INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Eric J. Holcomb
Governor
Bruno L. Pigott
Commissioner

February 16, 2018

Ms. Cathy Stepp
Regional Administrator
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604-3950

Dear Ms. Stepp:

Re: Indiana's Response to U.S. EPA's Intended Designations for Remaining Areas of Indiana under the 2015 8-Hour Ozone National Ambient Air Quality Standard

This letter is in response to United States Environmental Protection Agency's (U.S. EPA's) December 20, 2017, letter to Governor Holcomb about U.S. EPA's approach to the completion of designations for remaining areas of Indiana under the 2015 8-hour ozone national ambient air quality standard (NAAQS).

Consistent with the state's recommendations, U.S. EPA designated most Indiana counties as "attainment/unclassifiable" in a first round of designations on November 6, 2017, and is proposing to designate many remaining areas of the state as "attainment/unclassifiable" in a second and final round by this spring. However, U.S. EPA is proposing to deviate from Indiana's recommended designations of "attainment" for Clark, Floyd, Lake and Porter counties and "unclassifiable" for Dearborn County (Lawrenceburg Township) and designate all of those areas as nonattainment. Upon careful review of U.S. EPA's technical analysis, Indiana disagrees with U.S. EPA's intended designations for Lake and Porter counties and Dearborn County (Lawrenceburg Township) under the 2015 8-hour ozone standard and offers the following information.

Pertaining to Lake and Porter counties, Indiana firmly believes that nonattainment boundaries should be limited to areas that actually contain a three year average ambient monitor-based design value above the standard. As shown in Enclosure 1, all ozone monitors in Lake and Porter counties have been below the applicable NAAQS since 2009. Therefore, including either Lake or Porter County in the Chicago-Naperville nonattainment area is unjustified and unwarranted.

Indiana's, initial recommendations, submitted September 16, 2016, included a thorough analysis that demonstrated Lake and Porter counties have minimal contributions to violating monitors within the Chicago-Naperville, IL-IN-WI Combined Statistical Area. In addition, Lake and Porter counties have achieved permanent and significant emission reductions due to the implementation of regulations and control measures aimed at ensuring compliance under the 1997 and 2008 8-hour ozone standards, again, resulting in all Lake and Porter county ozone monitors measuring below the 1997, 2008, and 2015 NAAQS and Indiana is in full compliance with its federal-approved State Implementation Plan. Many of these regulations are more stringent than those in other areas of Indiana, other areas of the CSA, and many areas of the United States. As such, there are geographic and source sectors contributing to the violating monitors that present more cost-effective control options than are available within the U.S EPA's proposed nonattainment boundary. The wrongful inclusion of Lake and Porter counties within the Chicago nonattainment area will place an unfair and undue burden on those counties when other areas (e.g. Milwaukee, WI region) and other sources (e.g. Lake Michigan commercial marine vessels) that have a potentially greater contribution of ozone precursors have been excluded from designation consideration, thus excluded from associated emission control requirements as well.

Concerning Lawrenceburg Township in Dearborn County, Indiana believes there is no technical basis to include this township in the Cincinnati, OH-KY-IN nonattainment area. Although no air quality monitors are located within the county or township, Lawrenceburg Township was included in previously designated nonattainment areas under the 1997 and 2008 8-hour ozone standards based primarily on emissions of ozone precursors from the American Electric Power Tanners Creek generating station located within the township and the facility's assumed contributions to violations of the standards at monitors located in Ohio. Lawrenceburg Township was redesignated to attainment for the 1997 standard in 2010 and for the 2008 standard in 2017 based on air quality data demonstrating attainment and permanent and enforceable reductions of precursor emissions including, in part, the permanent closure in 2015, of the Tanners Creek Generating Station. As a result, Lawrenceburg Township no longer has a significant source(s) of ozone precursors and should not be included in any area designated nonattainment. A complete evaluation of Dearborn County is provided in Enclosure 2, including photochemical modeling demonstrating an insignificant contribution to ozone monitors in Ohio and an assessment of the propensity of VOC emissions from Lawrenceburg Township to form ozone. The evaluation illustrates that there is no basis for designating Lawrenceburg Township, Dearborn County as "nonattainment" under the 2015 8-hour ozone NAAQS. As such, Indiana strongly encourages U.S. EPA to reconsider its recommendation and designate Dearborn County (Lawrenceburg Township) as "attainment/unclassifiable" under the 2015 8-hour ozone NAAQS.

This submittal consists of one (1) hard copy of the required documentation. An electronic version of the submittal in PDF format that is identical to the hard copy has been sent to Doug Aburano, Chief of U.S. EPA Region 5's Attainment Planning and Maintenance Section, and Chris Panos of U.S. EPA Region 5.

We greatly appreciate the opportunity to comment on U.S. EPA's proposed recommendations for Indiana's designations under the 2015 8-hour ozone NAAQS. If you have any questions or need additional information, please contact Keith Baugues, Assistant Commissioner, Office of Air Quality, at (317) 232-8222 or kbaugues@idem.IN.gov.

Sincerely,

Bruno L. Pigott
Commissioner

BP/kb/sd/bc/md/gf/as

Enclosures

1. Enclosure 1: Lake and Porter Counties Ozone Monitoring Date 2007 - 2017
2. Enclosure 2: Technical Support Document

cc: Doug Aburano, U.S. EPA Region 5 (no enclosures)
Chris Panos, U.S. EPA Region 5 (no enclosures)
Keith Baugues, IDEM-OAQ (no enclosures)
Scott Deloney, IDEM-OAQ (no enclosures)
Brian Callahan, IDEM-OAQ (w/ enclosures)
Gale Ferris, IDEM-OAQ (w/ enclosures)
Amy Smith, IDEM-OAQ (w/ enclosures)
File Copy

Enclosure 1

Lake and Porter Counties Ozone Monitoring Data
2007 - 2017

Indiana's Response to U.S. EPA's Intended Designations Under the 2015 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)

February 2018

County	Site ID #	Site Name	Three-Year Design Value (ppm)								
			07-09	08-10	09-11	10-12	11-13	12-14	13-15	14-16	15-17*
Lake	180890022	Gary-IITRI	0.068	0.061	0.062	0.069	0.069	0.069	0.065	0.067	0.068
Lake	180890030	Whiting HS	0.070	0.064	0.066	0.073	0.070	0.069	0.065	Disc.	Disc.
Lake	180892008	Hammond - 141st St	0.070	0.067	0.068	0.072	0.070	0.069	0.063	0.065	0.065
Porter	181270024	Ogden Dunes	0.073	0.067	0.067	0.072	0.072	0.073	0.068	0.069	0.069
Porter	181270026	Valparaiso	0.068	0.062	0.062	0.063	0.064	0.065	0.063	0.066	0.069

* - preliminary data.

NAAQS = 75 ppb
All monitors < NAAQS

NAAQS = 70 ppb
All monitors < NAAQS

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Enclosure 2

Technical Support Document

Indiana's Response to U.S. EPA's Intended Designation for Lawrenceburg Township, Dearborn County Under the 2015 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)

February 2018

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EXECUTIVE SUMMARY

The purpose of this technical support document (TSD) is to demonstrate that Lawrenceburg Township in Dearborn County does not contribute to monitored violations of the 2015 8-hour ozone national ambient air quality standard (NAAQS) in the Cincinnati-Wilmington-Maysville, OH-KY-IN Combined Statistical Area (CSA) and, therefore, should be designated "attainment/unclassifiable" under the NAAQS.

