APPENDIX I

Lake Michigan Air Directors Consortium (LADCO) Round 5 Modeling Technical Support Document (Round 5 Photochemical Modeling Based on "Base M" Emissions 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.

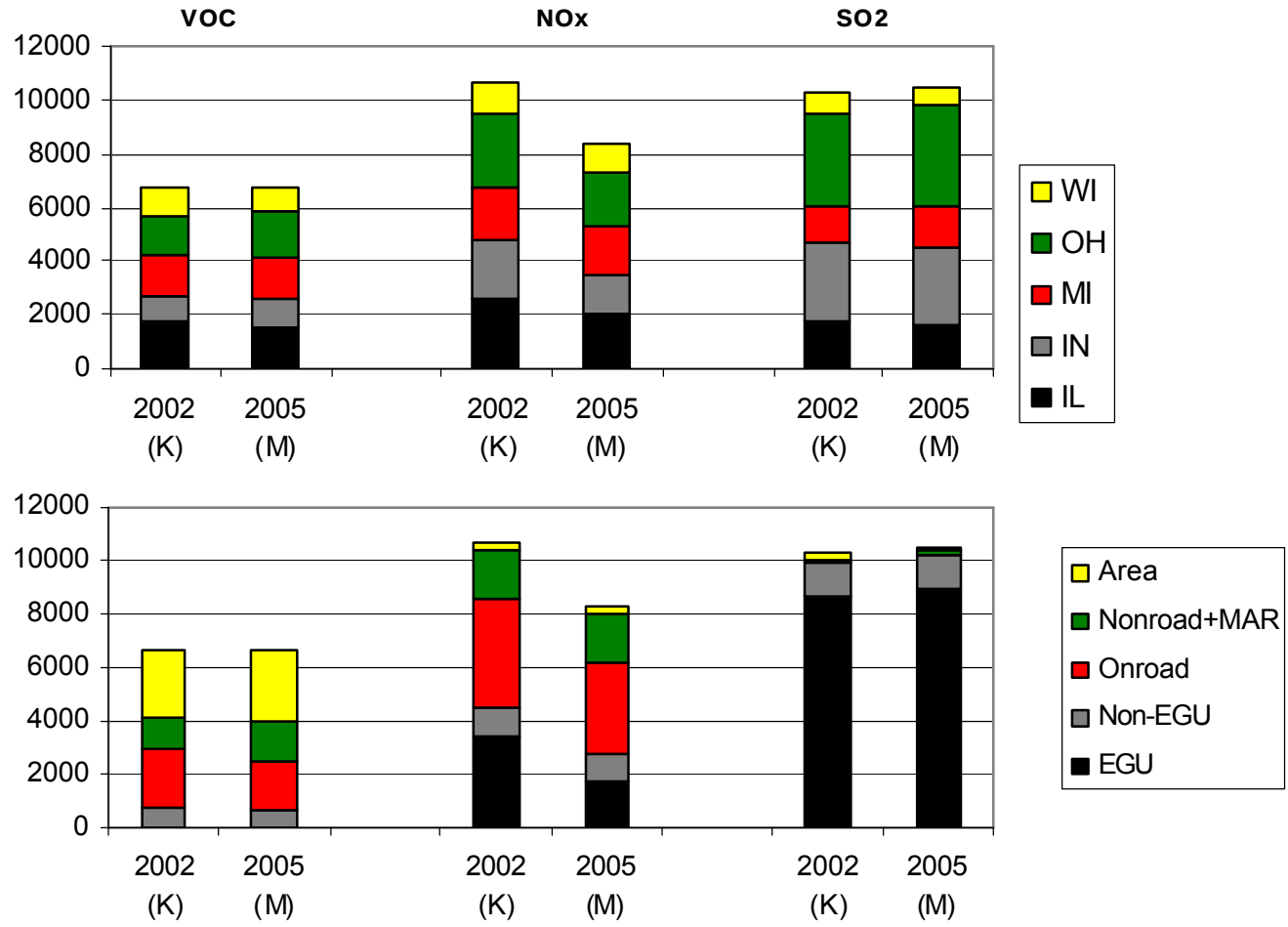


Figure 1. Base K and Base M Emissions for 5-State LADCO Region: VOC, NOx, and SO2 (TPD, July weekday)

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.

