

Proposed
Request to Redesignate Kentucky Counties
Located within the Louisville, KY-IN
2015 8-Hour Ozone Nonattainment Area



Prepared by:

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Air Pollution Control District

Kentucky Energy and Environment Cabinet
Division for Air Quality

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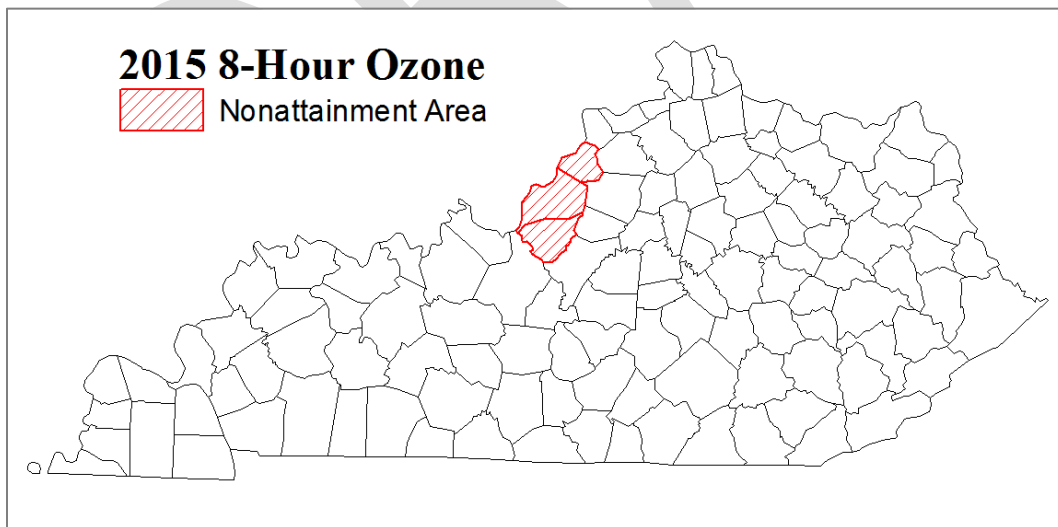
1. Introduction

A. Background

On October 26, 2015, the United States Environmental Protection Agency (EPA) revised both the primary and secondary ozone National Ambient Air Quality Standards (NAAQS) to a level of 0.070 parts per million (ppm), measured over an 8-hour period with the fourth-highest daily maximum averaged across three consecutive years.¹ The primary standard provides public health protection, while the secondary standard provides public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The final area designations were published on June 4, 2018, and became effective August 3, 2018.² The current Louisville, KY-IN nonattainment area for the 2015 8-hour ozone NAAQS (hereinafter “the Area”) includes the following counties: Bullitt, Jefferson, and Oldham, in Kentucky; and Clark and Floyd in Indiana. EPA used the same boundaries as the previous 1997 ozone nonattainment area when designating Bullitt, Jefferson, and Oldham counties as nonattainment for the 2015 8-hour ozone NAAQS. Final designations were based on 2014 – 2016 monitoring data.³ Highlighted in Figure 1 are the three counties in Kentucky. Depicted in Figure 2 is the entire Louisville, KY-IN nonattainment area.

Figure 1: Kentucky portion of Louisville, KY-IN 2015 Ozone Nonattainment Area

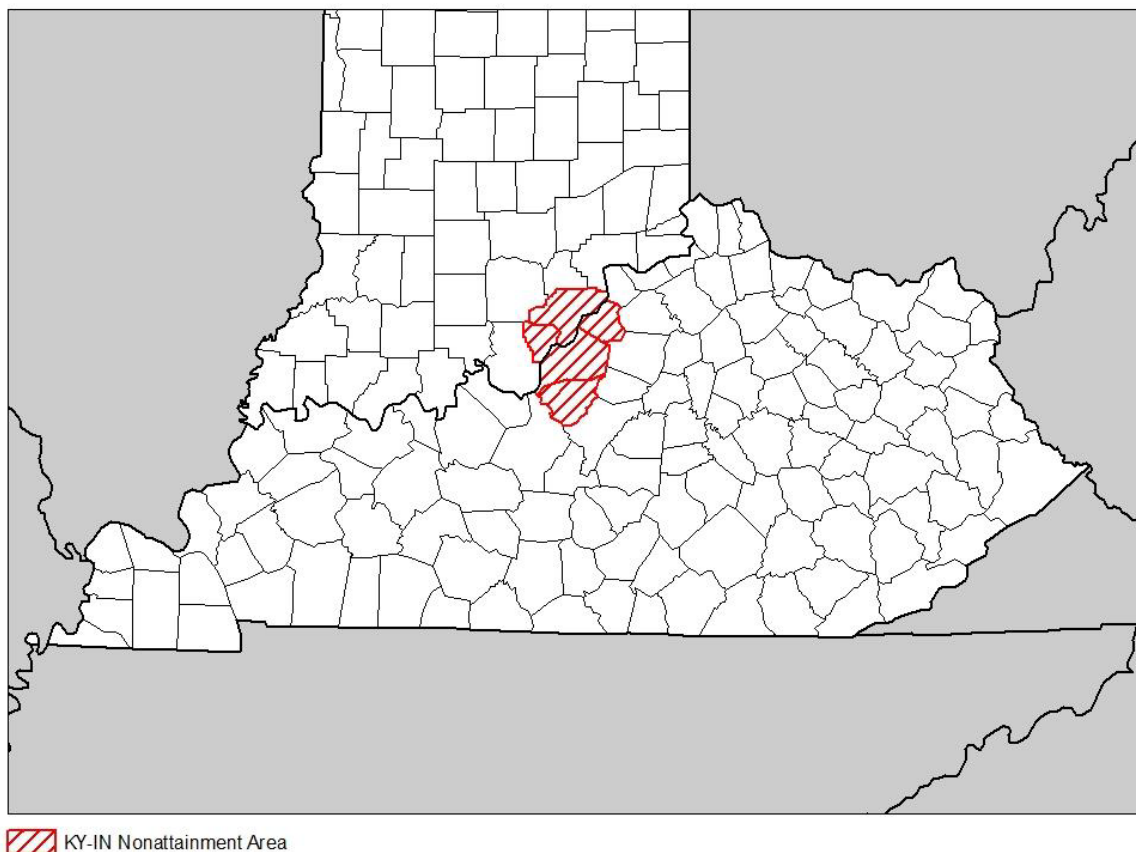


¹ EPA, *National Ambient Air Quality Standards for Ozone*, 80 FR 65291, (Oct. 26, 2015; effective Dec. 28, 2015).