On September 16, 2016, Indiana submitted initial recommendations to United States Environmental Protection Agency (U.S. EPA) for the designation of all of Indiana under the 2015 8-hour ozone NAAQS. Consistent with U.S. EPA guidance, Indiana evaluated quality-assured certified ambient air quality data for 2013-2015, quality-assured data for 2014-2016, which showed that all monitors within the State are below the current standard, and designation factors, and recommended all monitored counties be designated "attainment" and other counties be designated as "unclassifiable".

U.S. EPA intended to promulgate final designations for all areas of the country under the 2015 8-hour ozone NAAQS by no later than October 1, 2017. Federal actions delayed the federal review process, resulting in two rounds of designations. U.S. EPA designated 74 of Indiana's 92 counties as "attainment/unclassifiable" in its first round on November 6, 2017. On December 20, 2017, U.S. EPA informed Indiana, through the "120-day" notification/response process, of its approach for completing designations in remaining areas of the state. In this action, U.S. EPA intends to issue "nonattainment" designations for Clark, Floyd, Lake, and Porter counties and Lawrenceburg Township in Dearborn County.

In order for U.S. EPA to consider additional information (e.g., quality-assured certified ambient air quality data for 2014-2016) prior to issuing final second round designations, Indiana must submit this information by no later than February 28, 2018. Upon careful review of U.S. EPA's technical analysis, Indiana disagrees with U.S. EPA's intended designations for Lake and Porter counties and Lawrenceburg Township in Dearborn County.

U.S. EPA's intended inclusion of Lawrenceburg Township, Dearborn County is based on measured violations of the standard in Ohio's portion of the CSA and assumed contributions of ozone precursor emissions from Lawrenceburg Township. New modeling conducted by Indiana and an analysis of U.S. EPA designation factors support that there is no basis (technical or policy) for designating Lawrenceburg Township as "nonattainment" under the 2015 8-hour ozone NAAQS.

- Photochemical modeling recently performed as part of this demonstration shows nitrogen oxides (NO_x) and VOC emissions from Dearborn County point sources will have little to no impact on ozone concentration levels in the Cincinnati area in 2023.

- A significant portion of Dearborn County's large point source VOC emissions are attributable to the Midwest Grain Products of Indiana (MGPI) Lawrenceburg, Indiana distillery. The majority of MGPI's VOC emissions consist of ethanol, which due to its low volatility, is less reactive in the atmosphere and has much lower ozone formation potential compared to VOCs typically emitted from anthropogenic sources. As such, Indiana believes that U.S. EPA has significantly over-estimated Dearborn County's impact relating to point source VOC emissions that contribute to ozone formation in the CSA.

- The overall impact from Dearborn County is insignificant when compared to the magnitude of impacts from the Ohio and Kentucky portions of the CSA. Indiana notes U.S. EPA's "attainment/unclassifiable" designation for Lawrenceburg Township under the 2012 annual fine particle standard and firmly believes the township should be treated the same way under the 2015 8-hour ozone standard. Much of what U.S. EPA concluded in its designation for fine particles is relevant to U.S. EPA's proposed designation under the 2015 Ozone Standard. However, U.S. EPA seems to draw differing conclusions despite the fact that there have not been any significant changes to point sources, population density, population growth, or vehicle miles traveled.

The technical information provided below demonstrates that Dearborn County did not contribute to elevated ozone concentration levels that led to monitored violations in Ohio's portion of the CSA, and should not be included in the nonattainment area.

LAWRENCEBURG TOWNSHIP, DEARBORN COUNTY BACKGROUND

Geographic Description

Dearborn County lies directly west of Cincinnati, Ohio, and is included in the Cincinnati-Wilmington-Maysville, OH-KY-IN CSA along with Union and Ohio counties in southeast Indiana; Boone, Bracken, Campbell, Gallatin, Grant, Kenton, Mason and Pendleton counties in north central Kentucky; and Brown, Butler, Clermont, Clinton, Hamilton and Warren counties in southwest Ohio. Lawrenceburg Township is located in the southeastern corner of Dearborn County, along the Ohio River and adjacent to Boone County, Kentucky, and Hamilton County, Ohio.

Designation History

Under the 1997 8-hour ozone NAAQS, U.S. EPA included the Lawrenceburg Township portion of Dearborn County as part of the Cincinnati-Hamilton, OH-KY-IN nonattainment area based on measured violations in Ohio's portion of the CSA and assumed contributions to those violations due to emissions of ozone precursors (nitrogen oxides (NO_x) and VOCs) from American Electric Power's (AEP's) Tanners Creek Electric Generating Station (Tanners Creek) located in Lawrenceburg

Township. Based on subsequent air quality data from the 2007-2009 ozone seasons that showed the entire area had achieved the standard, U.S. EPA redesignated Lawrenceburg Township to attainment on May 11, 2010[1].

U.S. EPA included the Lawrenceburg Township portion of Dearborn County as part of the Cincinnati, OH-KY-IN nonattainment area under the 2008 8-hour ozone NAAQS based on measured violations in the Ohio portion of the CSA and assumed contributions to those violations due to emissions of NO_x and VOCs from, once again, Tanners Creek located in Lawrenceburg Township. As a result of a settlement between U.S. EPA and AEP to resolve violations of federal Clean Air Act New Source Review requirements, AEP retired the Tanners Creek Generating Station and all four of the facility's coal-fired units in 2015. Based on air quality data from 2012-2014 demonstrating attainment of the NAAQS for the entire nonattainment area, Indiana petitioned to have Lawrenceburg Township redesignated to attainment in February of 2016. U.S. EPA redesignated Lawrenceburg Township to attainment for the 2008 8-hour ozone NAAQS on April 7, 2017, based on the retirement of the Tanners Creek Generating Station and certified air quality data from 2013-2015 and preliminary data for 2016 demonstrating attainment[2].

TECHNICAL EVALUATION

1. Air Quality Data

There are no air quality monitors in Dearborn, Ohio, or Union counties. Eleven ozone air quality monitors operate in the Cincinnati CSA within counties in Ohio and Kentucky. Ohio monitoring locations include Butler County (three monitors), Clermont County (one monitor), Clinton County (one monitor), Hamilton County (three monitors), and Warren County (one monitor). Kentucky monitoring locations include Boone County (one monitor) and Campbell County (one monitor). For the 2014-2016 timeframe, six monitors in Ohio's portion of the CSA measured ozone concentrations that violated the 2015 8-hour ozone NAAQS (two in Butler County, three in Hamilton County, and one in Warren County). No violations were recorded at either of the monitors located in Kentucky's portion of the CSA. Because air quality monitors are not located in Indiana's portion of the Cincinnati CSA, a table of air quality data is not included here.