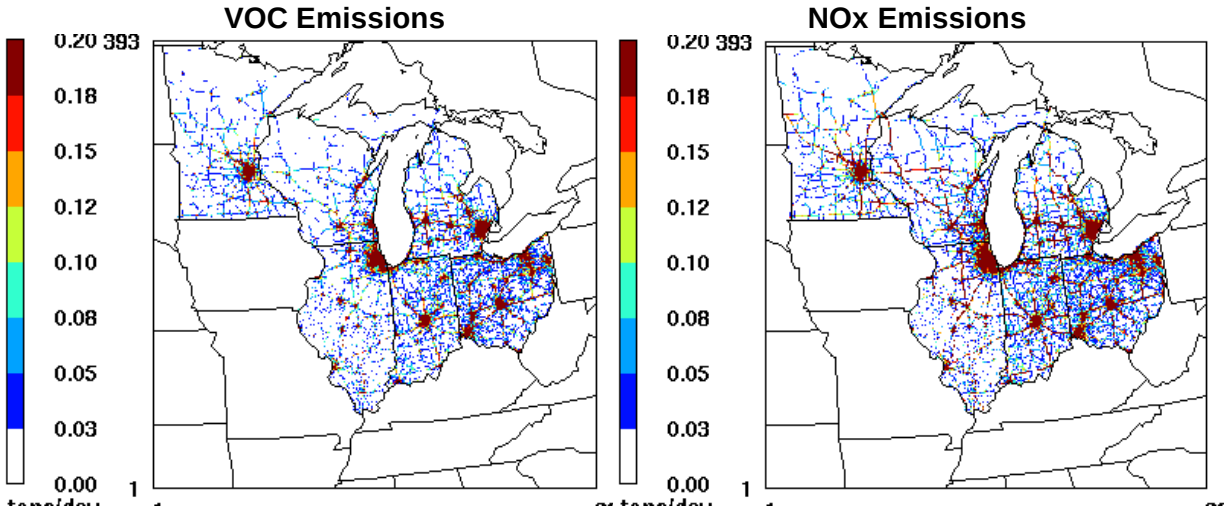


Figure 2. July 15, 2005 motor vehicle emissions for VOC (left) and NOx (right)

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.

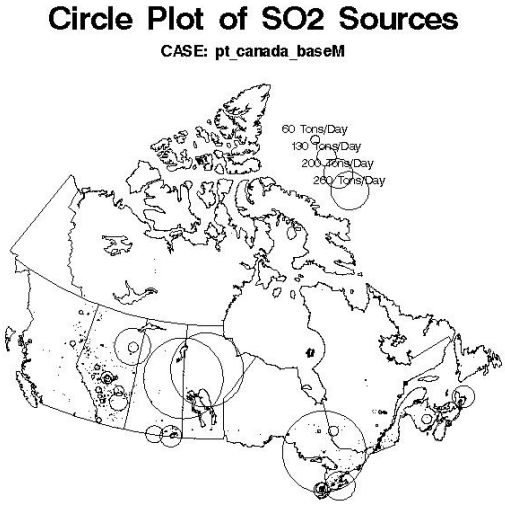
Outdoor Wood Boilers: Over the past several years, the installation and operation of outdoor wood boilers for residential use has increased dramatically in many northern states. Relying on an emission estimation methodology prepared by Bart Sponseller (WDNR, 2006), emissions were calculated by the other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

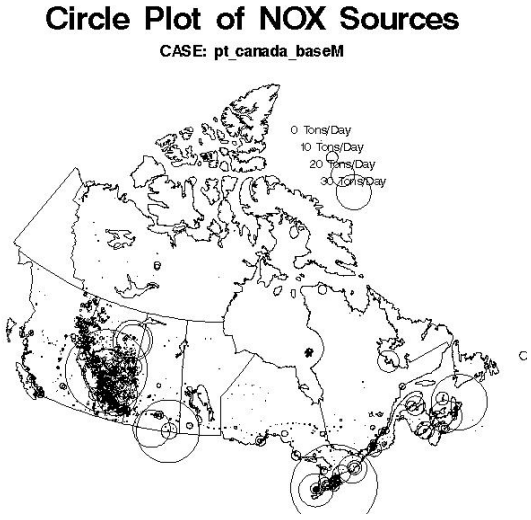
EGU Point:EMS was run by LADCO using 2005 data supplied by the LADCO States and, for the non-LADCO States, using emission files supplied by Alpine based on data from the other RPOs to produce weekday, Saturday, and Sunday emissions for each month. 2005 EGU emissions were temporalized for modeling purposes 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.