² EPA, *Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards*, 83 FR 25776, (June 4, 2018; effective Aug. 3, 2018).

³ EPA, *Louisville, KY-IN Nonattainment Area; Final Area Designation for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)*, at pp. 1, 7; available at https://www.epa.gov/sites/default/files/2018-05/documents/ky_in_louisville_tsd_final.pdf.

Figure 2: Entire Louisville, KY-IN 2015 Ozone Nonattainment Area



Under Section 181(a)(1) of the Clean Air Act (CAA), Kentucky's marginal classification requires that the Area attain the standard within three years of the final designation's effective date (August 3, 2018), establishing a due date of August 3, 2021 for attainment.⁴

The current design values for the Bullitt County, Oldham County, and Jefferson County monitors are 0.064 ppm, 0.063 ppm, and 0.069 ppm (highest of multiple Jefferson County monitors), respectively. The current design values are based on quality-assured data collected from 2019 to 2021. The design values for the Louisville monitors are now below the level of the NAAQS; therefore, Kentucky is requesting that EPA redesignate the Kentucky portion of the Area from nonattainment to attainment. The state of Indiana has submitted a separate request to redesignate their portion of the Area to attainment, which EPA proposed to approve on May 18, 2022.⁵

⁴ 42 U.S.C. §7511(a)(1). *See also* Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area State Implementation Plan Requirements, 83 FR 62998, (Dec. 6, 2018; effective Feb. 4, 2019), [hereinafter *Implementation Rule*].

⁵ EPA, Air Plan Approval; Indiana; Redesignation of the Indiana Portion of the Louisville, Indiana-Kentucky Area to Attainment of the 2015 Ozone Standards, 87 FR 30129 (May 18, 2022).

B. Requirements

Pursuant to Section 107(d)(3)(E) of the CAA, states may request nonattainment areas to be redesignated to attainment, provided specific criteria are met. The following criteria must be met in order for an area to be redesignated from nonattainment to attainment:

- (i) The Administrator determines that the area has attained the ozone standard. (CAA Section 107(d)(3)(E)(i))
- (ii) The Administrator has fully approved the applicable implementation plan for the area under Section 110(k). (CAA Section 107(d)(3)(E)(ii))
- (iii) The Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP, federal requirements, and other permanent and enforceable reductions. (CAA Section 107(d)(3)(E)(iii))
- (iv) The Administrator has fully approved a maintenance plan, including a contingency plan, under Section 175A. (CAA Section 107(d)(3)(E)(iv))
- (v) The state has met all requirements under Section 110 and Part D of Title I of the Act. (CAA Section 107(d)(3)(E)(v))⁶

Each of these requirements was further explained in a memo from John Calcagni, Director of the EPA Air Quality Management Division to Regional Directors in 1992.⁷ Particular detail given on requirement (iv) Maintenance Plans, where the memo identified and further explained five specific sub-requirements from Section 175A of the CAA⁸:

- a. Attainment Inventory
- b. Maintenance Demonstration
- c. Monitoring Network
- d. Verification of Continued Attainment
- e. Contingency Plan⁹

This submission follows the order and layout of the *Calcagni Memo*; therefore, Section 107(d)(3)(E) requirements (i)-(iii) and (v) are covered first in Parts 2.A-D, below. Maintenance Plan requirements are covered after that in Part 2.E. Finally, Part 2.F sets Motor Vehicle Emissions Budgets for the Area for purposes of the requirements for transportation conformity under Section 176 of the CAA.¹⁰

⁶ 42 U.S.C. §7407(d)(3)(E).

⁷ Memorandum from John Calcagni, Director, Air Quality Management Division, to Director, Air, Pesticides and Toxics Management Division, Regions I and IV, et al.; *Procedures for Processing Requests to Redesignate Areas to Attainment*, (Sept. 4, 1992) [hereinafter “*Calcagni Memo*”], available at https://www.epa.gov/sites/default/files/2016-03/documents/calcagni_memo_-_procedures_for_processing_requests_to_redesignate_areas_to_attainment_090492.pdf.

⁸ 42 U.S.C. §7505a.

⁹ *Calcagni Memo*, *supra* note 9, at pp. 7-13.

¹⁰ 42 U.S.C. §7506.

2. Requirements for Redesignation

A. Demonstration of Attainment (CAA §107(d)(3)(E)(i))

Section 107(d)(3)(E)(i) of the CAA requires that “the Administrator determines that the area has attained the national ambient air quality standard.”¹¹ The state must demonstrate to the Administrator that the area is attaining the applicable NAAQS by providing three years of clean ambient air quality data. The data should be collected and quality-assured in accordance with 40 CFR Part 58 and recorded in EPA's Air Quality System (AQS) database.¹² Pursuant to 40 CFR §50.19, the 8-hour primary and secondary ozone ambient air quality standards are met at an ambient air monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.070 ppm, as determined in accordance with Appendix U to 40 CFR Part 50.

