



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Eric J. Holcomb
Governor

Brian C. Rockensuess
Commissioner

April 1, 2022

Mr. John Mooney, Chief
Air Programs Branch
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3950

Re: Supplement to the Request for Redesignation
and Maintenance Plan for Attainment of
Indiana's Portion (Clark and Floyd Counties) of
the Louisville, Kentucky – Indiana (KY-IN),
2015 8-Hour Ozone Nonattainment Area

Dear Mr. Mooney:

The Indiana Department of Environmental Management (IDEM) developed and is providing supplemental information to the Request for Redesignation and Maintenance Plan for Attainment of Indiana's Portion (Clark and Floyd counties) of the Louisville, Kentucky – Indiana (KY-IN), 2015 8-Hour Ozone Nonattainment Area. IDEM submitted the Request for redesignation and maintenance plan to United States Environmental Protection Agency (U.S. EPA) on February 21, 2022.

This supplement addresses U.S. EPA's request to provide onroad emissions for nitrogen oxides and volatile organic compounds using the MOVES3.0.2 model for Clark and Floyd counties for the 2017 base year. This modelling run was performed to ensure that the onroad emissions data for 2017 were generated consistent with how onroad emissions data were generated for the 2019 attainment year and 2035 maintenance year.

The attached file contains one text revision referencing MOVES3.0.2 and several tables from the request for redesignation and maintenance plan with strike-through text updating the onroad emissions for 2017 for Clark and Floyd counties as well as the entire Louisville, KY-IN nonattainment area.

A separate email has been sent to Michael Leslie of U.S. EPA Region 5's Control Strategies Section transmitting specific MOVES3.0.2 run files.

Throughout the development of these submittals IDEM staff worked with U.S. EPA Region 5 to ensure that any potential concerns regarding this submission were addressed. IDEM appreciates U.S. EPA's continued efforts to communicate regularly with us as it reviews and processes these submittals.

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 Sarah Arra, Chief of U.S. EPA Region 5's Attainment Planning and Maintenance Section and Chris Panos of U.S. EPA Region 5.

IDEM believes that this supplement to Indiana's request for redesignation and maintenance plan submittal for Clark and Floyd counties satisfies Indiana's obligation under Section 107(d)(3) of the Clean Air Act to demonstrate how the area will attain, and maintain, the 2015 8-hour ozone standard.

IDEM requests that U.S. EPA proceed with review and approval of this submittal. If you have any question or need additional information, please contact Brian Callahan, Section Chief, Air Quality Standards and Implementation, Office of Air Quality, IDEM, at (317) 232-8244 or bcallaha@idem.IN.gov.

Sincerely,



Matthew Stuckey
Assistant Commissioner
Office of Air Quality

MS/sd/bc/gf

Enclosure:

Supplement to the Request for Redesignation and Maintenance Plan for Attainment in Indiana's Portion of the Louisville, Kentucky – Indiana, (KY-IN), 2015 8-Hour Ozone nonattainment Area

cc: Doug Aburano, U.S. EPA (no enclosure)
Sarah Arra, U.S. EPA Region 5 (no enclosure)
Chris Panos, U.S. EPA Region 5 (no enclosure)
Michael Leslie, U.S. EPA Region 5 (no enclosure)
Andrew Lee, U.S. EPA Region 5 (no enclosure)
Matt Stuckey, IDEM-OAQ (no enclosure)
Scott Deloney, IDEM-OAQ (no enclosure)
Brian Callahan, IDEM-OAQ (no enclosure)
Gale Ferris, IDEM-OAQ (w/ enclosure)
Michele Boner, IDEM-OAQ (w/ enclosure)
File Copy

Enclosure

Onroad Emissions for Nitrogen Oxides and Volatile Organic Compounds using the MOVES3.0.2 Model for Clark and Floyd Counties for the 2017 Base Year

