



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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**Eric J. Holcomb**  
*Governor*

**Bruno L. Pigott**  
*Commissioner*

November 12, 2020

Mr. Kurt Thiede  
Regional Administrator  
U.S. EPA, Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3950

Re: Warning Level Response for the 2008 8-Hour  
Ozone Redesignation Petition and  
Maintenance Plan: Indiana Portion of the  
Cincinnati – Hamilton, Ohio, Kentucky, Indiana  
(OH-KY-IN) Ozone Maintenance Area

Dear Mr. Thiede:

Lawrenceburg Township, Dearborn County, Indiana, is part of the Cincinnati – Hamilton, Ohio, Kentucky, Indiana (OH-KY-IN) 2008 8-hour ozone maintenance area. Indiana's Maintenance Plan for the area requires the Indiana Department of Environmental Management (IDEM) to provide additional information to United States Environmental Protection Agency (U.S. EPA) if ozone levels exceed certain thresholds. This letter addresses the Warning Level Response listed in Section 8.0 of Indiana's Maintenance Plan.

A Warning Level Response shall be prompted whenever an annual (1-year) 4<sup>th</sup> high monitored value of 79 parts per billion (ppb) occurs in a single ozone season or a two-year average 4<sup>th</sup> high monitored value of 76 ppb or greater occurs within the maintenance area. At the close of the 2019 ozone monitoring season, a single monitor within the maintenance area exceeded the threshold for a Warning Level Response. This monitor, the Grooms Road monitor in Hamilton County, OH (39-061-0006) recorded a two-year average fourth high value of 76 ppb. In response, IDEM conducted an evaluation to determine whether the trend, if any, is likely to continue by reviewing emissions and conducting a modeling analysis for the Cincinnati-Hamilton, OH-KY-IN, maintenance area.

Table 1 shows the annual fourth high, two-year average fourth high, and three-year design values for the years 2017 through 2019, for the Ohio and Kentucky monitors in the Cincinnati-Hamilton, OH-KY-IN, maintenance area. The monitored 2018 annual and 2017-2018 and 2018-2019 two-year average fourth high values at the Grooms Road monitor were isolated occurrences within the maintenance area. All other monitors in the area recorded annual and two-year average fourth high values for the years 2017

through 2019 below the Warning Level thresholds. All Ohio and Kentucky monitors recorded 2017-2019 three-year design values below the 2008 8-hour ozone standard.

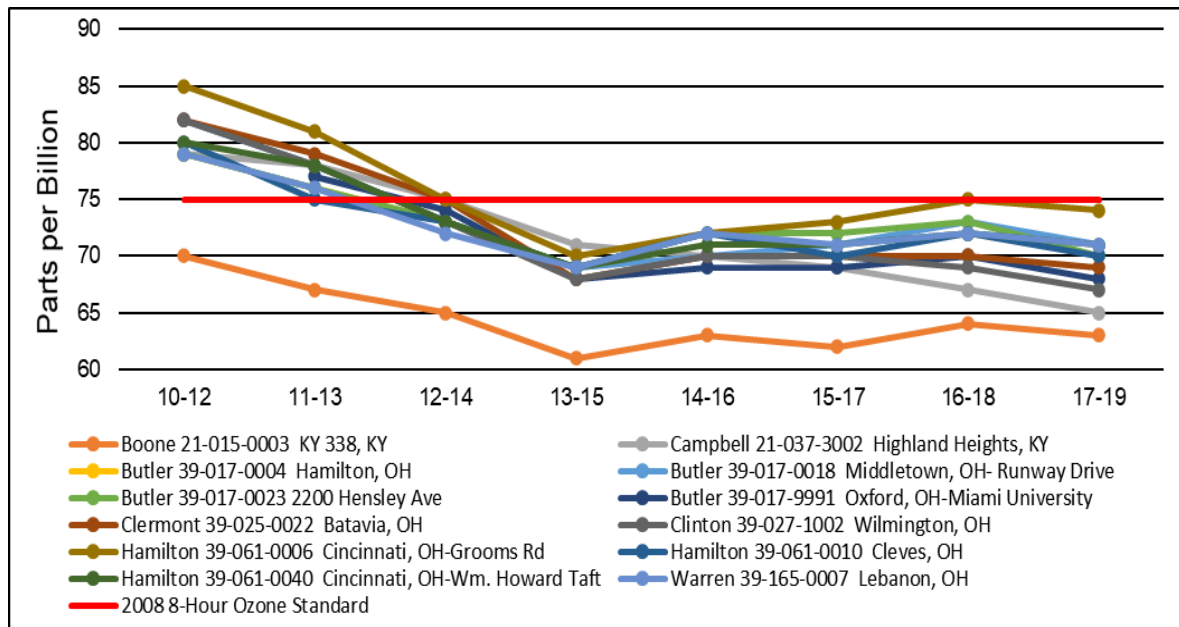
Modeling shows that the measured ozone values will continue to decrease, and the area will continue to attain the standard in the future.