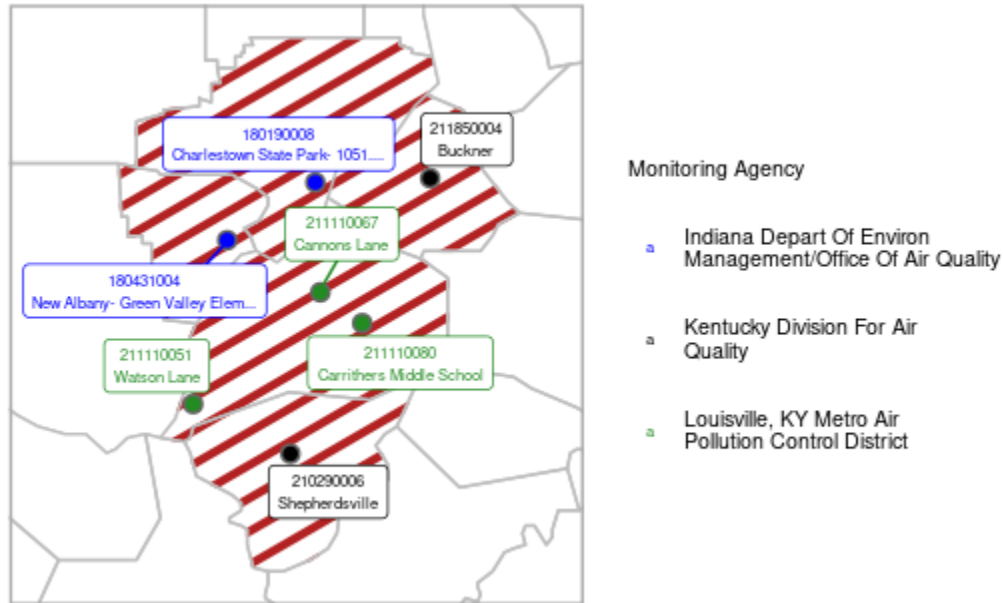
(i) Monitoring Network

There are seven monitors in the Area that monitor for ozone, five in Kentucky and two in Indiana. The two monitors in Indiana are operated by the Indiana Department of Environmental Management (IDEM). Of the five in Kentucky, two (the Bullitt & Oldham County monitors) are operated by the Commonwealth of Kentucky, Energy and Environment Cabinet, Department for Environmental Protection, Division for Air Quality (the Division), and three are operated by the Louisville Metro Air Pollution Control District (the District). Figure 3 shows the locations of ozone monitors in the Area, along with operating agencies.

¹¹ 42 U.S.C. §7407(d)(3)(E)(i).

¹² See also, *Calcagni Memo*, supra note 9, at 2.

Figure 3: Louisville, KY-IN Ozone Nonattainment Area - Ozone Monitors & Agencies



(ii) Monitoring Data

Current ambient air quality data from all monitoring sites in the Area are below 0.070 ppm and are attaining the 2015 8-hour ozone NAAQS. Design values for all monitors within the nonattainment Area are shown in Table 1.

**Table 1
Annual 4th Maximum 8-hour Monitored Ozone and
Design Values for the Louisville, KY-IN Ozone Nonattainment Area, 2019-2021
(parts per million)**

Site ID	County	Annual 4 th Maximum			Design Value
		2019	2020	2021	2019-2021
21-029-0006	Bullitt, KY	0.063	0.065	0.065	0.064
21-185-0004	Oldham, KY	0.065	0.061	0.065	0.063
21-111-0067	Jefferson, KY	0.068	0.071	0.069	0.069
21-111-0051	Jefferson, KY	0.065	0.063	0.067	0.065
21-111-0080	Jefferson, KY	0.064	0.068	0.073	0.068
18-019-0008	Clark, IN	0.064	0.062	0.063	0.063
18-043-1004	Floyd, IN	0.063	0.066	0.064	0.064

The 8-hour ozone data collected from 2019 through 2021 for the two ambient air quality monitoring sites in Bullitt and Oldham counties results in a three-year average of the annual fourth-highest daily maximum 8-hour average ozone concentrations of 0.064 and 0.063 ppm.

The three monitors in Jefferson County have three-year design values ranging from 0.065 to 0.069 ppm. The average design values are below the 0.070 ppm standard. Subsequently, all monitors in the entire Area are attaining the 2015 8-hour Ozone standard. Therefore, the data demonstrates that the entire Louisville, KY-IN nonattainment area is in attainment.

The Division and the District have quality assurance programs which ensure that all ambient air monitoring data collected is accurate and precise; air monitors are audited on a scheduled basis and data validation is performed monthly. All ambient air monitoring data shown in Table 1 was determined in accordance with Appendix U to 40 CFR Part 50 and has been quality-assured in accordance with Appendix A to 40 CFR Part 58, and the data has been recorded into the AQS database. Pursuant to 40 CFR § 58.15, each air monitoring agency must certify the previous year of AQS-submitted data as accurate by May 1 of the following year. On November 18, 2021, the Division submitted a letter to EPA certifying that the 2021 ozone ambient concentration data and quality assurance data at the Bullitt and Oldham County monitors and two sites outside the Area has been completely submitted to AQS. The District similarly certified data for the three ozone monitors in its portion of the Area on January 21, 2022. This data demonstrates that the recent average design values of ozone concentrations continue to attain the standard.

B. Fully Approved Implementation Plan (CAA §§107(d)(3)(E)(ii) & 110(k))

Kentucky submitted a final SIP documenting the CAA requirements of Section 110(a) infrastructure provisions for the 2015 8-hour ozone NAAQS on January 11, 2019. On June 1, 2020, EPA took final action to approve the infrastructure elements but did not take action regarding the provisions for interstate transport, prevention of significant deterioration (PSD) and air quality modeling requirements.¹³ In a separate action on October 2, 2020, EPA approved the provisions for PSD and modeling requirements.¹⁴ However, on February 22, 2022, EPA proposed to disapprove the interstate transport portion of the infrastructure requirements for the 2015 8-hour ozone NAAQS.¹⁵

EPA has previously determined that it is not necessary to have the interstate transport requirements approved in order for an area to be redesignated to attainment:

EPA concludes that the SIP requirements linked with the area's ozone designation and classification are the relevant measures to evaluate when reviewing a redesignation request for the area. The section 110(a)(2)(D) requirements, where applicable, continue to apply to a state regardless of the designation of any one particular area within the state. Thus, we believe these requirements are not applicable requirements for purposes of redesignation.¹⁶

Therefore, Kentucky meets the requirements of CAA 107(d)(3)(E)(ii) and requests redesignation of the Kentucky portion of the Louisville, KY-IN nonattainment area to attainment.

