

04/26/2011 and **04/26/2011**

Additionally, the statement checked below is true and correct:

___ Newspaper does not have a Web site.

✓ Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper

___ Newspaper has a Web site, but due to a technical problem or error, public notice was posted on _____

___ Newspaper has a Web site but refuses to post the public notice.

Kenney Dodson

DATE: 04/26/2011

Title: Clerk

INDIANAPOLIS STAR AND NEWS, INDIANAPOLIS, IN

LEGAL NOTICE OF PUBLIC HEARING

Redesignation Petition and Maintenance Plan In Association with the Annual Fine Particle (PM2.5) Standard

Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana

Notice is hereby given under 40 CFR 51.102 that the Indiana Department of Environmental Management (IDEM) will hold a public hearing on May 26, 2011. The purpose of this hearing is to receive public comment on the Draft Redesignation Petition and Maintenance Plan in association with the Annual Fine Particle (PM2.5) Standard, for Jefferson County (Madison Township) and Clark and Floyd counties, Indiana. The meeting will convene at 5:30 p.m. (local time) in the Program Room at the Jeffersonville Township Public Library, 1312 Eastern Boulevard, Clarksville, Indiana. All interested persons are invited and will be given opportunity to express their views concerning the draft documents.

Jefferson County (Madison Township) and Clark and Floyd counties, Indiana are part of the Louisville KY-IN Nonattainment Area for Fine Particles. This area was designated as nonattainment for the annual standard for fine particles and subject to the requirements of Section 172 of the Clean Air Act (CAA). One of the compliance requirements mandated by Section 172(c) of the CAA, is the development of a plan demonstrating that the area will continue to meet the annual standard for fine particles. This Redesignation Petition and Maintenance Plan is being drafted and submitted consistent with United States Environmental Protection Agency (U.S. EPA) guidance.

Copies of the draft documents will be available on or before May 26, 2011 to any person upon request and at the following locations:

- Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, 100 North Senate, Room N1003, Indianapolis, Indiana.
- Clarksville Branch Library, 1312 Eastern Boulevard, Clarksville, Indiana.
- Floyd County Public Library, 180 West Spring Street, New Albany, Indiana.
- Jeffersonville Township Public Library, 211 East Court Avenue, Jeffersonville, Indiana.
- Madison-Jefferson County Public Library, 420 West Main Street, Madison, Indiana.

The draft documents will also be available on the following web page:
http://www.in.gov/idem/4658.htm

Oral statements will be heard, but for the accuracy of the record, statements should be submitted in writing. Written statements may be submitted to the attendant designated to receive written comments at the public hearing.

IDEM will also accept written comments through May 29, 2011. Mailed comments should be addressed to:

Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana Fine Particle (PM2.5) Redesignation Petition and Maintenance Plan
Scott Deloney, Chief
Air Programs Branch
Indiana Department of Environmental Management
Office of Air Quality – Mail Code 61-50
100 North Senate Avenue
Indianapolis, IN 46206-2251

A transcript of the hearing and all written submissions provided at the public hearing shall be open to public inspection at IDEM and copies may be made available to any person upon payment of reproduction costs. Any person heard or represented at the hearing or requesting notice shall be given written notice of actions resulting from the hearing.

For additional information contact Mr. Gale Ferris, at the Indiana Department of Environmental Management, Air Programs Branch, Office of Air Quality, Room 1001, Indiana Government Center North, 100 North Senate Avenue, Indianapolis or call (317) 234-3653 or (800) 451-6027 ext. 4-3653 (in Indiana).

****

Individuals requiring reasonable accommodations for participation in this hearing should contact the IDEM Americans with Disabilities Act (ADA) coordinator at:

Attn: ADA Coordinator
Indiana Department of Environmental Management – Mail Code 50-10
100 North Senate Avenue
Indianapolis, IN 46204-2251

Or call (317) 233-1785 (voice) or (317) 232-6565 (TDD). Please provide a minimum of 72 hours notification.

(S - 4/26/11 - 5801966)

Jefferson County (Madison Township) and Clark and Floyd Counties, Indiana Redesignation Request and Maintenance Plan in Association with the Annual Fine Particle ($PM_{2.5}$) Standard

Summary/Response to Comments Received at the Public Hearing

On May 26, 2011, the Indiana Department of Environmental Management (IDEM) conducted a public hearing in Clarksville, Indiana concerning the draft Redesignation Request and Maintenance Plan for Jefferson County (Madison Township) and Clark and Floyd counties, Indiana. IDEM received no comments at the public hearing.

Summary/Response to Comments Received During the Comment Period

IDEM requested public comment on the draft Redesignation Request and Maintenance Plan for Jefferson County (Madison Township) and Clark and Floyd counties, Indiana from April 20, 2011 to May 29, 2011.