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3.1 Emission Inventory

In consultation with U.S. EPA and Kentucky, a base-year of 2017, an attainment-year of 2019, an interim-year of 2030, and a maintenance-year of 2035 were selected. The 2017 base-year emissions inventory represents a comprehensive, accurate, and current inventory of actual emissions from all sources of NO_x and VOCs in Clark and Floyd counties. The 2017 Emissions Modeling platform¹ was used to collect data for the 2017 NEI year. Point source (including EGU's), area, and non-road emissions were compiled from the data available on U.S. EPA's Emissions Modeling Clearinghouse website for the entire Louisville, (KY-IN) nonattainment area. On-road values for Clark and Floyd counties were provided by KIPDA with the assistance of APCD. ~~The MOVES2014a was run using the "inventory mode" for the years 2015 and 2020, which has been interpolated to arrive at 2017 NO_x and VOC tons per summer day totals.~~ **The MOVES3.0.2 model was used to generate 2017 NO_x and VOC onroad ton per summer day emissions.** Biogenic emissions are not included in these summaries.

The 2019 inventory includes point sources (including EGU emissions), area, and non-road emissions compiled from the data available on U.S. EPA's Emission Modeling Platform 2016v2.² The modeling platform provides emission estimates for 2016 and projections to 2023, 2026, and 2032. Daily estimates of emissions by sector and county were provided on the 2016v2 Data File and Summaries site. The estimated tons per summer day were calculated by performing a query to find an average for the days in the summer months.

The projected inventory for 2030 was a straight-line interpolation between the projected modeling inventories for 2023, 2026, and 2032. The interpolations were performed at the sector level. The 2035 projected inventory utilized the FORECAST.LINEAR function in Microsoft Excel with inventory data points from 2016, 2023, 2026, and 2032. This inventory was estimated at the sector level as well. If the FORECAST.LINEAR function resulted in a negative value, the emissions were assumed to not change.

3.2 Attainment Inventory

U.S. EPA's Redesignation Guidance requires states to identify the level of emissions in an affected area that is sufficient to attain and maintain the NAAQS. To satisfy this requirement, Indiana is submitting the inventory shown in Tables 3.1 through Table 3.3. This inventory is a comprehensive inventory of ozone precursor emissions (i.e., NO_x and VOC) representative of the year when the area achieved attainment of the ozone air quality standard.

¹ [2017 Emissions Modeling Platform | US EPA](#)

² <https://www.epa.gov/air-emissions-modeling/2014-2016-version-7-air-emissions-modeling-platforms>

Table 2.4: Emission Estimations and Projections for On-Road Mobile Sources – Louisville KY-IN Nonattainment Area 2017 (Base-Year), 2019 (Attainment-Year), and 2035 (Maintenance-Year)

| | 2017 | 2019 | 2035 |
|------------------------|------------------------|-------------|-------------|
| NO _x , tpsd | 38.09 36.63 | 33.03 | 14.94 |
| VOC, tpsd | 15.23 13.70 | 13.65 | 4.79 |

Table 3.4: Clark and Floyd Counties, Indiana NO_x Emission Inventory Totals (Tons per Summer Day)

| Sector | 2017 Base | 2019 Attainment | 2030 Interim | 2035 Maintenance | Safety Margin |
|---------------|-------------------------------|------------------------|---------------------|-------------------------|----------------------|
| Point | 2.70 | 4.18 | 2.36 | 2.50 | -1.68 |
| Area | 2.05 | 0.42 | 0.42 | 0.42 | 0 |
| Nonroad | 1.92 | 2.76 | 1.80 | 1.25 | -1.51 |
| Onroad | 42.49 11.03 | 7.73 | 4.31 | 4.07 | -3.66 |
| TOTAL | 49.16 17.70 | 15.09 | 8.89 | 8.24 | -6.85 |

Table 3.5: NO_x Emission Inventory Totals for the Indiana and Kentucky portions of the Louisville, KY-IN Nonattainment Area (Tons per Summer Day)

| Sector | 2017 Base | 2019 Attainment | 2030 Interim | 2035 Maintenance | Safety Margin |
|------------------------|-------------------------------|------------------------|---------------------|-------------------------|----------------------|
| <i>Indiana</i> | | | | | |
| Point | 2.70 | 4.18 | 2.36 | 2.50 | -1.68 |
| Area | 2.05 | 0.42 | 0.42 | 0.42 | 0 |
| Nonroad | 1.92 | 2.76 | 1.80 | 1.25 | -1.51 |
| Onroad | 42.49 11.03 | 7.73 | 4.31 | 4.07 | -3.66 |
| TOTAL | 49.16 17.70 | 15.09 | 8.89 | 8.24 | -6.85 |
| <i>Kentucky</i> | | | | | |