**Table 1**  
**Annual, Two-Year Average Fourth High Ozone Values and Design Values**  
**2017-2019**

County	Site ID	Site Name	2017 4th High (ppb)	2018 4th High (ppb)	2019 4th High (ppb)	4th High 2yr Avg 2017- 2018 (ppb)	4th High 2yr Avg 2018- 2019 (ppb)	2017- 2019 Design Value (ppb)
Boone, KY	21-015-0003	KY 338	60	68	62	64	65	63
Campbell, KY	21-037-3002	Highland Heights	68	66	62	67	64	65
Butler, OH	39-017-0018	Middletown-Runway Drive	70	76	67	73	72	71
Butler, OH	39-017-0023	2200 Hensley Ave.	72	73	67	73	70	70
Butler, OH	39-017-9991	Oxford-Miami University	69	70	65	70	68	68
Clemton, OH	39-025-0022	Batavia	68	69	71	69	70	69
Clinton, OH	39-027-1002	Wilmington	70	67	65	69	66	67
Hamilton, OH	39-061-0006	Cincinnati Grooms Road	72	80	72	76	76	74
Hamilton, OH	39-061-0010	Cleves	68	75	67	72	71	70
Hamilton, OH	39-061-0040	Cincinnati-Wm Howard Taft	71	72	71	72	72	71
Warren, OH	39-165-0007	Lebanon	68	75	70	72	73	71

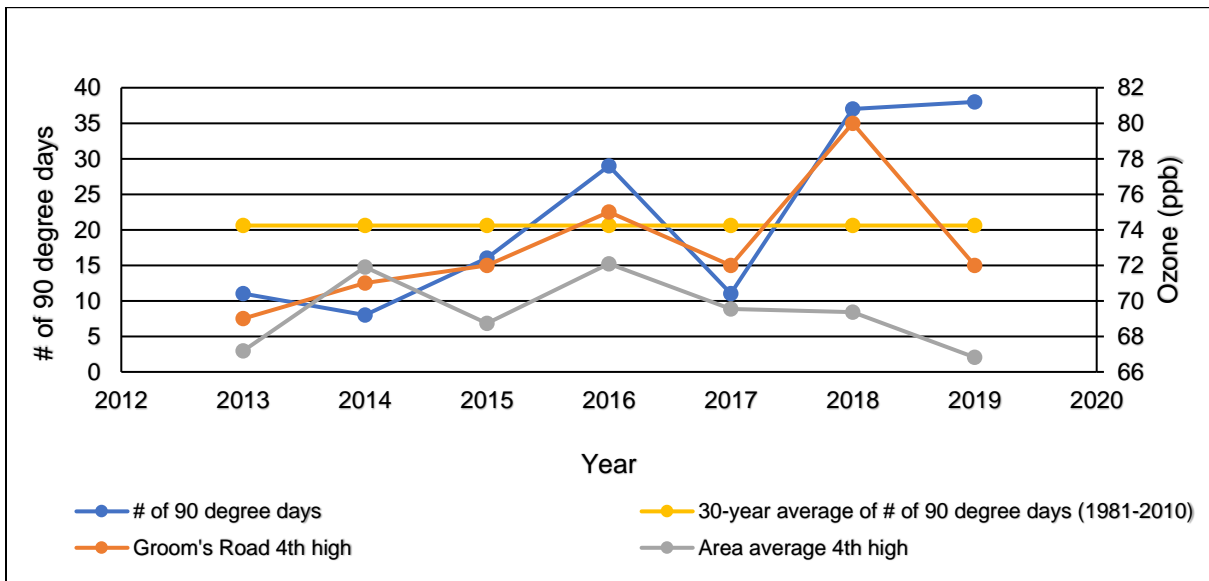
Graph 1 provides the design values for the years 2012-2019 for all monitors within the Cincinnati-Hamilton OH-KY-IN maintenance area demonstrating attainment and maintenance of the 2008 ozone NAAQS.