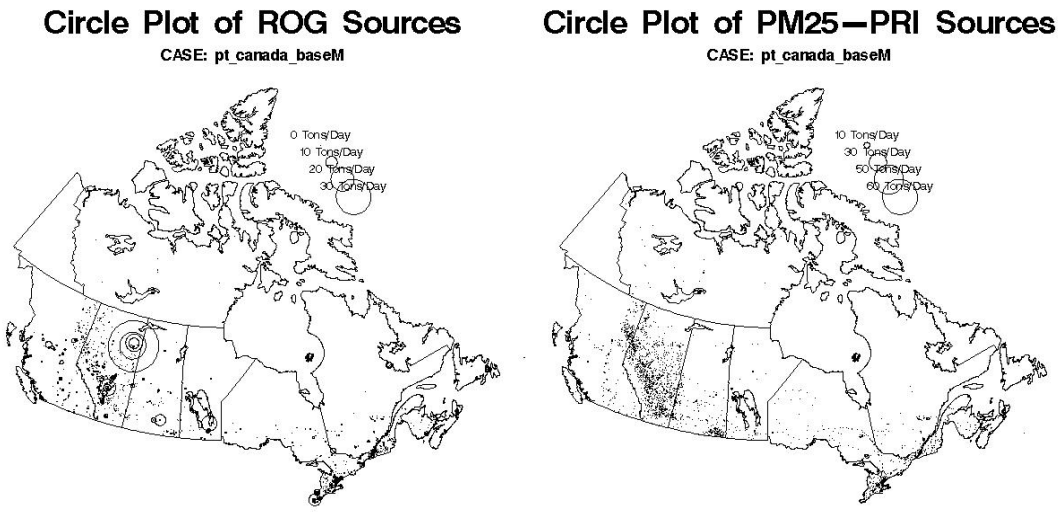


Figure 3. Base year emission plots for Canada

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.

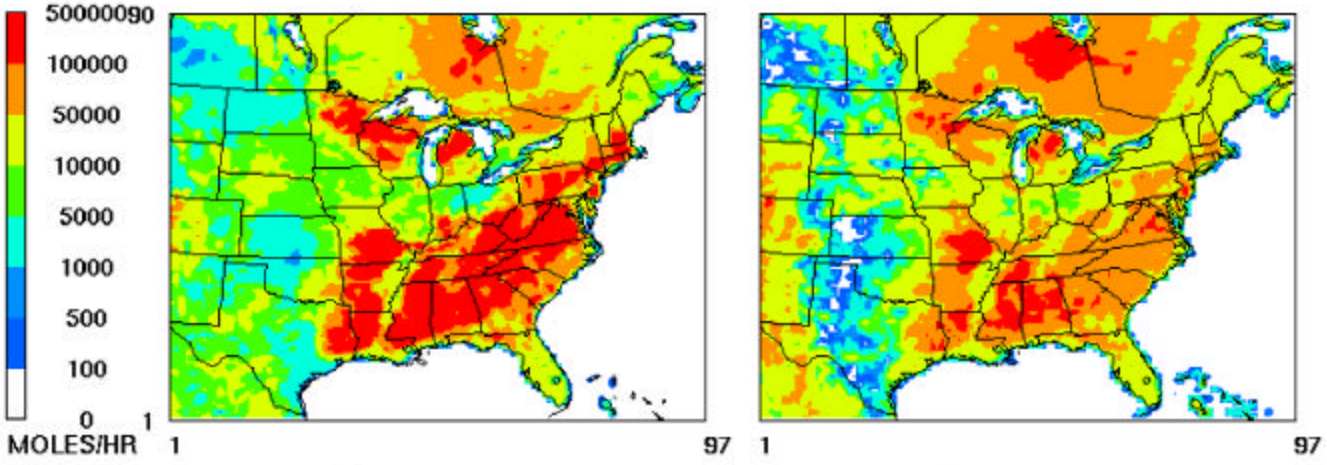


Figure 4. Isoprene emissions for Base M (left) v. Base K (right)

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.