IDEM received comments from the following parties:

Larry D. Chaney, MPO Director, Kentuckiana Regional Planning and Development Agency (LC)

Comment: There is sufficient uncertainty associated with several variables used in the analysis of regional air quality that establishing motor vehicle emission budgets (MVEBs) for $PM_{2.5}$ and NO_x based on 15% margins of safety will be too low. Establishing MVEBs that are too low (i.e. too stringent) will increase the probability that a conformity failure will occur. If this occurs, the metropolitan transportation plan (MTP) and transportation improvement plan (TIP) cannot be updated or amended. This would hinder the progress in implementing transportation projects some of which have the potential to reduce pollutant emissions and presumably improve local air quality. (LC)

Response: IDEM agrees with the commenter that a number of variables used in the regional air quality analysis can result in adjustments to future emission projections (e.g. new tools and emission factors). This variability applies to all source sectors, not just mobile sources, and has to be accounted for within the maintenance plan to prevent backsliding by preserving an overall margin of safety. In an effort to accommodate future variations in the transportation demand model and the total daily vehicle miles traveled (VMT) forecast when no change to the network is planned, IDEM consulted with the interagency consultation group (ICG), including United States Environmental Protection Agency (U.S. EPA) Regions IV and V, to determine a reasonable approach to address this variation. The ICG approved a 15% safety margin for direct

$PM_{2.5}$ mobile source emission estimates for the years 2015 and 2025, and a 15% safety margin for NO_x mobile source emission estimates for the years 2015 and 2025. IDEM believes that this margin of safety provides adequate flexibility to account for mobile source-related variability.

As a maintenance area for the 8-hour ozone standard, KIPDA has performed a number of air quality analyses to demonstrate that its MTP and TIP conform to the region's MVEBs for ozone precursors (i.e. volatile organic compounds and NO_x). These analyses have demonstrated that the region's projected future year emissions are well below the MVEBs and have shown that a margin of safety of 7.5% would have been adequate for the region to demonstrate conformity. A 15% margin of safety is more than twice the amount historically shown to be necessary for the region to demonstrate conformity with the 8-hour ozone MVEBs and should more than adequately accommodate future growth in the region. With new ozone and fine particles standards scheduled to be released within the next year, these conformity budgets will almost certainly be replaced within the next three to four years. Due to the fact that those budgets will be contained in attainment state implementation plans (SIPs) as opposed to maintenance plans, IDEM will not be in a position to accommodate a margin of safety as large as 15%. Therefore, it is highly likely that the MVEBs contained in this particular SIP will only be applicable for the next three to five years. KIPDA's MTP and TIP clearly demonstrate conformance with the maintenance SIP budgets for this window of time, without reliance on a margin of safety.

Comment: Population growth, employment, commuting, and VMT information from the 2010 Census and related sources is not available at a sufficiently small level of geography to be able to quantify the impacts of socioeconomic changes. County-level information does indicate that although the region has suffered from the recent economic downturn, there is still growth in socioeconomic attributes and VMT. Regional planning cannot be based on short-term events like the economic downturn. Therefore, growth in travel must be expected once the economy improves. When it does, MVEBs must be large enough to account for future growth in VMT. (LC)

Response: Motor vehicle emission inventories were developed using the latest available planning assumptions at the time the SIP was developed. Future year emissions projections are likely to change when they are updated over time. If warranted, IDEM can process a SIP revision in conjunction with a MTP or TIP revision through the interagency consultation process. U.S. EPA can process such a revision within 90 days. This process and schedule would not impede the transportation planning process. Additionally, fleet turnover, ever evolving fuel and engine standards, and emission factor model upgrades have historically resulted in future year emission projections to decrease rather than increase, and there is no reason to expect that historical trend to reverse over the next few years.

Comment: How can the MTP demonstrate conformity with the proposed MVEBs? It is not feasible to change projects in the MTP in order to demonstrate conformity except in cases where the otherwise failing MTP is only failing by a small amount. Theoretically, it is possible to determine which projects, if any, have negative air quality impacts and remove them. However, MTPs are required to be financially responsible and additional funding for new projects would have to come from funding not used by the projects with positive air quality impacts. An extreme case of this would be to remove all projects that do not show positive air quality impacts. This might be theoretically possible, but it would be impractical because the air quality neutral projects may provide benefits that are not normally considered. (LC)

Response: The proposed MVEBs have been built around the region's long range travel demand model and MTP. All projects contained within the current MTP and TIP are thus protected without reliance on a margin of safety. IDEM believes that the MVEBs established in the SIP provide an adequate margin of safety to account for any variability that may occur in the transportation planning process, especially considering the estimated lifespan of these particular MVEBs. If adding a new or unexpected project results in the region being unable to demonstrate conformity, existing projects will need to be adjusted accordingly to ensure emissions are below the MVEBs, or an amendment to the SIP could occur concurrently with an amendment to the plan or TIP if warranted.

Comment: Mobile source emission estimates used in the MVEB setting process were calculated using a new model recently released by U.S. EPA referred to as the Motor Vehicle Emission Simulator (MOVES). Because of its newness and complexity, there is ample reason to expect that "bugs" will be found in the software and "fixes" will need to be made. KIPDA believes that the uncertainty associated with the MOVES model and its inputs are considerable and should be accompanied by more lenient, rather than more stringent MVEBs. (LC)

Response: MOVES incorporates substantial new vehicle emissions-related data and accounts for changes in vehicle technology and regulations as well as improved understanding of in-use emission levels and the factors that influence them. This allows federal reduction programs to be better accounted for (e.g. new fuel and engine standards) and will likely result in more accurate emission estimates. IDEM feels that it is inappropriate to refer to the MVEBs as "stringent", "overly stringent", or "more stringent" considering the fact that the MVEBs accommodate everything contained in the current long-range MTP and provide a margin of safety that is approximately 200% greater than the region has needed historically.