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[1] Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes; Ohio; Indiana; Redesignation of the Ohio and Indiana Patient Portions of the Cincinnati-Hamilton Area to Attainment for Ozone, Federal Register 26118 (May 11, 2010).
http://www.in.gov/idem/airquality/files/redesignation_dearborn_ozone_1997_approval.pdf

[2] Air Plan Approval; Indiana; Redesignation of the Indiana Portion of the Cincinnati, Ohio-Kentucky-Indiana Area to Attainment of the 2008 Ozone Standard, Federal Register 16940 (April 7, 2017)
http://www.in.gov/idem/airquality/files/redesignation_dearborn_ozone_2008_approval.pdf.

2. Emissions Analysis

Table 1: Cincinnati Area NO_x and VOC Emissions by County (Tons per Year) contains a breakdown of contributions from counties within the CSA. Data shows that sources in the Ohio and Kentucky portions of the Cincinnati CSA account for a vast majority of the area's overall ozone precursor emissions (NO_x and VOCs), including approximately 97% of the area's overall NO_x emissions and 94% of the area's overall VOC emissions. Conversely, all of Indiana's Cincinnati CSA counties contribute only 3% of the area's overall NO_x emissions and 6% of the area's overall VOC emissions. *Figure 1: Cincinnati Area NOx and VOC Emission Comparisons* illustrates Dearborn County's relative small contribution in comparison to Ohio and Kentucky's portions of the CSA.

Table 1: Cincinnati Area NO_x and VOC Emissions by County (Tons per Year) [a]

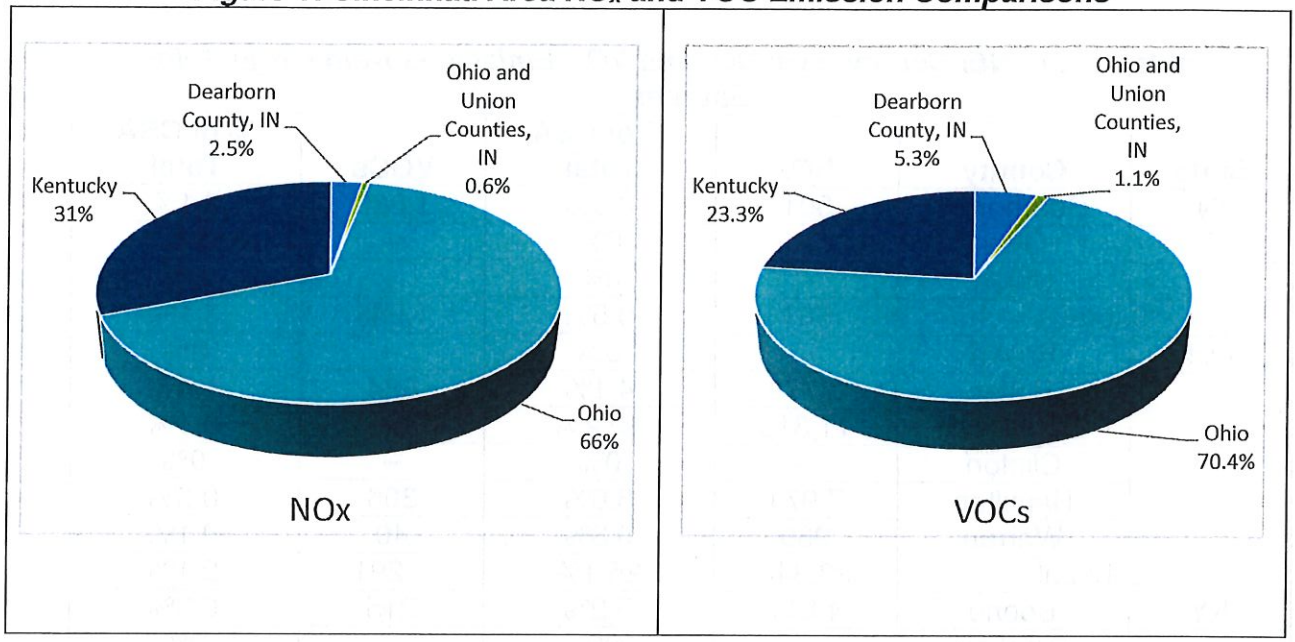
State	County	NO_x	% of CSA	VOCs	% of CSA
IN	Dearborn [b]	2,359	2.5%	3,345	5.3%
	Ohio	148	0.2%	221	0.4%
	Union	327	0.4%	417	0.7%
	Subtotals	2,834	3.1%	3,983	6.4%
OH	Brown	1,091	1.2%	1,320	2%
	Butler	12,090	13%	10,296	16.5%
	Clermont [c]	15,307	16.5%	5,046	8.1%
	Clinton	1,561	1.7%	1,713	2.7%
	Hamilton	26,305	28.3%	19,866	31.8%
	Warren	4,874	5.3%	5,766	9.2%
	Subtotals	61,228	66%	44,007	70.4%
KY	Boone	9,555	10.3%	5,928	9.5%
	Bracken	771	0.8%	362	0.6%
	Campbell	2,620	2.8%	2,046	3.3%
	Gallatin	2,174	2.3%	521	0.8%
	Grant	1,997	2.2%	974	1.6%
	Kenton	4,172	4.5%	3,417	5.5%
	Mason	6,073	6.5%	753	1.2%
	Pendleton	1,413	1.5%	555	0.9%
	Subtotals	28,775	31%	14,556	23.3%
	Totals	92,837	100%	62,546	100%

[a] Based on 2014 National Emissions Inventory.

[b] Dearborn County emissions adjusted to remove emissions from the Tanners Creek power station, which was closed permanently in 2015.

[c] Clermont County emissions adjusted to remove emissions from the Walter C. Beckjord power station, which was permanently shut down in October 2014, per U.S. EPA Cincinnati, OH-KY-IN Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD).

Figure 1: Cincinnati Area NO_x and VOC Emission Comparisons



U.S. EPA, in its Technical Support Document, called attention to large point sources from each county under consideration for inclusion in the nonattainment area. While large point sources contribute approximately 38% and 6% of the CSA's total overall NO_x and VOC emissions, Dearborn County's large point sources only contribute approximately 0.5% and 3% of the NO_x and VOC emissions in the CSA. *Table 2: 2014 NEI County-level NO_x and VOC Emissions from Large Point Sources* demonstrates these contributions within the CSA.

Table 2: 2014 NEI County-level NO_x and VOC Emissions from Large Point Sources [a]

State	County	NO_x	% of CSA Total	VOCs	% of CSA Total
IN	Dearborn [b]	501	0.5%	1,966	3.1%
	Ohio	--	0%	--	0%
	Union	--	0%	--	0%
Subtotal		501	0.5%	1,966	3.1%
OH	Brown	--	0%	--	0%
	Butler	3,779	4.1%	884	1.4%
	Clermont [c]	11,318	12.2%	61	0.1%
	Clinton	--	0%	--	0%
	Hamilton	7,974	8.6%	306	0.5%
	Warren	269	0.3%	40	0.1%
Subtotal		23,340	25.1%	1,291	2.1%
KY	Boone	4,811	5.2%	215	0.3%
	Bracken	--	0%	--	0%
	Campbell	--	0%	--	0%
	Gallatin	659	0.7%	84	0.1%
	Grant	--	0%	--	0%
	Kenton	--	0%	--	0%
	Mason	5,089	5.5%	102	0.2%
	Pendleton	796	0.9%	102	0.2%
Subtotal		11,355	12.2%	503	0.8%
Large Point Source Contributions Total		35,196	38%	3,760	6%
NO_x and VOC Emissions CSA Area Total [d]		92,837	100%	62,546	100%

[a] U.S. EPA Cincinnati, OH-KY-IN Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD) Table 4. 2014 NEI County-Level NO_x and VOC Emissions from Large Point Sources.