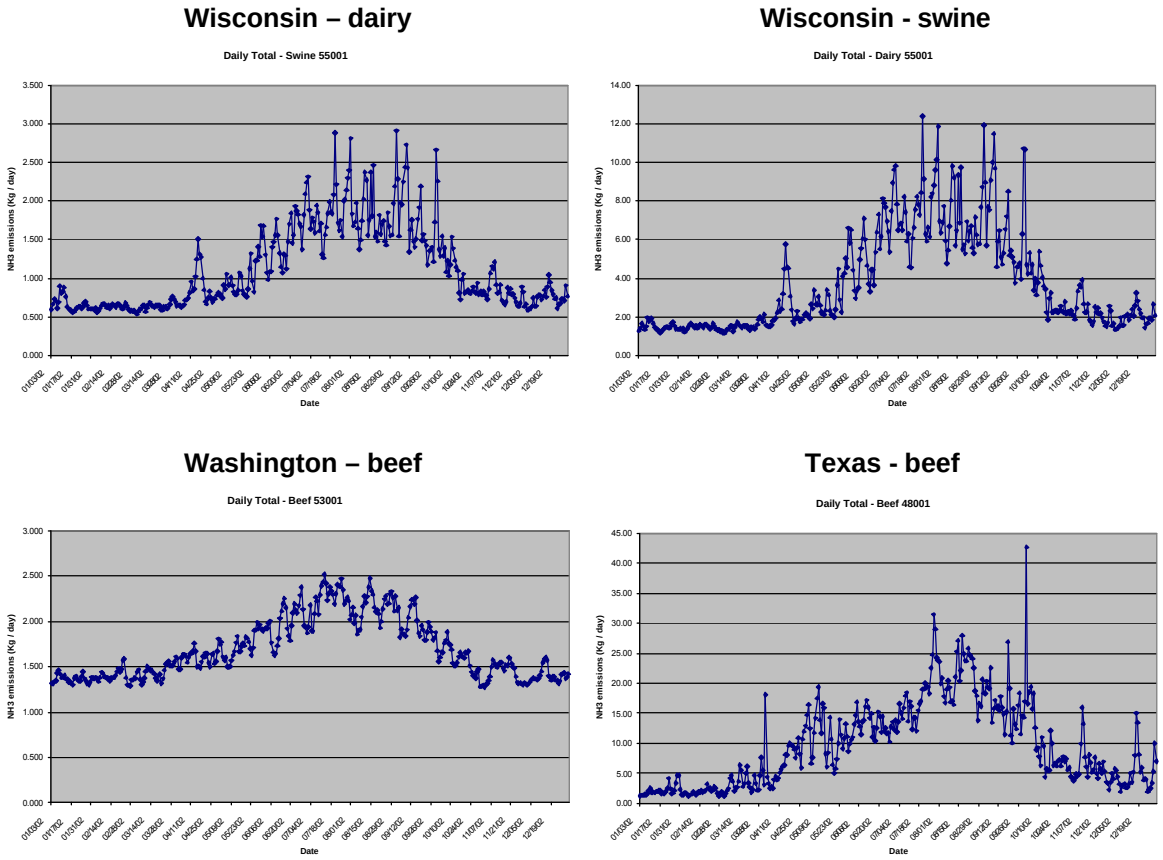


Figure 5. Daily emissions for 2002 for various model farms

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

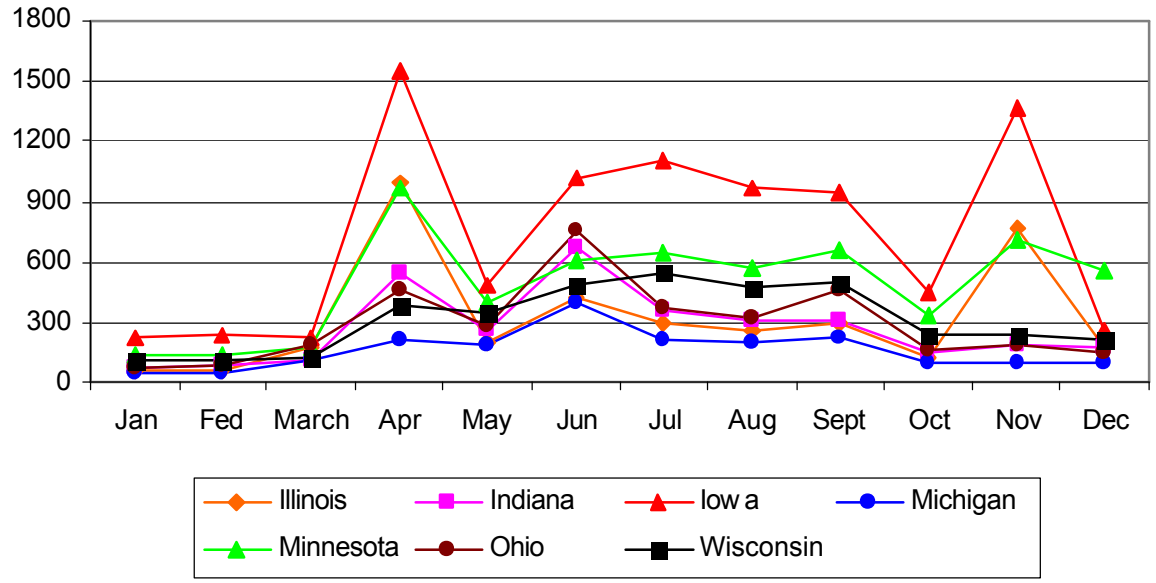


Figure 6. Average daily ammonia emissions for Midwest States by month for 2005

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.