MVEBs were developed using the latest available planning assumption and should adequately accommodate for future growth in the region. If warranted, IDEM can process a SIP revision in conjunction with a MTP or TIP revision through the interagency consultation process. U.S. EPA can process such a revision within 90 days. This process and schedule would not impede the transportation planning process.

Comment: As new vehicle registration data for Bullitt and Jefferson counties becomes available, it is likely that the majority of the NO_x margin of safety and a significant portion of the $PM_{2.5}$ margin of safety will be used up. If the region should need to use MOVES in the emission rate mode, the rest of the NO_x margin of safety will be immediately consumed. (LC)

Response: Motor vehicle emission inventories were developed using the latest available planning assumptions at the time the SIP was developed. If new vehicle registration data or estimating emissions in the "emission rate mode" necessitates the need to revise the MVEBs in the future, IDEM can process a SIP revision in conjunction with a MTP or TIP revision through the interagency consultation process. U.S. EPA can process such a revision within 90 days. This process and schedule would not impede the transportation planning process. However, IDEM does not anticipate this to be necessary. When population shifts from one county to another and is accounted for within a regional emissions analysis, the net impact is negligible (because it is accounted for in both scenarios). Additionally, socio-economic data suggests that the growth that is occurring within the metropolitan region would likely affect the fleet mix in a favorable manner (i.e., decrease in average vehicle age).

Conclusion: IDEM is not making any changes to the MVEBs contained within the maintenance plan. The MVEBs are consistent with the consensus achieved through interagency consultation and based on close evaluation of historical conformity demonstrations, provides a generous margin of safety. Any increase to the margin of safety contained within the SIP needs to be quantified (actual VMT for 2010 is 30% greater than what was projected by the travel demand model for the same year, etc.) in order to properly substantiate a percent greater than that which is currently contained. IDEM believes that 15% is more than adequate to account for the qualitative variabilities presented as concern by KIPDA.

KIPDA
Kentuckiana Regional Planning and Development Agency

May 26, 2011

Scott Deloney, Chief
Air Programs Branch
Indiana Department of Environmental Management
Office of Air Quality – Mail Code 61-50
100 North Senate Avenue
Indianapolis, IN 46206-2251

SUBJECT: Comments concerning the State Implementation Plan (SIP) Budgets Proposed by the Indiana Department of Environmental Management

It is our understanding that new emission budgets for the Louisville KY-IN Metropolitan Area are proposed for PM 2.5 in the State Implementation Plan (SIP) developed by the Indiana Department of Environmental Management (IDEM) with the aid of other agencies. The SIP including the budgets is presently undergoing public review. These budgets were proposed to limit the amount of fine particulate matter (PM 2.5) and one of its precursors, oxides of Nitrogen (NOx) that could be emitted. Please know that KIPDA staff is not in any way opposed to the reduction of those pollutants. However, we do have concerns regarding the margin of safety proposed by IDEM, as well as the potential negative impacts on transportation planning if those budgets are not met and the local area experiences a conformity failure.

To summarize the position of the KIPDA MPO, please refer to the attachments: NOx Emission Levels and PM2.5 Emission Levels. As can be seen in the graphs, the emissions were at a certain level when the Annual PM 2.5 standard was attained. Therefore, the 2008 total emissions for each pollutant represent a level that can be emitted with the expectation that attainment of the standard would continue. It can also be noted that onroad mobile source emissions are expected to drop in each case (as shown by the lighter blue). The levels for onroad mobile sources for 2015 and 2025 are based on the metropolitan transportation plan (MTP) as it existed last year. Those levels were calculated with data from the regional travel demand forecasting model (TDFM). If the budgets were set at those levels, any change to any of the inputs (projects, socioeconomic data, etc.) to the TDFM would have a reasonable chance of causing a conformity failure. To decrease the probability of a conformity failure, a margin of safety (the darker blue on each graph) was added to the emission level calculated from TDFM outputs, and the budgets were set as being the sum of the emissions from TDFM outputs and the margins of safety. The margins of safety currently being proposed by IDEM are 15%.

11520 Commonwealth Drive
Louisville, KY 40299
502-266-6084
Fax: 502-266-5047
KY TDD 1-800-648-6056
www.kipda.org

The concern of KIPDA is that there is sufficient uncertainty that budgets based on 15% margins of safety will be too low. Having budgets which are too low (i.e. too stringent) increase the probability that a conformity failure will occur. If this occurs, the MTP and TIP cannot be updated or amended. This situation will hinder—if not stop—the progress in implementing projects. The irony of this situation is that at least some of the projects being delayed or cancelled could reduce pollutant emissions and presumably improve air quality.

KIPDA will be providing comments to IDEM to support larger, less stringent budgets. KIPDA recognizes that the emission levels from all sources must remain below 2008 (attainment) levels. Further, we also recognize that the onroad mobile source budgets will still require emission reductions. However, we believe that the uncertainty associated with the calculation of the emissions supports larger budgets. We do not believe it is necessary to set budgets for 2015 at approximately 40% below 2008 (attainment) levels and for 2025 at almost 70% below 2008 (attainment) levels. The proposed emission reductions contain enough excess that a more modest set of reductions would still improve air quality without the significant risk of a conformity failure. Discussed below are several issues we believe support the larger budgets.