¹³ EPA, *Air Plan Approval; Kentucky; Infrastructure Requirements for the 2015 8-Hour Ozone National Ambient Air Quality Standard*, 85 FR 33021 (June 1, 2020; effective July 1, 2020).

¹⁴ EPA, *Air Plan Approvals; KY; Prevention of Significant Deterioration and Modeling Infrastructure Requirements for 2015 Ozone NAAQS*, 85 FR 54507 (Sept. 2, 2020; effective Oct. 2, 2020).

¹⁵ EPA, *Air Plan Disapproval; Kentucky; Interstate Transport Requirements for the 2015 8-Hour Ozone National Ambient Air Quality Standards*, 87 FR 9498 (proposed Feb. 22, 2022).

¹⁶ EPA, *Air Plan Approval; Indiana; Redesignation of the Indiana Portion of the Chicago-Naperville Area to Attainment of the 2008 Ozone Standard, NO_x RACT Waiver, and Serious Plan Elements*, 87 FR 12033 at 12036 (Mar. 3, 2022); see also EPA, *Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes; Ohio and Kentucky*, 65 FR 37879 at 37890 (June 19, 2000; effective July 5, 2000).

C. Permanent and Enforceable Reductions in Emissions (CAA §107(d)(3)(E)(iii))

Regarding the requirement of Section 107(d)(3)(E)(iii) that “the improvement in air quality is due to permanent and enforceable reductions”¹⁷, the *Calcagni memo* states that states should estimate emissions reductions achieved from federal and state and local measures, and also states that “[a]ttainment resulting from temporary reductions in emission rates (e.g., reduced production or shutdown due to temporary adverse economic-conditions) or unusually favorable meteorology would not qualify as an air quality improvement due to permanent and enforceable emission reductions.”¹⁸

According to EPA:

Ozone [(O₃)] is formed near the earth's surface due to chemical interactions involving solar radiation and precursor pollutants including volatile organic compounds (VOCs) and nitrogen oxides (NO_x). Over longer time periods, methane (CH₄) and carbon monoxide (CO) can also lead to O₃ formation at the global scale. The precursor emissions leading to O₃ formation can result from both man-made sources (e.g., motor vehicles and electric power generation) and natural sources (e.g., vegetation and wildfires). Occasionally, O₃ that is created naturally in the stratosphere can also contribute to O₃ levels near the surface. Once formed, O₃ near the surface can be transported by winds before eventually being removed from the atmosphere via chemical reactions or deposition to surfaces. In sum, O₃ concentrations are influenced by complex interactions between precursor emissions, meteorological conditions, and surface characteristics.¹⁹

This Part first estimates the reductions in emissions achieved between the nonattainment inventory year of 2017 and the attainment year of 2019, then outlines both federal and state & local control measures contributing to the reduction, and finally explains why the reduction should not be attributed to temporary reductions in emissions.

¹⁷ 42 U.S.C. §7407(d)(3)(E)(iii).

¹⁸ Calcagni Memo, supra note 9 at 4.

¹⁹ National Ambient Air Quality Standards for Ozone, supra note 1 at 65299 (citation omitted).

(i) Reduction in Emissions Achieved

A comprehensive inventory of emissions for the nonattainment year of 2017, and attainment year of 2019 was developed to evaluate the reduction in emissions achieved in the Kentucky portion of the Area. An Excel spreadsheet containing all inventory data and calculations is included in Appendix A of this submission.

On December 22, 2021, the Division submitted a “base year” (nonattainment) inventory for the Area pursuant to the requirement of Section 182(a)(1) of the CAA.²⁰ 2017 was chosen for the nonattainment inventory because it was the most recent year within the nonattainment period for the Area for which there was a comprehensive inventory available, namely the National Emissions Inventory (NEI).²¹ The NEI was used as the basis for the inventory, with selected updates to certain source categories based on more specific information available to the Division and the District, as explained further in the Nonattainment Inventory SIP. The 2017 nonattainment year inventory here contains the same onroad and point source emissions developed specifically for the Area in that previous submittal based on local information, but updates the nonpoint and nonroad sectors using the 2017 modeling platform developed from the 2017 NEI.²²

The attainment design value for the Area is based on monitoring data for the years 2019 through 2021 (See Part 2.A). The Division and the District believe that the COVID-19 pandemic has had little effect on the monitored level of ozone (see Requirement 3 of 4, below). The year 2019 was chosen as the year of the attainment inventory because it is the first year of the three-year design value demonstrating attainment of the standard of 0.070 ppm, the one-year highest fourth-maximum monitored ozone level (0.068 ppm) was below the standard, and it predates the COVID-19 pandemic.

²⁰ 42 U.S.C. §7511a(a)(1). To avoid confusion the 2017 inventory is referred to from here on as the “nonattainment inventory” rather than the “base year inventory.”

²¹ Per EPA: “The National Emissions Inventory (NEI) is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants from air emissions sources. The NEI is released every three years based primarily upon data provided by State, Local, and Tribal air agencies for sources in their jurisdictions and supplemented by data developed by the EPA. The NEI is built using the Emissions Inventory System (EIS) first to collect the data from State, Local, and Tribal air agencies and then to blend that data with other data sources.” See <https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei>.

²² <https://www.epa.gov/air-emissions-modeling/2017-emissions-modeling-platform>. Specifically, the county monthly report at https://gaftp.epa.gov/Air/emismod/2017/reports/2017gb_hapcap_county_monthly_report_CAPs_PEC_POC_09apr2021.xlsx was used to obtain June, July, and August emissions, which were then divided by the 92 days in that month to obtain tons per summer day emissions. The emissions for these two categories are also lower than in the previous submission in large part because biogenic emissions are not included in the nonpoint category as they were previously.