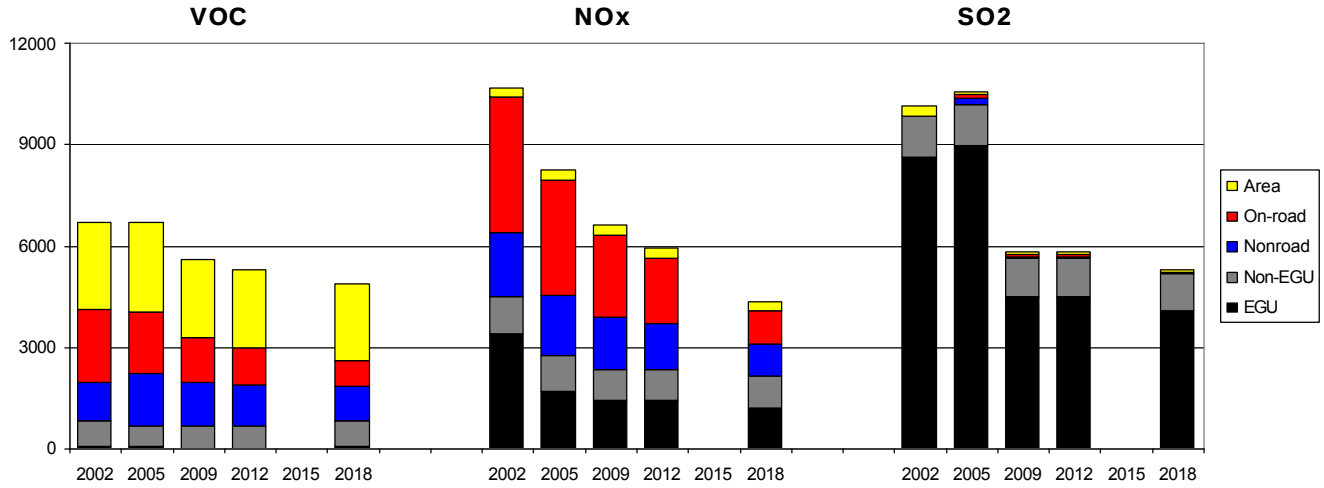


Figure 7. Base year and future year emissions for 5-State LADCO Region (TPD, July weekday)

[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.

[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

References

Alpine Geophysics, 2007a, “Emissions Inventory Assistance: 2005 Base Year Biogenic and Other (non-LADCO) State Emissions, Preparation and Delivery of Non-MRPO Emission Files< March 12, 2007.

Alpine Geophysics, 2007b, Updated CONCEPT code with new (MEGAN) biogenic emissions delivered via e-mail from James Wilkinson on February 9, 2007.

EC/R, Incorporated, 2004, “Fire Emissions Inventory Development for the Midwest Regional Planning Organization”, Final Report, September 30, 2004.

E.H. Pechan, 2004, “LADCO Nonroad Emissions Inventory Project – Development of Local Data for Construction and Agricultural Equipment”, Final Report, September 10, 2004

E.H. Pechan, 2005, “Development of Updated Growth and Control Factors for Lake Michigan Air Directors Consortium (LADCO)”, Draft Report, December 29, 2005.

E. H. Pechan, 2007, “Development of 2005 Base Year Growth and Control Factors for Lake Michigan Air Directors Consortium (LADCO)”, Final Report, September 2007.

Environ, 2004, “LADCO Nonroad Emissions Inventory Project for Locomotive, Commercial Marine, and Recreational Marine Emission Sources, Final Report, December 2004.

Environ, 2007a, “LADCO 2005 Locomotive Emissions”, Draft, February 2007.

Environ, 2007b, “LADCO 2005 Commercial Marine Emissions”, Draft, March 2, 2007.

Environ, 2008, “LADCO On-Road Emission Inventory Development Using CONCEPT MV”, January 2008.

LADCO, 2006a, “Base K/Round 4 Strategy Modeling” Emissions”, May 16, 2006.

LADCO, 2006b, “Base K/Round 4 Modeling: Summary”, August 31, 2006.

Mansell, G, Z. Wang, R. Zhang, J. Fadel, T. Ramsey, H. Xin, Y. Liang, and J. Arogo, 2005, “An Improved Process-Based Ammonia Emissions Model for Agricultural Sources – Emission Estimates”

USEPA, 2007a, "Guidance for on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze”, EPA-454/B07-002, April 2007.

USEPA, 2007b, E-mail from Dennis Beauregard (OAQPS) dated February 22, 2007.