[b] Dearborn County emissions adjusted to remove emissions from the Tanners Creek power station, which was closed permanently in 2015.

[c] Clermont County emissions adjusted to remove emissions from the Walter C. Beckjord power station, which was permanently shut down in October 2014, per U.S. EPA Cincinnati, OH-KY-IN Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD).

[d] From Table 1: Cincinnati Area NO_x and VOC Emissions by County (Tons per Year), above.

Lawrenceburg Township large point source emissions account for just 0.5% of the area's overall NO_x emissions and 2.4% of the area's overall VOC emissions. *Table 3: Lawrenceburg Township Large Point Source NOx and VOC Emission Contributions (2014 NEI Data)* demonstrates the township's insignificant contribution in the CSA.

Table 3: Lawrenceburg Township Large Point Source NO_x and VOC Emission Contributions (2014 NEI Data)

Area	NO_x Emissions (Tons)	% of CSA	VOC Emissions	% of CSA
Lawrenceburg Township Large Point Sources	497	0.5%	1,509	2.4%
Other Dearborn County Large Point Sources	3.5	0%	458	0.7%
NO_x and VOC Emissions CSA Area Total *	92,837		62,546	

* From Table 1: Cincinnati Area NO_x and VOC Emissions by County (Tons per Year), above.

Following is additional data and discussion on large point emission sources, including MGPI, as well as population and traffic, which further demonstrates that the overwhelming air quality impact in the Cincinnati area is from emission sources in Ohio and Kentucky's portion of the CSA.

a. Large Point Sources

Dearborn County's large point source contributions to the overall NO_x and VOC emissions in the Cincinnati CSA are insignificant in comparison with the magnitude of contributions from sources in the Ohio and Kentucky portions of the Cincinnati area.

The Tanners Creek power plant in Lawrenceburg Township, Dearborn County, was the primary source of ozone precursor emissions, primarily NO_x, within Indiana's portion of the Cincinnati CSA and the basis for the township's inclusion in the nonattainment area under the previous NAAQS. As of its retirement in 2015, the Tanners Creek facility is no longer a source of NO_x and VOC ozone precursor emissions in the area.

A significant portion of Dearborn County's VOC emissions are attributable to MGPI. The majority of the facility's VOC emissions consist primarily of ethanol, primarily from the facility's barrel aging and warehouse storage activities. Research shows that volatile organic compounds differ in their potential to form ozone; reactive organics enhance the rates of ozone formation from NO_x and certain types of VOCs have a very low reactivity and, therefore, a low ozone-formation potential[3]. Ethanol has been identified as a VOC with low reactivity and low ozone-formation potential. Therefore, Dearborn County's VOC emissions contribution attributable to the

[3] Quantification of Ozone Impacts of Volatile Organic Compounds, William P.L. Carter, College of Engineering Center for Environmental Research and Technology, and Statewide Air Pollution Research Center, University of California; http://www.cert.ucr.edu/~carter/pubs/usctalk.pdf.

formation of ground-level ozone in the CSA is significantly overestimated by U.S. EPA in its TSD to support its intended designation of Lawrenceburg Township as part of the Cincinnati nonattainment area.

For example, MGPI reported 1,497 tons of VOC emissions in 2014, but approximately 1,182 tons, or 79%, were attributed to low-reactivity ethanol[4]. Taking MGPI's ethanol emissions into account, Dearborn County's potential contribution of ozone forming VOCs in 2014 may have been as low as 2,163 tons, or 3.5% of total VOC emissions in the CSA. *Table 4: Dearborn County Large Point Source VOC Emissions and Ethanol Breakdown (2014)* shows Dearborn County's potential contribution in the Cincinnati CSA when taking VOC emissions from MGPI's ethanol storage into account. Indiana believes that priority should be given to controlling other, more reactive VOC compounds.

Table 4: Dearborn County Large Point Source VOC Emissions and Ethanol Breakdown (2014)

Year	Dearborn County Total Large Point Source Emissions, in Tons [a]	MGPI VOC Emissions Attributable to Ethanol Emissions, in Tons [b]	Dearborn County Net Contribution of Non-Ethanol VOC Emissions	CSA Area VOC Emissions Total [a]	Dearborn County Net % Contribution in CSA of Non-Ethanol VOC Emissions
2014	3,345	1,182	2,163	62,546	3.5%

[a] From Table 1: Cincinnati Area NO_x and VOC Emissions by County (Tons per Year), above.
[b] Source: Facility Emission Detail, MGPI of Indiana, Plant ID: 1802900005, Report for 2014, submitted with IDEM State Form AES-01 Air Emission Statement Certification, June 29, 2015.

b. Population and Degree of Urbanization

The vast majority of the CSA's residents live in the Ohio and Kentucky portions of the CSA. Dearborn County comprises only approximately 2% of the CSA's population based on 2015 estimates[5]. Dearborn County's population is also much less concentrated than other counties in the intended nonattainment area. Population decreases are indicated for each county within Indiana's portion of the CSA in contrast with an overall increase indicated for counties in the Ohio and Kentucky portions of the intended nonattainment area. *Table 5: Population Contributions in the Cincinnati CSA* provides a breakdown of county contributions and growth within the CSA.

[4] Facility Emission Detail, MGPI of Indiana, Plant ID: 1802900005, Report for 2014, submitted with IDEM State Form AES-01 Air Emission Statement Certification, June 29, 2015.
[5] U.S. EPA Cincinnati, OH-KY-IN Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD) population and growth statistics used for consistency.