The 2019 attainment year inventory was developed using a combination of sources: (1) Data from the 2017 NEI; (2) Data required to be submitted by sources to the District²³ and the Division,²⁴ (3) Mobile modeling conducted by the Kentuckiana Regional Planning and Development Agency (KIPDA) and the District for the Area; and (4) EPA's 2016v2 modeling platform.²⁵

On-road emissions for 2019 were developed using the travel demand model (TDM) designed by KIPDA, and EPA's Motor Vehicle Emission Simulator (MOVES).²⁶ The inputs for the mobile modeling were developed using KIPDA's most recent TDM information, and emissions were developed from these inputs and MOVES version 3.0.2.²⁷

For the point source category, the attainment inventory uses emissions data collected by the District and the Division directly for all sources other than airports and railyards for 2019. Other sources in the point category in the NEI (i.e., airports and railyards) were accounted for by using the 2017 NEI for airports and railyards.²⁸

For point sources that reported seasonal operations (primarily in Jefferson County), those data were used to calculate summer emissions, which were then divided by the 92 days in the summer months (June, July, and August) to derive tons per ozone season/tons per summer day (tpsd) emissions.²⁹ For the remaining sources where information on seasonal variation of activities is not readily available, tons per summer day emissions were calculated by dividing annual emissions by four and then by the 92 days of summer.³⁰ This was determined to be an appropriate method for estimating summer day emissions, as the average summer operations from these facilities were estimated to be approximately 24.6% to 26.3%. Further supporting this estimation method, a review of data from the Louisville International Airport, one of the largest contributors to these remaining emissions, this method of approximation is supported by data

²³ District Regulation 1.06, available at <https://louisvilleky.gov/air-pollution-control-district/document/regulation-106-version-11>.

²⁴ 401 KAR 52:020, available at <https://apps.legislature.ky.gov/law/kar/401/052/020.pdf>; and 401 KAR 52:030, available at <https://apps.legislature.ky.gov/law/kar/401/052/030.pdf>.

²⁵ See EPA, 2016v2 Platform.

²⁶ EPA publicly provides access to the MOVES model at <https://www.epa.gov/moves>.

²⁷ All onroad input data and run specifications are included along with this submission in Appendix B

²⁸ https://gaftp.epa.gov/air/nei/2017/data_summaries/2017v1/2017neiJan_facility_process_byregions.zip, available at <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data>. Data for Bullitt, Jefferson, and Oldham counties were extracted, and summed by NAICS and pollutant, and emissions for facilities in NAICS codes 48811 and 488210 (covering "Airport Operations" and "Support Activities for Rail Transportation" respectively) were added to point emissions collected by the Division and the District for each respective county.

²⁹ A full 2019 inventory of point sources reporting to the District is contained in Appendix C

³⁰ A full 2019 inventory of remaining point sources in the Kentucky portion of the Area reporting to the Division is contained in Appendix D.

available on monthly flights indicates that flights in June, July, and August made up almost precisely one quarter of total annual flights (25.1%).³¹

For nonpoint and nonroad emissions in 2019, emissions from the 2017 nonattainment inventory presented here, as described above, along with future year inventories from the 2016v2 modeling platform, developed as described further in Part 2.E, below, were used along with the Microsoft Excel “TREND” function³² to interpolate 2019 emissions based on 2017 NEI emissions and 2023, 2028, and 2032 projected emissions. The TREND function uses linear interpolation and least-squares regression to interpolate or extrapolate from known points. Linear regression was chosen because it is both the simplest and most accessible method available for projecting emissions, and also appropriate based on the projected decline in emissions in the 2017 and 2016 version 2 modeling platforms. Emissions from 2017 as well as projections from all future years were chosen to interpolate 2019 but using just the two closest (2017 and 2023) resulted in little difference. Biogenic sources and fires were left out of the inventory, per guidance from EPA.³³

While this inventory does not reflect the entire ozone season³⁴ or just weekdays, most ozone exceedances occur in June, July, or August. Furthermore, ozone exceedances occurred at a proportionate rate on weekends and weekdays in 2017. Finally, the two largest sources of NO_x and VOCs in the Area, power plants and bourbon aging, respectively, emit roughly equally on weekdays and weekends, so including all days of the week is reasonable. According to EPA guidance, “Since the goal of the definition of ozone season day emissions is representativeness of the emissions contributing to the ozone nonattainment problem, if including the weekend emissions resulted in a better representation of emissions, then states may be able to justify including weekend emissions....”³⁵

Comparing 2017 and 2019 emissions shows reductions of both NO_x and VOCs in every county and across all categories of emissions sources. Figures 4 through 7, below, show the reductions by county and then by category, for NO_x and VOCs. Table 2 gives a complete comparison of 2017 and 2019 emissions broken down by county, category, and pollutant.

³¹ Louisville Regional Airport Authority (LRAA), *Aviation Statistics* (December 2017), available at <https://www.flylouisville.com/wp-content/uploads/2019/05/Aviation-Stats-2017-12-Dec.pdf>. Adding the monthly total flights for June, July and August (41,486), and dividing by the total (163,676) on page 2.

³² See Microsoft Office documentation for the TREND Function.

³³ EPA, Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations (May 2017) at 42, 48 57, available at https://www.epa.gov/sites/default/files/2017-07/documents/ei_guidance_may_2017_final_rev.pdf. As noted above in note 22, this is a significant difference from the previously submitted nonattainment emissions inventory.

³⁴ According to 40 CFR §51.1300(j), “Ozone season means for each state (or portion of a state), the ozone monitoring season as defined in 40 CFR part 58, appendix D, section 4.1(i) for that state (or portion of a state).” For Kentucky this is March through October.

³⁵ EPA, *supra* note 32 at 76.