Zhang, R, T. Ramsey, J. Fadel, J. Arogo, Z. Wang, G. Mansell, and H. Xin, 2005, “An Improved Process-Based Ammonia Emissions Model for Agricultural Sources – Model Development”

WDNR, 2006, “Wisconsin Draft 2005 Outdoor Wood Boiler Methodology”, PowerPoint presentation by Bart Sponseller, November 13, 2006.

Web Sites:

http://www.ladco.org/tech/emis/basek/BaseK_Reports.htm

http://www.ladco.org/tech/emis/r5/round5_reports.htm

http://www.ladco.org/tech/emis/basem/canada/index.htm

http://www.ec.gc.ca/pdb/npri/

http://bai.acd.ucar.edu/Megan/

http://www.conceptmodel.org/nh3/nh3_index.html

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

The SAS System 09:55 Wednesday, February 27, 2008 1

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
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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
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polid							250.336	226.151	-24.1856
							========	=======	========
							370.662	336.554	-34.1074

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APPENDIX J

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

Lawrenceburg Township, Dearborn County, Indiana

Notice is hereby given under 40 CFR 51.102 that the Indiana Department of Environmental Management (IDEM) will hold a public hearing on January 5, 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 Lawrenceburg Township, Dearborn County, Indiana. The meeting will convene at 5:30 p.m. (local time) at the Lawrenceburg Public Library, Ewbank Meeting Room 1 and 2, 150 Mary Street, Lawrenceburg, Indiana 47025. All interested persons are invited and will be given opportunity to express their views concerning the draft documents.

Lawrenceburg Township, Dearborn County, Indiana is part of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area. This area was designated as nonattainment for the annual fine particle standard 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 December 5, 2010 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.
- Lawrenceburg Public Library, 150 Mary Street, Lawrenceburg, Indiana.
- Lawrenceburg City Building, 230 Walnut Street, Lawrenceburg, 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 January 7, 2010. Mailed comments should be addressed to:

Lawrenceburg Township, Dearborn County, Indiana Fine Particle ($PM_{2.5}$) Redesignation Petition and Maintenance Plan
Scott Deloney, Chief
Programs Branch
Indiana Department of Environmental Management
Office of Air Quality MC 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 Ms. Sarah Raymond, 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) 232-8449 or (800) 451-6027 ext. 2-8449 (in Indiana).

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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.

A 1/12/11

Prescribed by State Board of Accounts

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

ATTACH COPY OF ADVERTISEMENT HERE

(Governmental Unit) Dearborn County, Indiana

To Dearborn County Register
P.O. Box 4128, Lawrenceburg, IN 47025

Fed. I.D. #35-1869520
Acct. #15001

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	108
Body -- number of lines	
Tail -- number of lines	
Total number of lines in notice	108

COMPUTATION OF CHARGES

108 lines, 1 column wide equals 108 equivalent lines at ____ cents per line ..... $ 63.59

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 ..... $ 63.59

DATA FOR COMPUTING COST

Width of single column in picas 15.5 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:

November 18, 2010

Additionally, the statement checked below is true and correct:

JAN 10 '11 AM9:20

..... 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 .....

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

Tom Brooker

Date Nov. 18, 2010 Title Publisher

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

Claim No. _____ Warrant No. _____

IN FAVOR OF
Acct. #15002, Journal-Press
P.O. Box 59, Aurora, Indiana 47001

$_____

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

Publisher's Affidavit

State of Indiana)
) ss:
Dearborn County)

Personally appeared before me, a notary public in and for said county and state, the undersigned, Joseph M. Awad who, being duly sworn, says that he is Publisher of the Journal-Press newspaper of general circulation printed in the city of Delphos, Ohio and published in the English language in the city of Aurora in the state and county aforesaid, and that the printed matter attached hereto is a true copy, which was duly published in said paper for 1 times, the dates of publication being as follows:

Subscribed and sworn to before me this 18 day of Nov., 2010.

Yvonne D Waters

Yvonne D. Waters, Notary Public
My commission expires 5-30-13

15.5 Pica Column

Number of Insertions	1	2	3	4
Type Size	0.5888	0.88	1.1755	1.4689

7

DEARBORN COUNTY REGISTER, LAWRENCEBURG, IN

LEGAL NOTICE OF PUBLIC HEARING
Redesignation Petition and Maintenance Plan In Association with the Annual Fine Particle (PM2.5) Standard
Lawrenceburg Township, Dearborn County, Indiana

Notice is hereby given under 40 CFR 51.102 that the Indiana Department of Environmental Management (IDEM) will hold a public hearing on January 5, 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 Lawrenceburg Township, Dearborn County, Indiana. The meeting will convene at 5:30 p.m. (local time) at the Lawrenceburg Public Library, Ewbank Meeting Room 1 and 2, 150 Mary Street, Lawrenceburg, Indiana 47025. All interested persons are invited and will be given opportunity to express their views concerning the draft documents.