Table 5: Population Contributions in the Cincinnati CSA

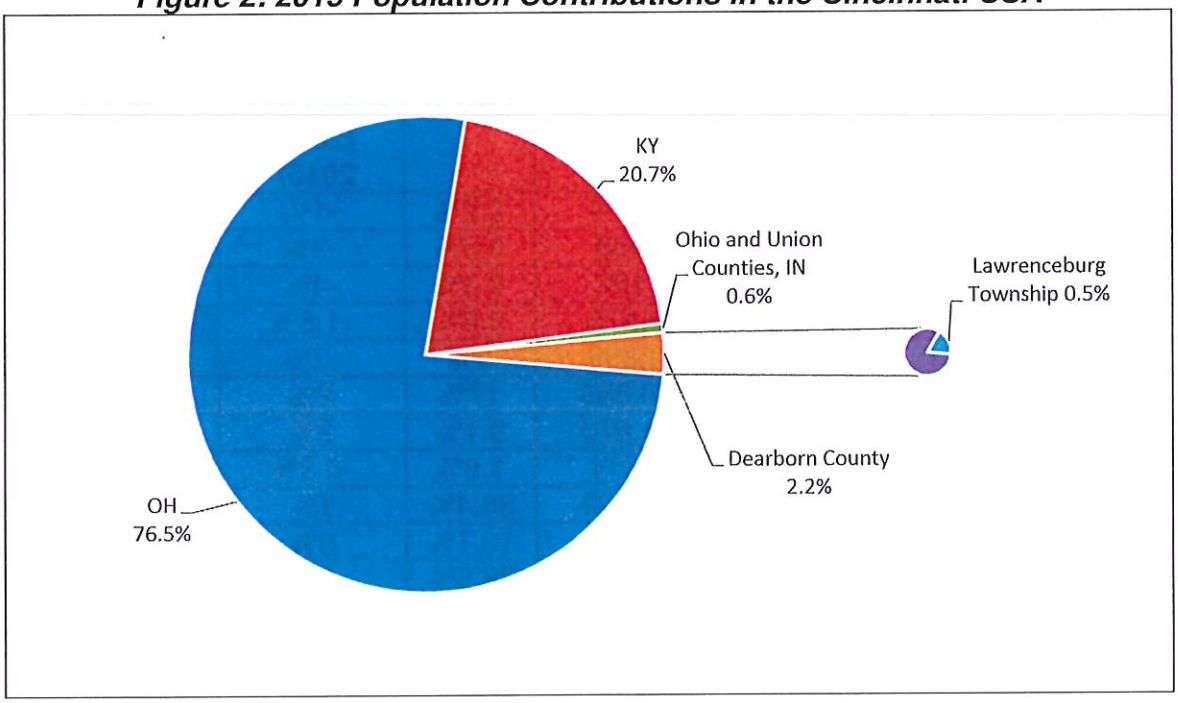
State	County	2010 Population*	2015 Population*	% of CSA (2015)	% Change in the Population (2010-2015)*	Population Density (per sq. mile) (2015)*
IN	Dearborn	50,047	49,455	2.2%	-1%	162
	Ohio	6,128	5,938	0.3%	-3%	69
	Union	7,516	7,182	0.3%	-4%	45
Subtotal		63,691	62,575	2.8%	-1.5%	
OH	Brown	44,846	43,839	2%	-2%	89
	Butler	368,130	376,353	17%	2%	806
	Clermont	197,363	201,973	9.1%	2%	447
	Clinton	42,040	41,917	1.9%	-0.3%	103
	Hamilton	802,374	807,598	36.4%	1%	1990
	Warren	212,693	224,469	10.1%	6%	559
Subtotal		1,667,446	1,696,149	76.5%	2%	
KY	Boone	118,811	127,712	5.8%	7%	518
	Bracken	8,488	8,321	0.4%	-2%	40
	Campbell	90,336	92,066	4.2%	2%	608
	Gallatin	8,589	8,636	0.4%	1%	85
	Grant	24,662	24,757	1.1%	0.4%	96
	Kenton	159,720	165,012	7.4%	3%	1030
	Mason	17,490	17,099	0.8%	-2%	71
	Pendleton	14,877	14,408	0.6%	-3%	52
Subtotal		442,973	458,011	20.7%	3%	
CSA Total		2,174,110	2,216,735	100%	2%	

* Source: U.S. EPA Cincinnati, OH-KY-IN Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD), Table 5. Population and Growth.

The larger populations and higher population densities of the Ohio and Kentucky counties located adjacent to Dearborn County indicate an overwhelmingly greater impact on air quality than that of Lawrenceburg Township. Lawrenceburg Township's population of 10,985 for 2010[6] accounts for only 0.5% of the CSA's estimated population of 2,174,110 for 2010. Trends for the Indiana counties within the CSA suggest that Lawrenceburg Township will not experience substantial population growth and will continue to pose insignificant potential impacts in comparison with Ohio and Kentucky's portions of the CSA. *Figure 2: 2015 Population Contributions in the Cincinnati CSA* illustrates Dearborn County and Lawrenceburg Township's small relative population and air quality impacts.

[6] U.S. Census Bureau, 2010 Census Population and Housing Unit Counts, Table 8, Population and Housing Units: 1900 to 2010; and Area Measurements and Density: 2010, https://www.census.gov/prod/cen2010/cph-2-16.pdf.

Figure 2: 2015 Population Contributions in the Cincinnati CSA



c. Traffic, Commuting Patterns and Vehicle Miles Traveled

Table 6: Daily Vehicle Miles Traveled (VMT) 2014, Cincinnati CSA contains a breakdown of 2014 VMT for all of the counties in the CSA and the percentage of their contribution to the CSA's total VMT. Data shows that Dearborn County's 2014 daily vehicle miles traveled account for only approximately 3% of the total VMT in the Cincinnati CSA. *Figure 3: Daily Vehicle Miles Traveled (VMT) Contributions 2014, Cincinnati CSA* illustrates Dearborn County's small contribution in comparison with Ohio and Kentucky's portions of the CSA.

Table 6: Daily Vehicle Miles Traveled (VMT) 2014, Cincinnati CSA

State	County	Daily VMT	% CSA Total
IN [a]	Dearborn	1,778,900	2.96%
	Ohio	132,000	0.2%
	Union	226,500	0.4%
Subtotal		2,137,400	3.6%
OH [b]	Brown	1,127,500	1.9%
	Butler	8,304,040	13.8%
	Clermont	4,544,270	7.6%
	Clinton	1,729,280	2.9%
	Hamilton	23,339,420	38.9%
	Warren	5,285,120	8.8%
Subtotal		44,329,630	73.9%
KY [c]	Boone	4,150,000	6.9%
	Bracken	256,000	0.4%
	Campbell	2,094,000	3.5%
	Gallatin	807,000	1.3%
	Grant	1,300,000	2.2%
	Kenton	4,115,000	6.9%
	Mason	529,000	0.9%
	Pendleton	299,000	0.5%
Subtotal		13,550,000	22.6%
CSA Total		60,017,030	100%

[a] Indiana Department of Transportation, Indiana DVMT History, Length DVMT by County, Indiana Traffic Statistics_HistoricINVMTBByCounty (1992-2014) http://www.in.gov/indot/2469.htm.

[b] Ohio Department of Transportation, County Summary: Adjusted County kDVMT's, https://www.dot.state.oh.us/Divisions/Planning/TechServ/traffic/Pages/DVMT.aspx.

c Kentucky Transportation Cabinet, 2014 DVMT (in thousands) and Mileage by County and Functional Class, http://transportation.ky.gov/Planning/Pages/Roadway-Information-and-Data.aspx.