Issue 1 - Growth in Population, Employment, Commuting, and VMT

At this time, much of the information from the 2010 Census and related sources is not available at a sufficiently small level of geography to be able to quantify the impacts of socioeconomic changes. However, there are some inferences that can be drawn from the county-level that is presently available. Below are several important pieces of that information.

1. The increase in population from 2000 to 2010 exceeded that from 1990 to 2000 for four of the five counties in the metropolitan area and for the region as a whole. The regional increase in population from 2000 to 2010 was about 30% higher than the regional increase from 1990 to 2000.
2. The employment in all counties grew noticeably from 2000 to 2008 before the recent recession caused some job losses in 2009. Still, four of the five counties showed a net increase in employment from 2000 to 2009. The regional increase in employment from 2000 to 2008 was slightly above 5%, and even after the job losses in 2009, there was a modest net increase from 2000 to 2009.
3. The patterns of inter-county commuting also show continued growth. The total number of people commuting to jobs in the five metropolitan counties grew from 102,304 to 114,380 during the period from 2000 to the 2006-2008 timeframe (the most recent data available). This represents an increase of 12,076, which is slightly less than 12%.
4. The 15-year (1993-2007) trend of vehicle-miles-traveled (VMT) shows a positive slope. The recent economic downturn has led to indications that there has been no growth or perhaps a decline in VMT in the last 2-3 years. However, a similar phenomenon occurred during 2000 and 2001. When the economy "recovered", the growth in VMT returned and at a slope of the same order of magnitude.

This information indicates that although the KIPDA region has suffered from the recent economic downturn, there is still growth in socioeconomic attributes and VMT. Planning cannot be based on short-term events like the recent economic downturn. Therefore, growth in travel must be expected once the economy improves. When it does, the emission budgets must be large enough to allow the growth to occur.

Issue 2 - Can VMT be "controlled" through the proper choice of transportation projects?

During consultation concerning the PM 2.5 SIP budgets, the KIPDA MPO made a statement questioning how conformity could be "passed" with the proposed budgets. The response was that KIPDA would have to change the projects in the plan. KIPDA believes that this is not feasible except in cases where the otherwise failing MTP is only failing by a small amount. As can be noted in 40 CFR 93.122 (b) and (d), the tool of choice for a regional emissions analysis is to be the TDFM. TDFMs usually determine projects which increase capacity to have travel impacts which translate into emission reductions and those which decrease capacity to have travel impacts which translate into emission increases. Projects which do not change capacity are not reflected in the TDFM. In the past, "no-build" (not to be confused with a similar but slightly different concept using the same term in 40 CFR 93) analyses were tested by removing all projects from a future year scenario. In these test analyses, the emissions associated with this "no-build" analysis were higher than the scenario with all the projects included. However, the differences in emissions have been small and not at the level necessary to offset a problem with an insufficient budget. Theoretically, it is possible to determine which projects, if any, have negative air quality impacts and remove them. That being said, MTPs are required to be financially responsible. Therefore, additional funding for new projects would have to come from the funding not used by the projects with positive air quality impacts. An extreme case of this would be to remove all projects that do not show positive air quality impacts. This might be theoretically possible, but it would be impractical because the air quality neutral projects may provide benefits that are not normally considered. For example, the repaving of a street is normally an air quality neutral project. If this is not accomplished according to a reasonable schedule, however, the condition of the street will become so bad that it loses its capacity, and a negative air quality impact would occur.

Issue 3 - Variability of MOVES

The emission estimates used in the budget-setting process involved a new model called MOVES. MOVES is a new and very complex model. KIPDA has three concerns which deal directly with MOVES. They are discussed below.

1. As stated above, MOVES is a new and very complex model. It is a model which can be used in two different ways. One of these is to develop emission rates (e.g. amount of pollutant per mile traveled), and the other is to have MOVES combine the travel-related information and the emission rates and calculate emissions. The first of these methods is known as the emission rate mode, and the latter is known as the inventory mode. Various parties across the county have made test runs to

determine the difference in results when using MOVES in the emission rate mode versus using MOVES in the inventory mode. The results presented vary by pollutant, but for oxides of Nitrogen (NOx), which is one of the pollutants with a proposed budget, researchers have found increases of 3%-4% when using MOVES in the emission rate mode versus the inventory mode. That increase is not large until it is compared with the 15% margin of safety. In this area, we have used the emission rate method of estimating emissions because that was all that was available with the previous model. However, there were other advantages to using this method, not the least of which was that it was more precise and more conceptually correct.

2. Because of the newness and complexity of MOVES, KIPDA expects that "bugs" will be found in the software, and "fixes" will be made. The previous emissions model was in its sixth generation before it was replaced by MOVES. For most—if not all—of those models, errors were found after their releases, and they had to be fixed. The fixes changed the emission rates produced by the model. KIPDA believes there is ample reason to expect the same from MOVES, which introduces still another unknown variable in the consideration of margins of safety and budgets.