Lawrenceburg Township, Dearborn County, Indiana is part of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area. This area was designated as nonattainment for the annual fine particle standard 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 December 5, 2010 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.

Lawrenceburg Public Library, 150 Mary Street, Lawrenceburg, Indiana.

Lawrenceburg City Building, 230 Walnut Street, Lawrenceburg, 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 January 7, 2010. Mailed comments should be addressed to:

Lawrenceburg Township, Dearborn County, Indiana Fine Particle (PM2.5) Redesignation Petition and Maintenance Plan
Scott Deloney, Chief
Programs Branch
Indiana Department of Environmental Management
Office of Air Quality MC 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 Ms. Sarah Raymond, 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) 232-8449 or (800) 451-6027 ext. 2-8449 (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.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DRAFT REDESIGNATION PETITION AND MAINTENANCE PLAN

ORIGINAL

DATE: January 5, 2011

TIME: 5:30 P.M.

PLACE: Lawrenceburg Public Library
150 Mary Street
Eckert Meeting Room
Lawrenceburg, IN 47025

PRESENT: Shawn Seals, Indiana Dept. Env. Management
Sarah Raymond, Hearing Officer

Sharon Shields, Reporter

A public hearing of the Department of Environment Management Draft Redesignation and Maintenance Plan in association with the Annual Fine Particle ($PM_{2.5}$) Standard meeting was held at the Lawrenceburg Public Library, 150 Mary Street, Eckert Meeting Room, Lawrenceburg, IN 47025 at 5:30 P.M. on January 5, 2011.

OPENING STATEMENTS BY MS. SARAH RAYMOND:

This is a public hearing to accept comments concerning the draft Redesignation Petition and Maintenance Plan in association with the annual fine particulate matter standard for the Indiana Portion of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area; Dearborn County (Lawrenceburg Township), Indiana. This hearing is being held to conform to the provisions in 40 CFR Part 51 regarding public hearings for State Implementation Plan submittals.

My name is Sarah Raymond. I am a Senior Environmental Manager in the Rule and State Implementation Plan Development Section of the Indiana Department of Environmental Management'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 if Shawn Seals.

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

- The Dearborn County Register, Lawrenceburg, Indiana.

The purpose of this public hearing is to provide interested persons an opportunity to offer comments to the State regarding the draft Redesignation Petition and Maintenance Plan for the annual fine particulate matter standard for Lawrenceburg Township, Dearborn County, 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 have not already filled out the card, please do so and indicate if you are appearing for yourself or on behalf of a group or organization and identify such 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 this State Implementation Plan

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 me and I will include them with the official record of this proceeding.

Oral statements will be heard, but written statements may be handed to me or mailed to the Office of Air Quality on or before close of business on January 7, 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 costs.

After the conclusion of this public hearing, I will prepare a written report summarizing the comments received at this hearing and recommended 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) Draft Request for Redesignation Petition and Maintenance Plan for the annual fine particulate matter standard for the Indiana Portion of the

Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area; Dearborn County (Lawrenceburg Township), Indiana.

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

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 2001, when the Supreme Court upheld the standards and ruled that the U.S. EPA could proceed with implementation of the new standards. The submittal pertains solely to the 1997 annual fine particulate matter standard. The Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area complies with both the 1997 and 2006 24-hour standards. Indiana began monitoring for fine particles in 1999. Fine particulate matter monitors are located in all counties in the Cincinnati-Hamilton OH-KY-IN nonattainment area, except for Boone County, Kentucky and Lawrenceburg Township in Dearborn County, Indiana. The U.S. EPA originally designated counties under the fine

particle standards based on 2001 through 2003 monitoring data in December 2004. The U.S. EPA formally designated areas throughout the country on April 5, 2005 as attainment, nonattainment, or unclassifiable including Lawrenceburg Township, Dearborn County, Indiana as part of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area.

The Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area consists of Lawrenceburg Township, Dearborn County, Indiana; Boone, Kenton and Campbell counties, Kentucky; and Butler, Clermont, Hamilton and Warren counties, Ohio.

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

- The Indiana Department of Environmental Management (IDEM), which is responsible for Lawrenceburg Township, Dearborn County, Indiana.
- The Kentucky Department for Environmental Protection, (KDEP), which is responsible for Boone, Campbell and Kenton counties, Kentucky;

and,

- The Ohio Environmental Protection Agency (Ohio EPA), which is responsible for Butler, Clermont, Clinton, Hamilton and Warren Counties, Ohio;

Indiana, Ohio and Kentucky have worked cooperatively with U.S. EPA Regions IV and V to address the planning issues.