Figure 3: Daily Vehicle Miles Traveled (VMT) Contributions 2014, Cincinnati CSA

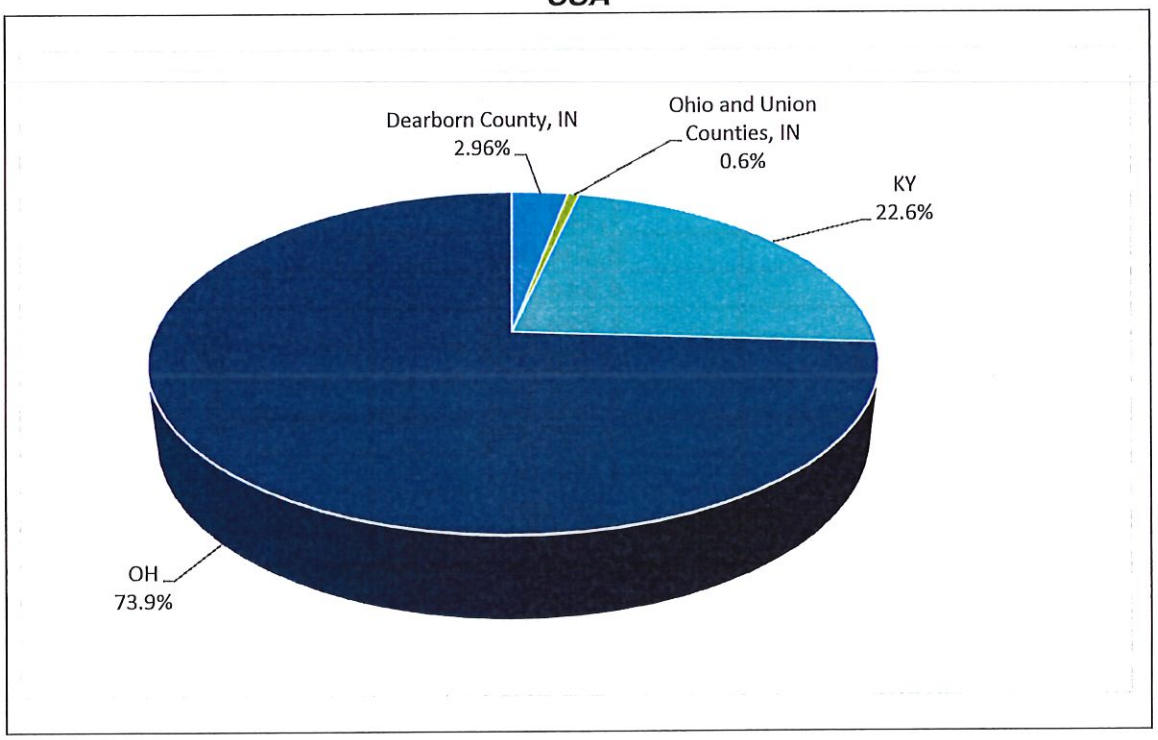


Table 7: Percent of Working Residents Who Commute to or Within Counties with Violating Monitors provides a county-by-county comparison of residents who work, the number of residents who commute to or within counties with violating monitors, and the percentage of each county's contribution within the CSA. Dearborn County accounts for approximately 1% of the commuters in the CSA who travel to or within a county with violating monitors.

Table 7: Percent of Working Residents Who Commute to or Within Counties with Violating Monitors

State	County	Number of County Residents Who Work *	Commuters	
			Number of County Residents Who Work and Commute to or Within Counties with Violating Monitors *	% of Total Number of County Residents Who Work and Commute to or Within Counties with Violating Monitors
IN	Dearborn	24,184	7,789	1.3%
	Ohio	3,066	522	0.1%
	Union	3,477	887	0.1%
Subtotal		30,727	9,198	1.5%
OH	Brown	18,030	5,706	0.9%
	Butler	169,161	134,693	21.8%
	Clermont	94,732	52,503	8.5%
	Clinton	17,707	3,839	0.6%
	Hamilton	372,836	295,507	47.7%
	Warren	102,393	69,230	11.2%
Subtotal		774,859	561,478	90.7%
KY	Boone	60,353	11,107	1.8%
	Bracken	2,535	51	0%
	Campbell	44,816	15,065	2.4%
	Gallatin	3,708	286	0.05%
	Grant	10,678	871	0.1%
	Kenton	79,496	20,135	3.3%
	Mason	6,460	107	0%
	Pendleton	6,037	840	0.1%
Subtotal		214,083	48,462	7.8%
CSA Total		1,019,669	619,138	100%

* Source: U.S. EPA Cincinnati, OH-KY-IN Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD) Table 6. Traffic and Commuting Pattern.

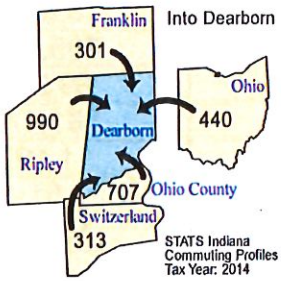
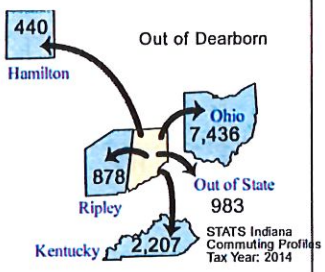
Data indicates that the average number of commuters from Dearborn County into Ohio remains consistent, as shown in *Table 8: Number of Commuters from Dearborn County into Ohio (2009-2014).* Typical commuter flow into and out of Dearborn County is shown in *Figure 4: Dearborn County Commuting Patterns (2014).* Although the percentage of out-of-county workers in Dearborn County may appear high, it represents one of the smallest percentages of out-of-county commuters compared with most other counties in the CSA, as shown in *Table 9: Out of County Commuter Percentages, Cincinnati CSA.* Based on Dearborn County's commuting patterns and trends, it is safe to assume that cross-county mobile sources (for example, Dearborn County to neighboring areas) have very little to no impact on ozone concentrations in this area.

Table 8: Number of Commuters from Dearborn County into Ohio (2009-2014)

2009	2010	2011	2012	2013	2014	Average
7,656	7,549	7,483	7,423	7,462	7,436	7,502

Source: STATSIndiana website, http://www.stats.indiana.edu/dms4/commuting.asp.

Figure 4: Dearborn County Commuting Patterns (2014)

Top 5 counties sending workers into Dearborn County			**Top 5 counties receiving workers from Dearborn County**		
County Sending Workers	**Workers**		**County Receiving Workers**	**Workers**	
Ripley County	990		Ohio (State)	7,436	
Ohio County	707		Kentucky	2,207	
Ohio (State)	440		Out of State	983	
Switzerland County	313		Ripley County	878	
Franklin County	301		Hamilton County	440	
Total of above	2,751		**Total of above**	11,944	
(11.3 % of Dearborn County workforce)			(34.9 % of Dearborn County labor force)		

Source: STATSIndiana website, http://www.stats.indiana.edu/dms4/commuting.asp.

Table 9: Out of County Commuter Percentages, Cincinnati CSA

		Implied Resident Labor Force		Workers Who Live AND work in county		Workers Who Live in/Work Outside the County (Commuters)	
State	County	Actual Number	Percent of Entire CSA	Actual Number	Percent of Implied Resident Labor Force	Actual Number	Percent of Implied Resident Labor Force
IN [a]	Dearborn	34,093	3.4%	20,899	61.3%	13,194	38.7%
	Ohio	4,173	0.4%	2,419	58%	1,754	42%
	Union	4,880	0.5%	2,799	57.4%	2,081	42.6%
Subtotal		43,146	4.2%	26,117	60.5%	17,029	39.5%
OH [b]	Brown	18,030	1.8%	3,797	21.1%	14,233	78.9%
	Butler	165,494	16.3%	61,415	37.1%	104,079	62.9%
	Clermont	94,728	9.3%	22,356	23.6%	72,372	76.4%
	Clinton	17,707	1.7%	6,659	37.6%	11,048	62.4%
	Hamilton	372,830	36.7%	253,941	68.1%	118,889	31.9%
	Warren	102,387	10.1%	26,259	25.6%	76,128	74.4%
Subtotal		771,176	75.9%	374,427	48.6%	396,749	51.4%
KY [c]	Boone	55,117	5.4%	20,636	37.4%	34,481	62.6%
	Bracken	2,549	0.3%	708	27.8%	1,841	72.2%
	Campbell	42,677	4.2%	10,338	24.2%	32,339	75.8%
	Gallatin	3,355	0.3%	684	20.4%	2,671	79.6%
	Grant	10,324	1.0%	2,327	22.5%	7,997	77.5%
	Kenton	75,780	7.5%	24,060	31.8%	51,720	68.3%
	Mason	6,474	0.6%	3,062	47.3%	3,412	52.7%
	Pendleton	5,710	0.6%	1,151	20.2%	4,559	79.8%
Subtotal		201,986	19.9%	62,966	31.2%	139,020	68.8%
CSA Total		1,016,308	100%	463,510	45.6%	552,798	54.4%

[a] Annual Commuting Trends Profiles (2009-2013 average), STATSIndiana, http://www.stats.indiana.edu/topic/commuting.asp.