3. Also of concern are the inputs used in MOVES. In particular, there has been speculation about one of the inputs. This concern is the vehicle registration data for Bullitt and Jefferson counties in KY. New registration information has been recently developed for the Indiana counties in the nonattainment area, but the process for the KY counties is still ongoing. When the new registration data was used for the Indiana counties, the emission levels for each county increased on the order of 6% to 17% for PM 2.5 and 5% to 15% for NOx. At present, the emission levels for the Kentucky counties—particularly Jefferson counties—are on the order of 3 times larger than the Indiana counties. If the emissions for the KY counties increase with new registration data in a manner similar to what happened with the IN counties, the margin of safety will essentially be used up. To test the situation, a test run was made using the combined new Clark/Floyd county data for the Kentucky counties. The results of this run indicated a 2%-3% regional increase for PM 2.5 and a 7%-8% regional increase for NOx. However, after the test run, it was noted that the existing registration data for Bullitt County indicated that its fleet was already older than the new Indiana data. Since the expected reason for the fleet getting older was the economy, it seems unlikely that the Bullitt County vehicle fleet would become newer while the vehicle fleets of the other counties are getting older. Therefore, KIPDA staff believe that the results should be viewed as an indication of the direction emissions will trend when the new Kentucky registration data is available but that the increase in emissions will be greater—probably closer to the 6%-8% increase in PM 2.5 and the 11%-12% increase in NOx shown by Jefferson County in the results of the test run.

KIPDA believes that uncertainty associated with the MOVES model and its input are considerable. Because of its newness, we do not expect anyone to have a good "feel" for what are "reasonable" results. In addition, after the discussion concerning the budgets, corrections were still being made to the emission results. KIPDA feels that because of the

newness and complexity, the use of MOVES should be accompanied by more lenient rather than more stringent budgets.

Issue 4 - Past Experience with setting budgets

In December 2010, Larry Heil of FHWA-IN asked the Indiana MPOs (in nonattainment and maintenance areas) to evaluate what the use of the new (2009) vehicle registration data would do to their chance to pass conformity once the new data has been quality assured and, therefore, had to be used. Five MPOs (besides KIPDA) provided information to Mr. Heil concerning test runs made to determine if they could pass conformity for Ozone. All five indicated that they would fail at least one of their conformity tests. The failures ranged from 1% to over 16%. On the other hand, the information for the Louisville area indicated that the KIPDA region could pass conformity with the critical (smallest) difference being about 7.5%. The budget for which KIPDA would pass conformity by 7.5% was for NOx, and the margin of safety for that budget was originally set at slightly over 50%.

In summary, KIPDA believes that there is too much uncertainty to expect budgets with a 15% margin of safety to be sufficient. As new registration data for Bullitt and Jefferson counties become available, it is likely that the majority of the NOx margin of safety and a significant portion of the PM 2.5 margin of safety will be used up. If the region should need to use MOVES in the emission rate mode, the rest of the NOx margin of safety will be immediately consumed. As a consequence, there will be nothing left as a margin of safety for other concerns such as what happens when 2010 Census data and accompanying projections become available and must be used. Finally, past experience with setting budgets indicates that 15% (while it may seem appropriate when they are set) can ultimately turn out to be far too small when changes occur in the future.

Part of our charge is to be good stewards of our environment, through air quality monitoring and analysis, reduction of Vehicle Miles Travelled (VMTs), and the development and implementation of alternatives to Single Occupancy Vehicles (SOVs) in our region. However, we also feel it necessary that we continuously move forward with a Metropolitan Transportation Plan that can adequately address those issues. Non-conformity as a result of overly restrictive budgets would certainly impede that effort.