Figure 4: 2017 v. 2019 NO_x Emissions by County for the Kentucky Portion of the Area

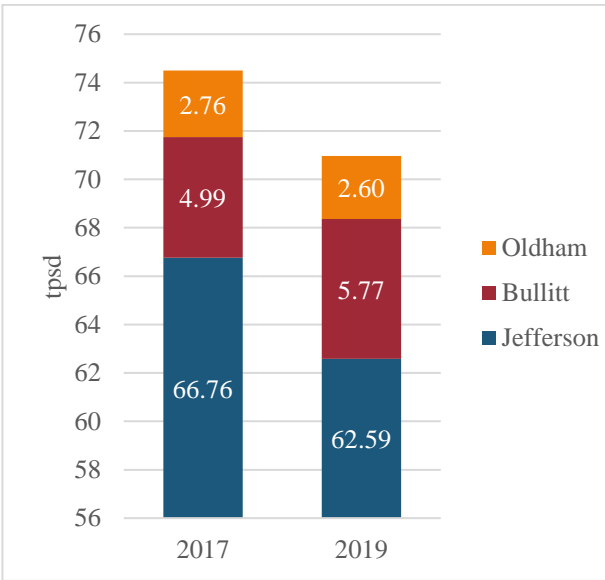


Figure 5: 2017 v. 2019 VOC Emissions by County for the Kentucky Portion of the Area

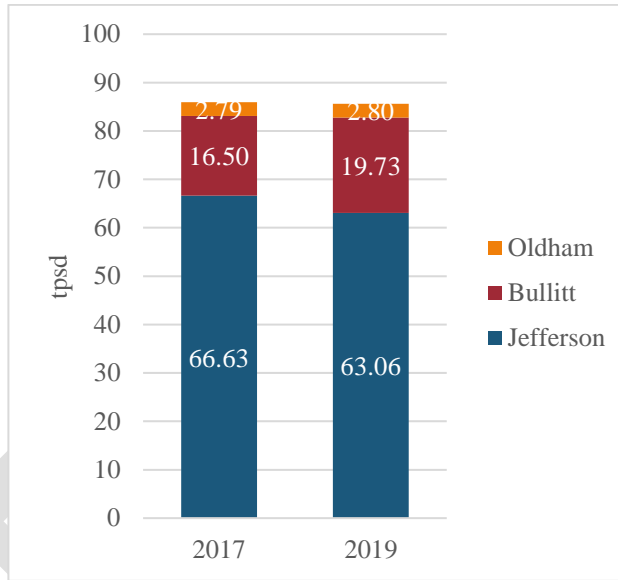


Figure 6: 2017 v. 2019 NO_x Emissions by Category for the Kentucky Portion of the Area

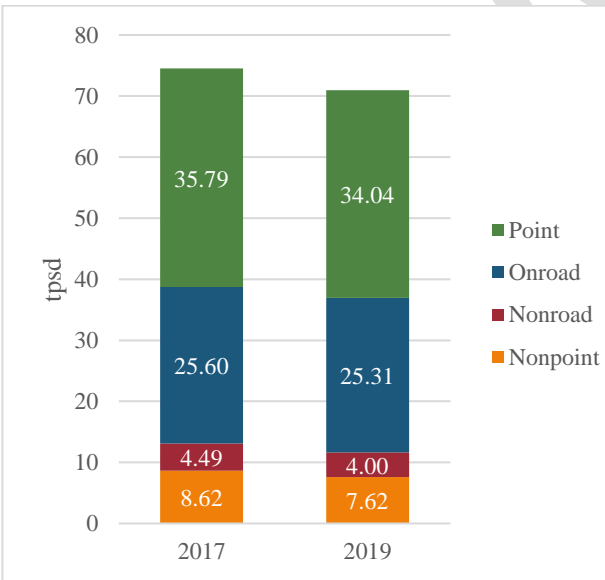


Figure 7: 2017 v. 2019 VOC Emissions by Category for the Kentucky Portion of the Area

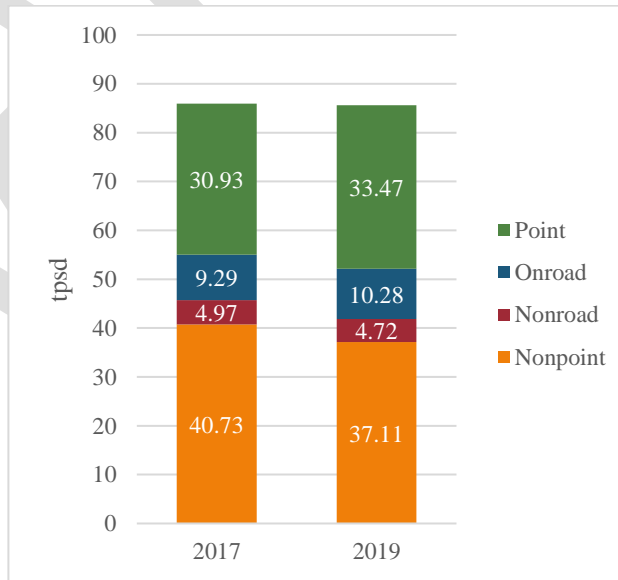
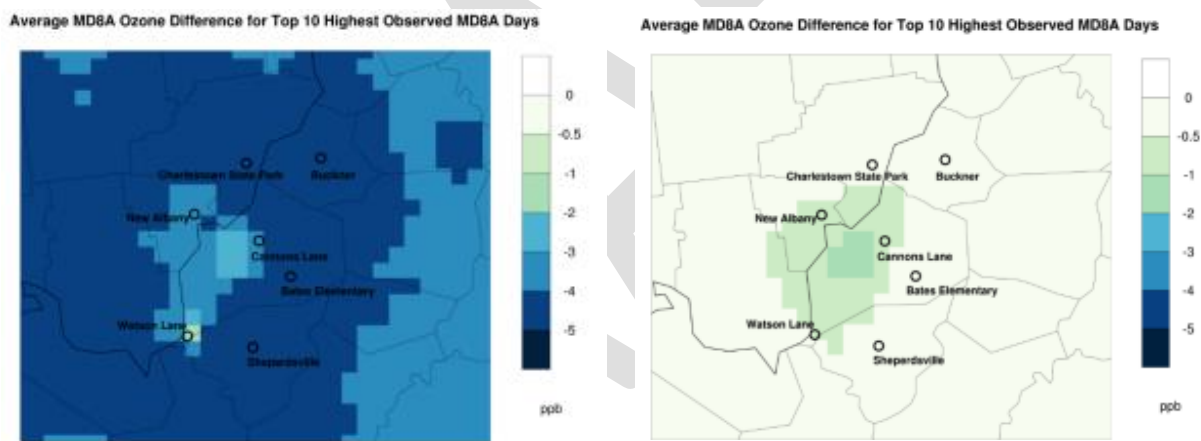