[b] Kentucky LED Maps by County (Helpful Data, County Profiles, Inflow/Outflow Job Counts 2010) Kentucky Career Center, https://kylmi.ky.gov/vosnet/Default.aspx.

[c] Worker Inflow/Outflow, 2014 Wage Data, Ohio Department of Job and Family Services, http://ohiolmi.com/census/commuting.htm.

3. Meteorology

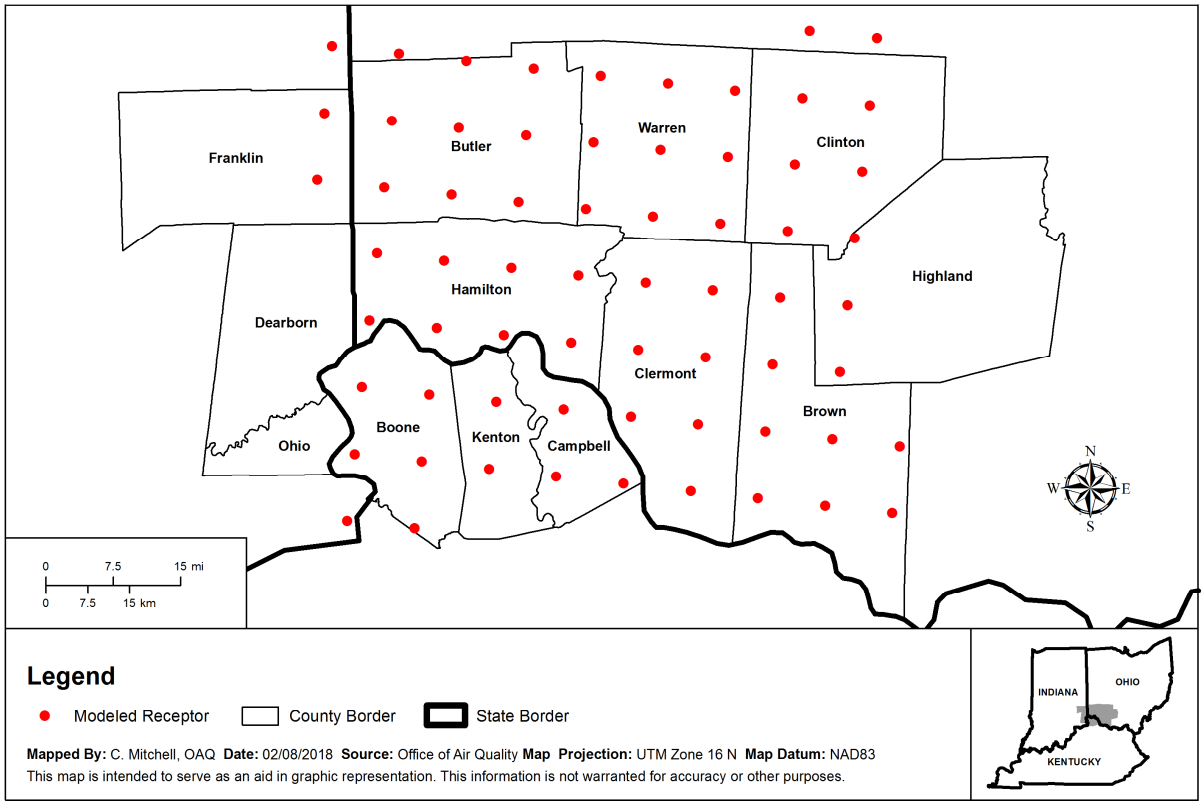
Photochemical modeling of ozone precursor emissions from Dearborn County, Indiana was performed to determine the impacts of those emissions on ozone air quality in the Cincinnati area. While U.S. EPA considers Lawrenceburg Township to be a significant contributor to monitored violations within the Cincinnati CSA without providing technical support, Indiana evaluated emissions from all of Dearborn County to demonstrate that Lawrenceburg Township, does not contribute to monitored violations of the 2015 8-hour ozone NAAQS.

a. Modeling Analysis

The emissions platform for the modeling exercise, taken from "U.S. EPA's Updates to Emissions Inventories for the Version 6.3 2011 Emissions Modeling Platform for the Year 2023" is the 2023 base case emissions, version EL. Within the 2023 EL emissions platform, Dearborn County is projected to have annual NO_x emissions of 1,067 tons and annual VOC emissions of 1,517 tons. Photochemical modeling was conducted with the Comprehensive Air Quality Model with Extensions (CAMx) Version 6.32. Because the time given to respond to U.S. EPA's 120-day letter is less than the full 120 days, a shortened summer run from June 15th (Julian Day 166) to August 4th (Julian Day 216) was conducted. These dates corresponded to ozone readings which exceeded the 2015 standard in the Cincinnati area in 2011. The models were run with 12 kilometer grid resolution and 25 vertical levels within the 2011 meteorological fields.

Two emission scenarios involving all point sources in Dearborn County were modeled: zeroing out 2023 NO_x and VOC point source emissions, and zeroing out only 2023 VOC point source emissions. The results of these model runs were then compared to the results of a base case 2023 model run that did not have the altered NO_x and VOC emissions. Results were taken across a receptor grid that had a southwest corner coordinate of 38.8 degrees latitude and -84.9 degrees longitude, and a northeast corner coordinate of 39.6 degrees latitude and -83.7 degrees longitude. This receptor grid includes all of the ozone monitors currently located in the Cincinnati CSA and includes monitored areas that U.S. EPA intends to designate as nonattainment for the 2015 ozone NAAQS. *Figure 5: Receptor Grid Used to Obtain Modeling Results* shows the receptor grid that these modeling results cover.

Figure 5: Receptor Grid Used to Obtain Modeling Results



For each modeling scenario, the four highest modeled 8-hour daily maximum ozone (MDA8) concentrations were determined for each receptor. Each of the two scenarios was then compared to the base case 2023 scenario in order to calculate the impact to MDA8 concentrations. The modeling results show that zeroing out both NO_x and VOC emissions have an insignificant impact on the ozone concentrations across the Cincinnati CSA as the maximum impacts are much less than the significance level of 1%, which is typically used by U.S. EPA to determine whether an area is a significant contributor. Furthermore, zeroing out just VOC emissions have almost no impact on the ozone concentrations across the Cincinnati CSA. The five highest impacts for each modeling scenario are shown below in *Table 10: Top Five Maximum Modeled Impacts (parts per billion (ppb)) across the Cincinnati CSA from Zeroing out Dearborn County NO_x and VOC Emissions* and *Table 11: Top Five Maximum Modeled Impacts (ppb) across the Cincinnati CSA from Zeroing out Dearborn County VOC Emissions.* Since this is not an attainment demonstration, relative response factors are not determined and only absolute modeling results are presented.