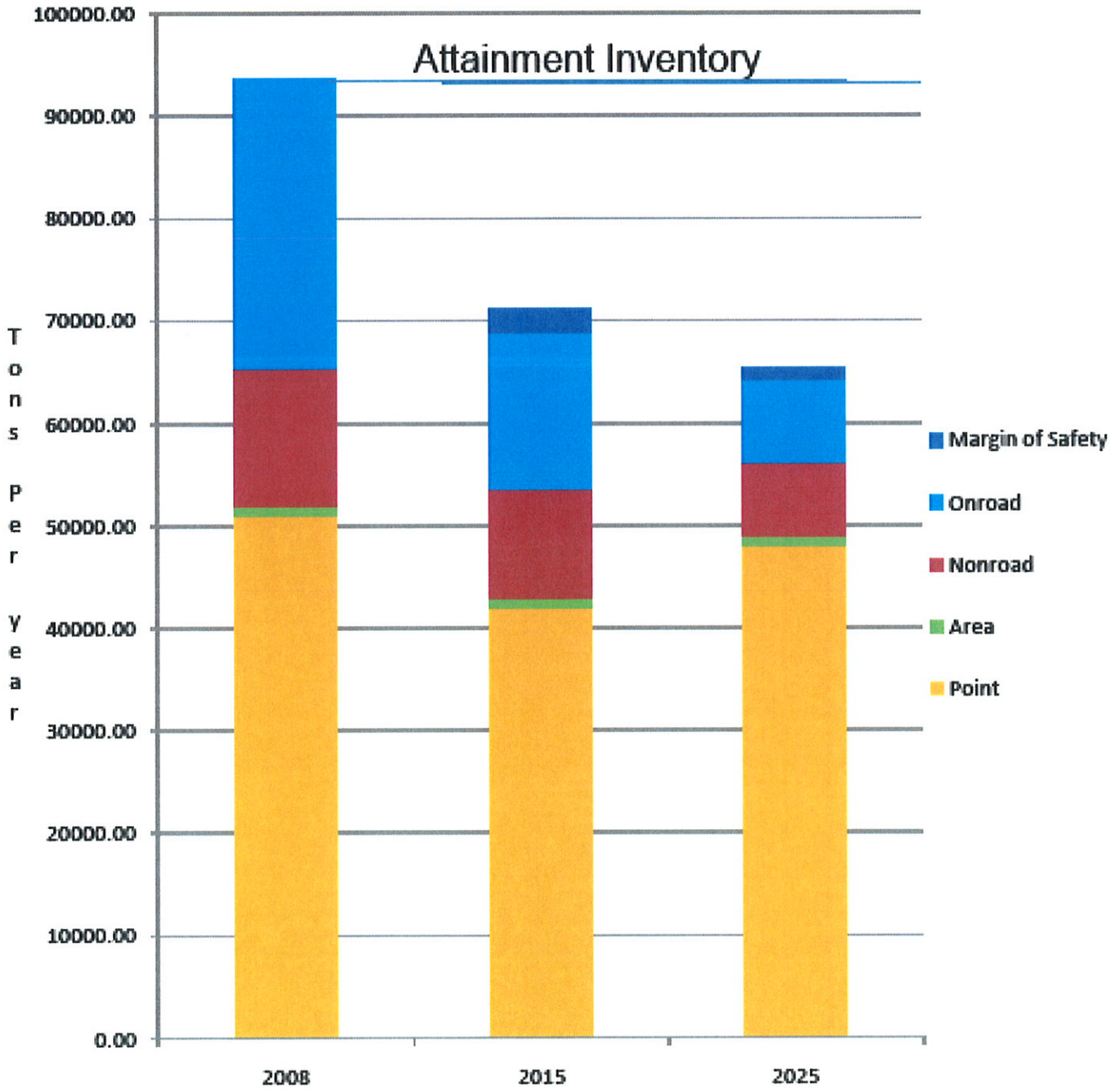
Thank you for the opportunity to comment on this very important matter. If you have questions or concerns regarding this information, please contact me either by phone at 502-266-6084 or by e-mail at larry.chaney@ky.gov.