**Graph 1**  
**2012-2019 Design Values for Cincinnati-Hamilton,**  
**OH-KY-IN, Maintenance Area**



A meteorological evaluation conducted for the year 2018 showed that it was an abnormal year. The 30-year climatological average (1981-2010) for the number of 90 degree days per year is 20.6 at the Cincinnati/Northern Kentucky International Airport. There were 37 such days in 2018, giving a departure from average of 16.4 days. This led to ozone conducive weather conditions in the area. Figure 1 below plots the annual number of 90 degree days against the 30-year climatological average, as well as the annual 4<sup>th</sup> high value for 8-hour ozone at the Grooms Road monitor against the average of the 4<sup>th</sup> high values at all ozone monitors across the Cincinnati-Hamilton OH-KY-IN maintenance area. While the 4<sup>th</sup> high value at the Grooms Road monitor in 2018 was 80 ppb, the monitor's 2019 4<sup>th</sup> high value decreased to 72 ppb. In general, the 4<sup>th</sup> high ozone values at Grooms Road follow the same downward trend of the average 4<sup>th</sup> high ozone values at the other area ozone monitors, with the exception of 2018.

**Figure 1**  
**Number of 90 Degree Days, Ozone Values Across**  
**Cincinnati Maintenance Area 2013-2019**



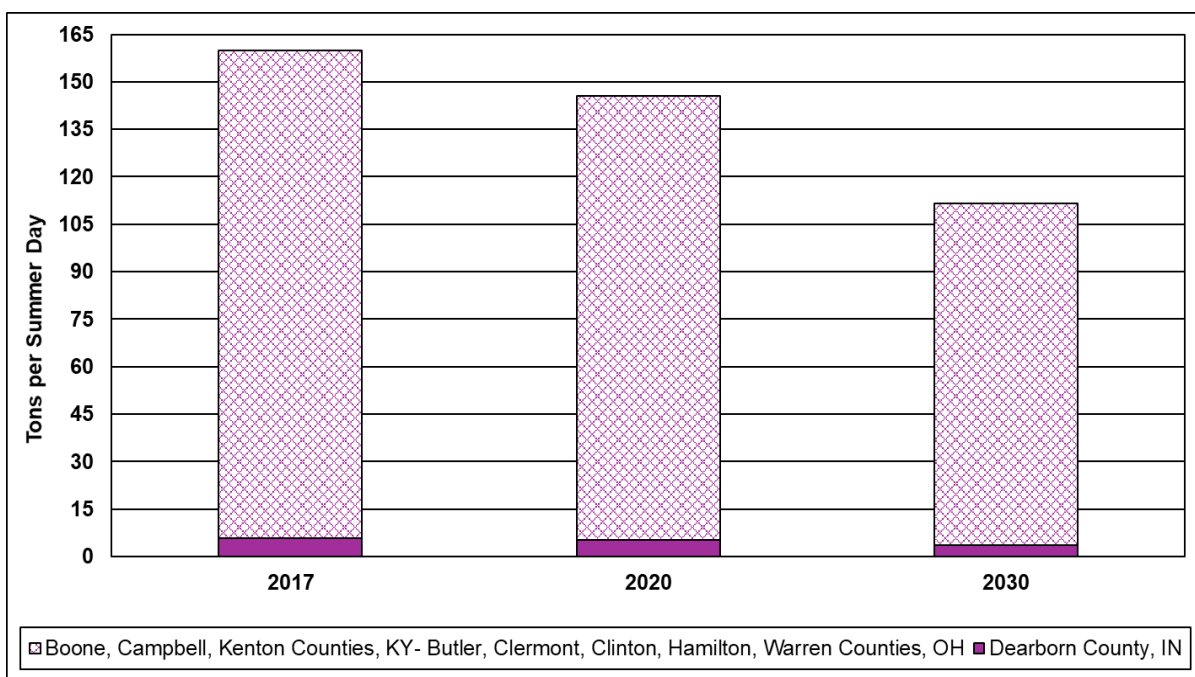
The Lake Michigan Air Directors Consortium (LADCO) conducted photochemical modeling to predict ozone design values for 2020 in regards to 2008 8-hour Ozone NAAQS redesignations. Emissions data for the year 2020 was interpolated between 2016 actual emissions and 2023 projected emissions. Results of this modeling show that all monitors in the Cincinnati maintenance area are predicted to be in attainment of the 2008 8-hour ozone NAAQS of 75 ppb. These modeling results validate the original Redesignation Petition and Maintenance Plan because the State Implementation Plan (SIP) air quality modeling still shows that future national and local emission control strategies to be phased-in or implemented will ensure that the area's air quality will continue to be in attainment of the 2008 8-hour ozone NAAQS.