Table 10: Top Five Maximum Modeled Impacts (parts per billion (ppb)) across the Cincinnati CSA from Zeroing out Dearborn County NO_x and VOC Emissions

Latitude	Longitude	Modeled Impact (ppb)
38.93251	-84.8254	-0.1728
38.81039	-84.7060	-0.1207
39.14761	-84.7881	-0.1196
38.91792	-84.6872	-0.1058
39.25517	-84.8896	-0.0921

Table 11: Top Five Maximum Modeled Impacts (ppb) across the Cincinnati CSA from Zeroing out Dearborn County VOC Emissions

Latitude	Longitude	Modeled Impact (ppb)
39.04006	-84.8068	-0.0018
39.14761	-84.7881	-0.0014
39.02546	-84.6683	-0.0012
39.13300	-84.6494	-0.0012
38.93251	-84.8254	-0.0008

4. Geography/Topography

There are no geographical or topographical features within Dearborn County that would have an impact on air quality or potential transport. Therefore, this factor was not significant in making this updated recommendation for a designation of "attainment/unclassifiable" for Lawrenceburg Township under the 2015 8-hour ozone standard.

5. Jurisdictional Boundaries

Dearborn County is included in the Cincinnati-Wilmington-Maysville, OH-KY-IN CSA. The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) serves as the planning agency for an area that includes Dearborn County, Indiana. Dearborn County (Lawrenceburg Township) is within the current maintenance area boundaries for the 2008 8-hour ozone NAAQS. However, transportation conformity and SIP planning for Dearborn County is conducted independently due to limitations of jurisdictional authority. Excluding Dearborn County does not present any challenge with regard to coordination of transportation conformity or SIP development activities.

DESIGNATION CONSISTENCY ANALYSIS

Although no air quality monitors are located within Dearborn County, Lawrenceburg Township was included in previously designated nonattainment areas under the and 2008 8-hour ozone NAAQS and the 1997 fine particle NAAQS based primarily on emissions from AEP's Tanners Creek power plant and the facility's

assumed contributions to violations of the standards at monitors in Ohio and Kentucky.

U.S. EPA redesignated Lawrenceburg Township to attainment for the 2008 8-hour ozone NAAQS in 2017, based, in part, on the retirement of the Tanners Creek Generating Station.

For the 2012 fine particle NAAQS, during the designation process Lawrenceburg Township was excluded by U.S. EPA for consideration for inclusion in the Cincinnati nonattainment area primarily because of the closure of the Tanners Creek facility, as well as other factors such as population density, the degree of urbanization, traffic commuting patterns, vehicle miles traveled, and meteorological weather transport patterns did not pose a significant impact.

Indiana believes that for the 2015 ozone NAAQS, U.S. EPA should treat Lawrenceburg Township in the same manner. The large source considered to be the primary contributor from the county has been closed and other factors have essentially remained the same and have been shown to have an insignificant effect outside the county. As such, a designation of "attainment/unclassifiable" is warranted.

CONCLUSION

In response to U.S. EPA's 120-day letter dated December 20, 2017, and technical analysis concerning the agency's intended nonattainment designation for Lawrenceburg Township in Dearborn County as part of the Cincinnati-Wilmington-Maysville, OH-KY-IN CSA under the 2015 8-hour ozone NAAQS, Indiana has reviewed air quality data, evaluated emissions data, conducted photochemical modeling, and evaluated designation factors including population characteristic, urban growth patterns, and commuting trends.

Indiana firmly believes that nonattainment boundaries for the 2015 8-hour ozone NAAQS should be limited to townships and/or counties that actually contain a monitor with a three-year average design value above the standard. However, because there are no monitors within Dearborn County, Indiana performed an analysis to demonstrate that all of Dearborn County has insignificant impacts on all monitors in the Cincinnati CSA.

U.S. EPA's intended designation of Lawrenceburg Township as "nonattainment" under the 2015 8-hour ozone NAAQS is based primarily on measured violations in Ohio's portion of the CSA and assumed contributions to those violations attributable to VOC emissions from large point sources located in the township. Overall contributions from point source emissions in the CSA combine for a very small 6% share of the total VOC emissions in the CSA. Dearborn County's contributions to VOC emissions are primarily attributable to large point sources that, despite

accounting for approximately half of the CSA's total large point source contributions, still only represent 3% of the total VOC emissions in the CSA. In addition, Dearborn County NO_x emissions only account for approximately 0.5% of the total NOx emissions in the CSA, further demonstrating Dearborn County's insignificant impact.

A significant portion of VOC emissions from point sources within the county are attributable to the MGPI Lawrenceburg, Indiana distillery. The majority of MGPI's VOC emissions consist of ethanol. While ethanol is considered a VOC, it's reactivity to form ozone is very low and therefore contributes to a much lesser degree to the formation of ground-level ozone in comparison to VOCs typically emitted from anthropogenic sources. As such, Indiana's emissions contribution attributable to the formation of ground-level ozone is significantly overestimated by U.S. EPA in its TSD to support its intended inclusion of Lawrenceburg Township as part of the Cincinnati nonattainment. Per the modeled impacts of total point source VOC referenced in Table 11 above, the contribution of VOC from all point sources within Lawrenceburg Township are less than one-tenth of one percent. Note that U.S. EPA has never used a contribution threshold of less than one percent to justify significant contribution in a regulatory action.

Other characteristics of Dearborn County indicate an insignificant contribution to violating monitors in Ohio. Dearborn County's population and urbanization is much smaller and much less concentrated than other counties in the intended nonattainment area, and trends show a slight population decrease from 2010 to 2015. Lawrenceburg Township's population of 10,985 accounts for only 0.5% of the CSA's estimated population and the county's VMT accounts for only 2.96% of the CSA's total VMT.

Furthermore, photochemical modeling has been performed that clearly demonstrates the insignificant impact of NOx and VOC emissions on the Cincinnati CSA. Two emission scenarios involving all point sources in Dearborn County were modeled: zeroing out 2023 NO_x and VOC emissions and zeroing out 2023 VOC emissions. The results of these model runs were then compared to the results of a base-case 2023 model run that did not have the altered NO_x and VOC emissions. The modeling results for both scenarios show an impact well below 1% of the ozone NAAQS, which is typically used by U.S. EPA to determine whether an areas is a significant contributor and demonstrate that emissions of ozone precursors from Lawrenceburg Township have an insignificant impact on the Cincinnati CSA.

The overall impact of Lawrenceburg Township on the Cincinnati CSA is very small compared with the magnitude of the Ohio and Kentucky portions of the CSA. Indiana has been and will continue working with federal, state and local entities to ensure compliance with clean air regulations and the protection of public health and the environment. For these reasons, Indiana recommends that Lawrenceburg Township in Dearborn County be designated as attainment/unclassifiable under the 2015 8-hour ozone NAAQS.