Sincerely,

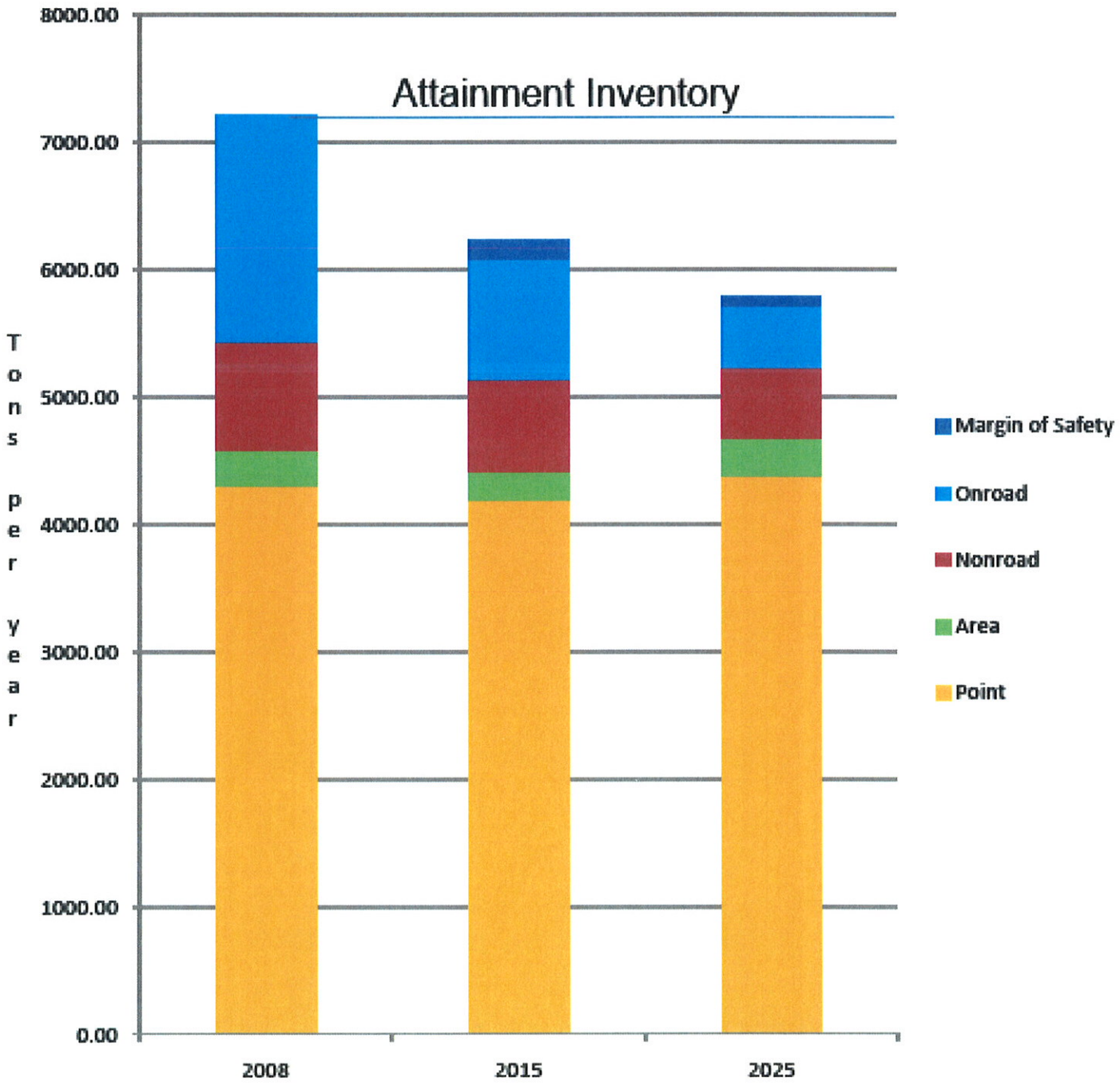
Larry D. Chaney
MPO Director

LDC/RS
Attachments

NOx Emission Projections by Source Type



PM 2.5 Emission Projections by Source Type



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DRAFT REDESIGNATION PETITION AND MAINTENANCE PLAN

COPY

DATE: May 26, 2011

TIME: 5:30 P.M.

PLACE: Jeffersonville Township Public Library
1312 Eastern Boulevard
Program Room
Clarksville, IN 47129

PRESENT: Christine E. Pedersen, Hearing Officer
Gale Ferris, Hearing Officer

Sharon Shields, Reporter

A public hearing of the Department of Environment Management Redesignation Petition and Maintenance Plan in association with the Annual Fine Particle ($PM_{2.5}$) Standard for the Jefferson County, Madison Township and Clark and Floyd Counties, Indiana was held in the Program Room, at the Jeffersonville Township Public Library, 1312 Eastern Boulevard, Clarksville, IN at 5:30 P.M. on May 26, 2011.

OPENING STATEMENT BY MS. CHRISTINE E. PEDERSEN:

This is a public hearing to accept comments concerning the Draft Redesignation and Maintenance Plan under the annual National Ambient Air Quality Standard or (NAAQS) for fine particles for the Indiana portion of the Louisville KY-IN Nonattainment Area for Fine Particles, including Madison Township in Jefferson County and Clark and Floyd counties in Indiana. This hearing is being held to conform to the provisions in 40 CFR Part 51 regarding public hearings for State Implementation Plan or (SIP) submittals.

My name is Christine Pedersen. I am Section Chief of the Rule and State Implementation Plan Development Section of the Indiana Department of Environmental Management's or (IDEM's) Office of Air Quality. I have been appointed to act as hearing officer for this public hearing.

Also here with me from the Office of Air Quality is Gale Ferris.

Notice of the time and place of the hearing was given as provided by law by publication in the following newspapers:

1. The Indianapolis Star, Indianapolis, Indiana
2. The New Albany Tribune, New Albany, Indiana
3. The Evening News, Jeffersonville, Indiana
4. The Madison Courier, Madison, Indiana

The purpose of this public hearing is to provide interested persons an opportunity to offer comments to the state regarding the draft Redesignation and Maintenance Plan under the annual NAAQS for fine particles for Madison Township in Jefferson County, and Clark and Floyd counties in Indiana.

Appearance cards have been distributed in the hearing room for all those desiring to be shown appearing on record in this cause. If you wish to speak and have not already filled out a card, please do so and indicate if you are appearing for yourself or on behalf of a group or organization and identify the group or organization. Also note the capacity in which you appear, such as attorney,

officer or authorized spokesperson.

Any person who is heard or represented at this hearing or who requests notice may be given written notice of the final action taken on the SIP submittal. Please indicate on the appearance card if you wish to receive this notification. When appearance cards have been completed, they should be handed to Gale or I and we will include them with the official record of this proceeding.

Oral statements will be heard, but written statements may also be handed to me. These statements can also be mailed to the Office of Air Quality on or before close of business on May 29, 2011. A written transcript of this hearing is being made. The transcript will be open for public inspection and a copy of the transcript will be made available to any person upon payment of the copying cost.

After the conclusion of this public hearing, I will prepare a written report summarizing the comments received at this hearing and recommending changes which may need to be made to this document.

I would like to introduce the following documents into the record:

1) The notice of public hearing.

2) And the Draft Request for Redesignation and Maintenance Plan under the annual NAAQS for Fine Particles for the Indiana portion of the Louisville KY-IN Nonattainment Area for Fine Particles, including Madison Township in Jefferson County, and Clark and Floyd counties in Indiana.

Finally, I would like to briefly go over the contents of the draft document.