| | | | | | |
|---------------------------------|--------------------|--------------|--------------|--------------|---------------|
| Point | 35.78 | 34.04 | 24.39 | 21.24 | -12.80 |
| Area | 7.21 | 6.77 | 5.84 | 5.41 | -1.36 |
| Nonroad | 3.46 | 3.38 | 2.91 | 2.69 | -0.69 |
| Onroad | 25.60 | 25.31 | 11.66 | 10.87 | -14.44 |
| TOTAL | 72.05 | 69.50 | 44.80 | 40.21 | -29.29 |
| Total Nonattainment Area | | | | | |
| Point | 38.48 | 38.22 | 26.75 | 23.74 | -14.48 |
| Area | 9.26 | 7.19 | 6.26 | 5.83 | -1.36 |
| Nonroad | 5.38 | 6.14 | 4.71 | 3.94 | -2.20 |
| Onroad | 38.09 36.63 | 33.04 | 15.97 | 14.94 | -18.10 |
| TOTAL | 91.21 89.75 | 84.59 | 53.69 | 48.45 | -36.14 |

Table 3.6: Clark and Floyd Counties, Indiana VOC Emission Inventory Totals (Tons per Summer Day)

| Sector | 2017 Base | 2019 Attainment | 2030 Interim | 2035 Maintenance | Safety Margin |
|--------------|--------------------|-----------------|--------------|------------------|---------------|
| Point | 2.15 | 0.20 | 0.21 | 0.21 | 0.01 |
| Area | 11.21 | 8.33 | 8.55 | 8.65 | 0.32 |
| Nonroad | 1.14 | 1.43 | 1.31 | 1.22 | -0.21 |
| Onroad | 5.94 4.41 | 3.37 | 1.41 | 1.24 | -2.13 |
| TOTAL | 20.44 18.91 | 13.33 | 11.48 | 11.32 | -2.01 |

Table 3.7: VOC Emission Inventory Totals for the Indiana and Kentucky portions of the Louisville, KY-IN Nonattainment Area (Tons per Summer Day)

| Sector | 2017 Base | 2019 Attainment | 2030 Interim | 2035 Maintenance | Safety Margin |
|----------------|-----------|-----------------|--------------|------------------|---------------|
| Indiana | | | | | |
| Point | 2.15 | 0.20 | 0.21 | 0.21 | 0.01 |

| | | | | | |
|--|---------------------------------|--------------|--------------|--------------|---------------|
| Area | 11.21 | 8.33 | 8.55 | 8.65 | 0.32 |
| Nonroad | 1.14 | 1.43 | 1.31 | 1.22 | -0.21 |
| Onroad | 5.94 4.41 | 3.37 | 1.41 | 1.24 | -2.13 |
| TOTAL | 20.44 18.91 | 13.33 | 11.48 | 11.32 | -2.01 |
| <i>Kentucky</i> | | | | | |
| Point | 30.92 | 33.45 | 24.52 | 21.61 | -11.84 |
| Area | 40.14 | 36.76 | 31.48 | 29.08 | -7.68 |
| Nonroad | 4.37 | 4.36 | 4.31 | 4.28 | -0.08 |
| Onroad | 9.29 | 10.28 | 4.04 | 3.55 | -6.73 |
| TOTAL | 84.72 | 84.85 | 64.35 | 58.52 | -26.33 |
| <i>Total Nonattainment Area</i> | | | | | |
| Point | 33.07 | 33.65 | 24.73 | 21.82 | -11.83 |
| Area | 51.35 | 45.09 | 40.03 | 37.73 | -7.36 |
| Nonroad | 5.51 | 5.79 | 5.62 | 5.50 | -0.29 |
| Onroad | 15.23 13.70 | 13.65 | 5.45 | 4.79 | -8.86 |
| TOTAL | 105.16 103.63 | 98.18 | 75.83 | 69.84 | -28.34 |