Table 2
Emissions by County and Category for Nonattainment Year and Attainment Year for the
Kentucky Portion of the Area
(tpsd)

<i>County</i>	Category	NO_x		VOCs	
		2017	2019	2017	2019
<i>Bullitt</i>	Nonpoint	0.34	0.33	5.41	5.03
	Nonroad	0.30	0.26	0.59	0.55
	Onroad	3.50	3.67	1.17	1.26
	Point	0.85	1.51	9.33	12.90
<i>Bullitt Total</i>		4.99	5.77	16.50	19.73
<i>Jefferson</i>	Nonpoint	7.87	6.88	33.78	30.53
	Nonroad	3.81	3.39	3.82	3.66
	Onroad	20.27	19.97	7.46	8.41
	Point	34.81	32.35	21.56	20.45
<i>Jefferson Total</i>		66.76	62.59	66.63	63.06
<i>Oldham</i>	Nonpoint	0.42	0.41	1.54	1.56
	Nonroad	0.38	0.35	0.56	0.51
	Onroad	1.83	1.67	0.66	0.61
	Point	0.13	0.18	0.04	0.12
<i>Oldham Total</i>		2.76	2.60	2.79	2.80
<i>Grand Total</i>		74.50	70.96	85.92	85.59

While not all categories declined in every county between 2017 and 2019, ozone is a regional pollutant not contained by county or even state lines.³⁶ Furthermore, while the decline in VOC emissions across the Area was smaller than the decline in emissions of NO_x, studies have shown that NO_x emissions reductions are often more effective at reducing ozone formation.³⁷ A study specifically of the Louisville area, commissioned by the District and conducted by Ramboll US Corporation in 2019, showed that the region is generally “NO_x-limited,” meaning reductions in NO_x emissions are more effective at reducing ambient ozone concentrations.³⁸ Figure 8, below, shows a comparison from the study of the effect of a 25% reduction in anthropogenic emissions of NO_x compared to the same reduction in VOC emissions.

Figure 8: Ozone Formation Study NO_x sensitivity (left) v. VOC Sensitivity (right)³⁹



The reduction in emissions, along with the evidence regarding the regional nature of ozone formation and NO_x-sensitivity of the Area, show that the improvement in air quality is the result of permanent and enforceable reductions in emissions. Figure 9 shows the Area’s design value over a longer period, showing the overall downward trend for the Area over time.

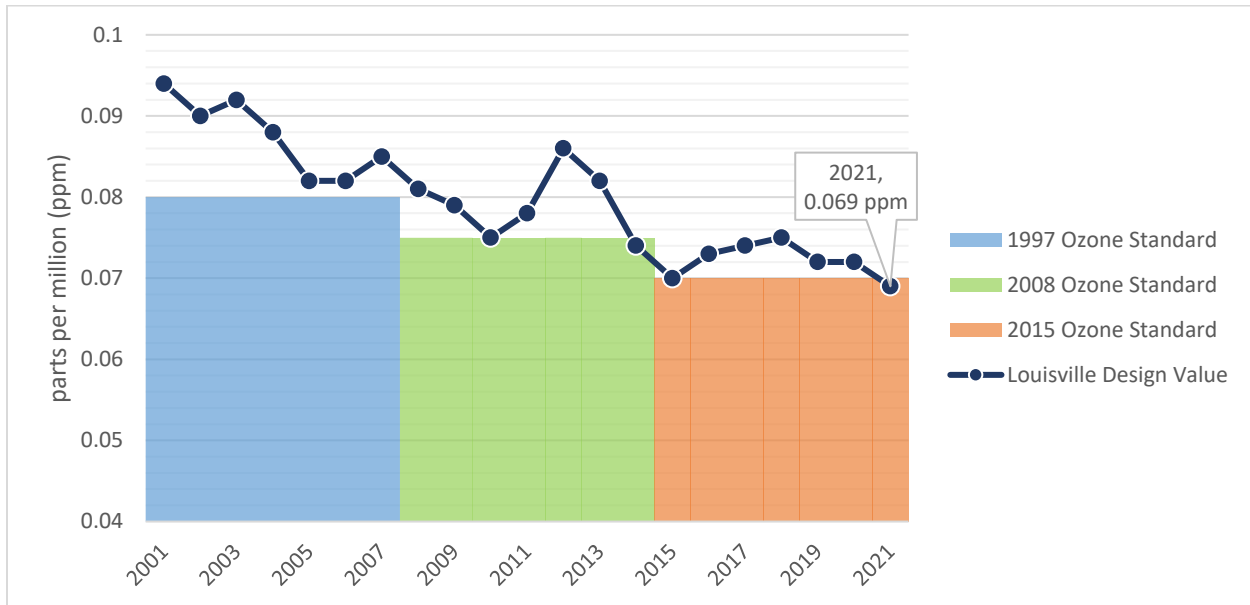
³⁶ See, e.g., EPA, *Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard*, 87 FR 20036 at 20053 (proposed Apr. 6, 2022) (“Studies have established that ozone formation, atmospheric residence, and transport occur on a regional scale (i.e., thousands of kilometers) over much of the U.S.” [footnote omitted].)

³⁷ *Id.* at 20039 (“Assessments of ozone control approaches have concluded that control strategies targeting reduction of NO_x emissions are an effective method to reduce regional-scale ozone transport.”); Georgia Institute of Technology, University of North Carolina, & Colorado State University, *Final Report: Emissions and Air Quality Modeling for SEMAP* (Dec. 31, 2014), available at http://semap.ce.gatech.edu/sites/default/files/files/SEMAP-Revised-Final-Report_Final.pdf (compare Figure 5-38 at p. 5-47 to Figure 5-27 at p. 5-35 for modeled sensitivity of Kentucky sites to NO_x reductions compared to VOC reductions).