In 1997, the United States Environmental Protection Agency (U.S. EPA) set daily and annual ambient air quality standards for fine particles at 15.0 micrograms per cubic meter on an annual basis and at 65.0 micrograms per cubic meter on a 24-hour or daily basis. Legal challenges to the new standards for fine particles resulted in delayed implementation of the standard until February of 2001, when the Supreme Court upheld the standard and ruled that the U.S. EPA could proceed with implementation of the new standards. This submittal pertains solely to the 1997 annual standard for fine particles. The Louisville area is in compliance with both the 1997 and 2006 24-hour fine particle standards. Indiana began monitoring for fine

particles in 1999. In December 2004, U.S. EPA originally designated counties under the fine particle standards based on 2001 through 2003 monitoring data. U.S. EPA formally designated areas throughout the country as attainment, nonattainment, or unclassifiable, including Madison Township in Jefferson County, and Clark and Floyd counties in Indiana as part of the Louisville KY-IN Nonattainment Area for Fine Particles. In addition to these Indiana counties, the nonattainment area includes Bullitt and Jefferson counties in Kentucky.

The agencies responsible for assuring the nonattainment area complies with the Clean Air Act requirements are:

- The Louisville Metro Air Pollution Control District, which is responsible for Jefferson County, Kentucky.
- The Kentucky Department for Environmental Protection, which is responsible for Bullitt County, Kentucky.
- The Indiana Department of Environmental Management, which is responsible for Madison Township in Jefferson County and Clark and Floyd counties in Indiana.

Indiana and Kentucky have worked cooperatively

with U.S. EPA Regions IV and V to address planning issues.

The Indiana portion of the nonattainment area has been in compliance with the annual standard for fine particles since the end of 2008 with values that are now well below the standard. Furthermore, photochemical modeling conducted by the State of Indiana, the Midwest Regional Planning Organization, and U.S. EPA demonstrates that beginning in 2011, this area will benefit greatly from the implementation of U.S. EPA's proposed Clean Air Transport Rule, with projected design values well below the standard, and providing for an ample margin of safety. These modeling results are considered to be conservative since they do not include emission reductions that will occur as a result of several federal control programs including substantial off-road diesel fuel and engine reductions.

Although Indiana and Kentucky have worked together to ensure the use of consistent information, each state is required to make a separate submittal for its portion of the planning components to U.S. EPA. As such, this submittal only covers Indiana's portion of the nonattainment area, including Madison Township in Jefferson County and Clark and Floyd counties in Indiana.

The highest most recent design value for the area, based on 2008 through 2010 quality-assured ambient air quality monitoring data is 14.1 micrograms per cubic meter. This design value represents fine particle concentrations that are below the national ambient air quality standards, therefore, the area is eligible to be redesignated to attainment under the annual standard for fine particles and classified as maintenance.

IDEM has prepared the draft Redesignation and Maintenance Plan for Indiana's portion of the Louisville KY-IN Fine Particle Nonattainment Area consistent with U.S. EPA guidance. The draft redesignation plan outlines a demonstration that the area has attained the standard based on monitored concentrations, and that the reductions in monitored concentrations are attributable to permanent and enforceable reductions in precursor emissions, specifically, reductions of nitrogen oxides or (No_2) and sulfur dioxide or (SO_2). Furthermore, the draft maintenance plan outlines the following information.

- Regional precursor emissions of NO_2 and SO_2 will continue to decline in the future.
- Due to existing and future emission controls, the area's air quality is not projected to worsen, and

should further improve over time.

- A commitment for all existing emission controls to remain in place.
- A commitment to revise the plan within eight years of redesignation.
- A commitment to adopt and expeditiously implement necessary corrective actions if an action level response is triggered.
- A mobile source budget for transportation conformity purposes.

This concludes my comments regarding the draft Redesignation and Maintenance Plan under the annual NAAQS for fine particles for the Indiana portion of the Louisville KY-IN Nonattainment Area for Fine Particles. Before opening this hearing for public comments, may I once again remind you that this hearing pertains only to this draft Redesignation and Maintenance Plan for the annual NAAQS for fine particles standard for Indiana's portion of the Louisville KY-IN Nonattainment Area for Fine Particles, and only comments pertaining to this matter will be considered as part of the public record.

Gale and I will be available following this hearing to address any questions you may have that do not

pertain to this specific matter.

This hearing is now open for public comment. Are there any public comments?

In the absence of any further comments, these proceeds are concluded. This hearing is adjourned.

1 C E R T I F I C A T E

2 STATE OF INDIANA)
3) SS:
COUNTY OF JEFFERSON)
4

5 I, Sharon Shields, do hereby certify that I am a
6 Notary Public in and for the County of Jefferson, State of
7 Indiana, duly authorized and qualified to administer oaths;
8 That the foregoing public hearing was taken by me in
9 shorthand and on a tape recorder on May 26, 2011 in the
10 Program Room at the Jeffersonville Township Public Library,
11 1312 Eastern Boulevard, Clarksville, IN; That this public
12 hearing was taken on behalf of the Indiana Department of
13 Environmental Management pursuant to agreement for taking at
14 this time and place; That the testimony of the witnesses was
15 reduced to typewriting by me and contains a complete and
16 accurate transcript of the said testimony.
17 I further certify that pursuant to stipulation by and
18 between the respective parties, this testimony has been
19 transcribed and submitted to the Indiana Department of
20 Environmental Management.
21 WITNESS my hand and notarial seal this 6th day of
22 June, 2011.
23 Sharon Shields
Sharon Shields, Notary Public
24 Jefferson County, State of Indiana
25 My Commission Expires: July 2, 2015