**Table 2**  
**LADCO Modeling**

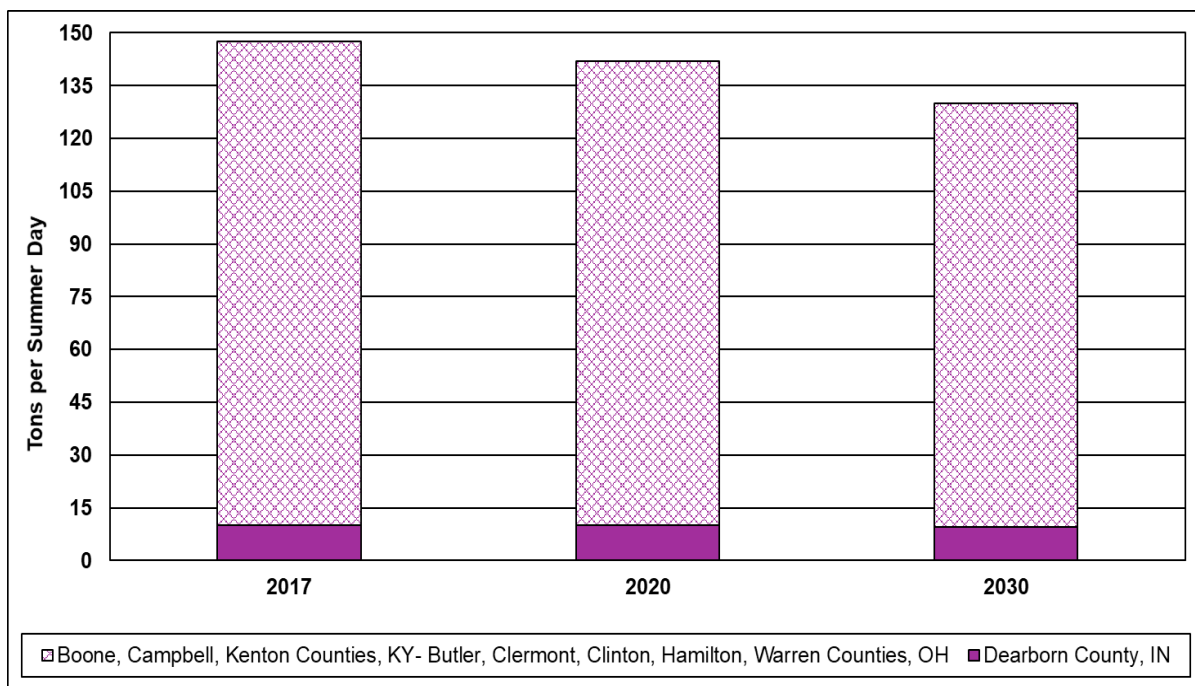
Monitor ID	State	County	2014-2018 5-year Weighted Design Value	2020 Modeled Design Value
210150003	KY	Boone	63.0	59.1
210373002	KY	Campbell	68.7	65.0
212270009	KY	Warren	61.3	56.9
390170018	OH	Butler	71.3	67.0
390170023	OH	Butler	72.3	68.1
390179991	OH	Butler	69.5	65.0
390250022	OH	Clermont	70.0	65.8
390271002	OH	Clinton	69.7	65.2
390610006	OH	Hamilton	73.3	69.4
390610010	OH	Hamilton	71.3	67.4
390610040	OH	Hamilton	71.3	67.4
391650007	OH	Warren	71.7	67.5

Figures 2 and 3 illustrate that regional Oxides of Nitrogen (NO<sub>x</sub>) and Volatile Organic Compounds (VOC) emissions will continue to decline in the maintenance area, as well as other counties in the region. National and local emission control strategies to be phased-in or implemented in the near future will ensure that the area's air quality will continue to be in attainment of the 2008 ozone NAAQS.

**Figure 2**  
**NO<sub>x</sub> Emission Trends – All Sources**



**Figure 3**  
**VOC Emission Trends – All Sources**



Emission control strategies already in place or being implemented over the next few years will ensure that the area's air quality will continue to be in attainment of the 2008 8-hour ozone standard. These strategies include: the NO<sub>x</sub> SIP Call, Tier 2 and 3 Motor Vehicle Emission and Fuel Standards, Emission Standards for Heavy-Duty Highway and Nonroad Engines and Vehicles, the Cross-State Air Pollution Rule, Large Non-Road Diesel Engine Standards, Oil and Natural Gas Industry Standards, and Mercury and Air Toxics Standards.

IDEM believes that this Warning Level Response evaluation in conjunction with the Redesignation Petition and Maintenance Plan for Lawrenceburg Township, Dearborn County Indiana, satisfy Indiana's obligation under Section 172(c) of the Clean Air Act to demonstrate how the area attained and will continue to attain the NAAQS for ozone. If you have any questions or need additional information, please contact Brian Callahan, Chief Air Quality Standards and Implementation Section, Office of Air Quality at (317) 232-8244 or [bcallaha@idem.in.gov](mailto:bcallaha@idem.in.gov).

Sincerely,

Matt Stuckey  
Deputy Assistant Commissioner  
Office of Air Quality

MS/sd/bc/gf/mb

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