Although Indiana, Ohio and Kentucky have worked together on a comprehensive plan for multi-state areas, 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; Dearborn County (Lawrenceburg Township), Indiana.

The highest most recent design value for the area, based on 2007 through 2009 quality assured ambient air quality monitoring data is 15.04 micrograms per cubic meter. This design value represents fine particle concentrations that are below the national ambient air quality standard, thus the area is eligible to be redesignated to attainment under the annual fine particle

standard and classified as maintenance.

The Indiana Department of Environmental Management has prepared the draft Redesignation Petition and Maintenance Plan for Indiana's Portion of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area consistent with U.S. EPA guidance. The draft petition 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 (NO_x) and sulfur dioxides (SO_2). Furthermore, the draft maintenance plan outlines the following:

- Dearborn County (Lawrenceburg Township), Indiana, does not significantly contribute to violations outside of its portion of the nonattainment area.
- Redesignating Indiana's portion of the Nonattainment area to attainment will not adversely affect any downwind area's ability to attain the standard.
- Regional Precursor emissions of nitrogen oxides (NO_x) and sulfur dioxides (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.
  * An action level response is triggered by a violation of the standard (a three year average annual arithmetic mean value of 15.1 micrograms per cubic meter or greater.
  * A mobile source budget for transportation conformity purposes.

This concludes my comments regarding the draft Redesignation Petition and Maintenance Plan for Indiana's Portion of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area. Before opening this hearing for public comments, may I once again remind you that this hearing pertains solely to this draft Redesignation Petition and

Maintenance Plan in association with the annual fine particle standard for Indiana's Portion of the Cincinnati-Hamilton OH-KY-IN Fine Particle Nonattainment Area, and only comments pertaining to this matter will be considered as part of the public record.

Shawn 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 proceedings are hereby concluded. This hearing is adjourned.

* * * * *

CONCLUSION OF HEARING

C E R T I F I C A T E

STATE OF INDIANA)
) SS:
COUNTY OF JEFFERSON)

I, Sharon Shields, do hereby certify that I am a Notary Public in and for the County of Jefferson, State of Indiana, duly authorized and qualified to administer oaths; That the foregoing public hearing was taken by me in shorthand and on a tape recorder on January 5, 2011 at the Lawrenceburg Public Library, Eckert Room, 150 Mary Street, Lawrenceburg, IN; That this public hearing was taken on behalf of the Indiana Department of Environmental Management pursuant to agreement for taking at this time and place; That the testimony of the witnesses was reduced to typewriting by me and contains a complete and accurate transcript of the said testimony.

I further certify that pursuant to stipulation by and between the respective parties, this testimony has been transcribed and submitted to the Indiana Department of Environmental Management.

WITNESS my hand and notarial seal this 14th day of January, 2011.

Sharon Shields

Sharon Shields, Notary Public
Jefferson County, State of Indiana

My Commission Expires: July 2, 2015

Lawrenceburg Township, Dearborn County, Indiana Redesignation Request and Maintenance Plan in Association with the Annual Fine Particle ($PM_{2.5}$) Standard

Summary/Response to Comments Received

The Indiana Department of Environmental Management (IDEM) requested public comment on the draft Redesignation Request and Maintenance Plan for Lawrenceburg Township, Dearborn County, Indiana from November 18, 2010 to January 7, 2011. The Ohio Environmental Protection Agency (Ohio EPA) provided minor technical updates that included an updated Mobile Source Emissions Inventory for the Cincinnati $PM_{2.5}$ Nonattainment Area from the Ohio Kentucky Indiana (OKI) Regional Council of Governments. Based on the updated Mobile Source Emission Inventory, the Redesignation Request and Maintenance Plan for Lawrenceburg Township, Dearborn County, Indiana has been updated, as well as the following appendices:

- Appendix C: Nitrogen Oxides (NO_x), Sulfur Dioxides (SO_2) and Direct Fine Particulate Matter ($PM_{2.5}$) (2005 and 2008) Emission Trends, All Sources, Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area
- Appendix E : 2008 Base Year Emissions Inventory and 2015 and 2021 Projected Emissions Inventory for Nitrogen Oxides (NO_x), Sulfur Dioxides (SO_2) and Direct Fine Particulate Matter ($PM_{2.5}$) in Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area

A public hearing was also held on January 5, 2011 in Lawrenceburg, Indiana. IDEM received no comments at the public hearing.