³⁸ Ramboll US Corporation, *Ozone Formation Study: Model Performance Evaluation and NO_x/VOC Sensitivity Final* (Nov. 2019), available at <https://louisvilleky.gov/air-pollution-control-district/document/apcdozoneformationstudy11-2019pdf>.

³⁹ *Id.* at pp. 79-80.

Figure 9: Louisville KY-IN Nonattainment Area Ozone Design Value, 2001-2021



Some of the regulatory contributors to this reduction are explained below. The final section of this Part shows that the improvement was not the result of unusually favorable meteorology or a temporary reduction in emissions due to the COVID-19 pandemic.

(ii) Applicable Federal Control Measures

Mobile Sources

Tier 2 Emission Standards for Vehicles and Gasoline Sulfur Standards

EPA finalized a federal rule in 2000 to reduce emissions from passenger vehicles in each manufacturer's fleet to meet an average standard of 0.07 grams of NO_x per mile.⁴⁰ Additionally, in January 2006, the sulfur content of gasoline was required to be on average 30 ppm, which assists in lowering NO_x emissions. EPA estimated that the reduction of NO_x emissions ranged from 77 percent for cars to 86 percent for minivans, light trucks and small SUVs. VOC emissions were also reduced, ranging from 12 percent for cars up to 18 percent for minivans, light trucks and small SUVs. These emission reductions are federally enforceable.

Tier 3 Emission Standards for Vehicles and Gasoline Sulfur Standards

In 2014, EPA followed up the Tier 2 vehicle and gasoline standards with Tier 3 standards, further reducing emissions of NO_x by 264,369 tons nationwide by 2018, and by 47,504 tons of

⁴⁰ EPA, Control of Air Pollution From New Motor Vehicles: Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements, 65 FR 6697 (Feb. 10, 2000; effective Apr. 10, 2000).

VOCs by 2018, continuing to 328,509 and 167,591 tons of NO_x and VOCs, respectively, by 2030.⁴¹

Heavy-Duty Gasoline and Diesel Highway Vehicle Standards & Ultra Low-Sulfur Diesel Rule

In 2001 EPA established a comprehensive national control program to regulate heavy-duty vehicles and their fuel as a single system, with standards beginning to take effect in model year 2007. EPA estimated the program would “reduce particulate matter and oxides of nitrogen emissions from heavy duty engines by 90 percent and 95 percent below current standard levels, respectively.”⁴² Like other motor vehicle and fuel standards, because the rules are phased in over time and vehicle fleet turnover continues over a timeline of years and decades, the rules continue to contribute to further reductions in emissions, and therefore in attainment of the 2015 ozone NAAQS for the Area.

Tier 4 Nonroad Engine Standards

On May 11, 2004, EPA signed the final rule introducing Tier 4 nonroad engine standards, which were phased-in from 2008 to 2015. Engine manufacturers were required to produce new engines with advanced emission control technologies. Exhaust emissions from these engines were predicted to decrease by more than 90 percent. When the full inventory of older non-road engines are replaced by Tier 4 engines, annual emission reductions are estimated at 738,000 tons of NO_x and 129,000 tons of particulate matter (PM).⁴³

National GHG Emissions Standards for Passenger Cars and Light Trucks

EPA finalized federal GHG emissions standards for passenger cars and light trucks for model years 2023–2026 on December 30, 2021. The final standards will leverage advances in clean car technology, which will reduce climate pollution, improve public health, and save Americans money on gasoline. The standards should also result in avoiding more than 3 billion tons of GHG emissions, including NO_x emissions, through 2050. The standards for reductions in emissions of air pollutants from new motor vehicles will be federally enforceable.⁴⁴

Stationary Sources

⁴¹ EPA, *Control of Air Pollution From Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards*, 79 FR 23413 at 23443 (Apr. 28, 2014; effective June 27, 2014).

⁴² EPA, *Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*, 66 FR 5001 (Jan. 18, 2001; effective Mar. 19, 2001).

⁴³ EPA, *Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel*, 69 FR 38957 (June 9, 2004; effective Aug. 30, 2004).

⁴⁴ EPA, *Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards*, 86 FR 74434 (Dec. 30, 2021; effective Feb. 28, 2022).

NO_x SIP Call in Surrounding States

Significant emissions reductions from coal-fired electricity generating units (EGUs) have contributed to the region's reduction in emissions and significant improvement in air quality. In October 1998, the EPA made a finding of significant contributions of NO_x emissions from certain states and published a rule that set ozone season NO_x budgets for the purpose of reducing regional transport of ozone.⁴⁵ This rule, referred to as the NO_x SIP Call, called for ozone season controls to be put on utility and very large industrial boilers, as well as internal combustion engines in 22 states in the Eastern United States. A NO_x emissions budget was set for each state and the states were required to develop rules that would allow them to meet their budget. A NO_x trading program was established, allowing sources to buy credits to meet their NO_x budget as opposed to actually installing controls.⁴⁶ The emission budgets were to be met by May of 2004. While the NO_x budget trading program ended in 2008, the NO_x SIP Call requirements for surrounding affected states still apply to states that elected to impose control measures on large EGUs or large non-EGUs. The NO_x SIP Call requirements included an enforceable control mechanism and monitoring, record keeping and reporting. Even with the trading program, the amount of ozone season NO_x emissions has decreased significantly in and around Kentucky.

Clean Air Interstate Rule

On May 12, 2005, the EPA promulgated the Clean Air Interstate Rule (CAIR). CAIR required 27 eastern states as well as the District of Columbia to achieve sulfur dioxide (SO₂) and NO_x emission reductions for new and existing EGUs. CAIR utilized a cap-and-trade system to reduce SO₂ and NO_x emissions. The CAIR NO_x ozone season and annual programs began in 2009, while the CAIR SO₂ annual program began in 2010. The United States Court of Appeals D.C. Circuit remanded CAIR without vacatur on December 23, 2008. The December 23, 2008 court ruling left CAIR and the CAIR FIPs, including the CAIR trading programs, in place until the EPA issued a new rule to replace CAIR in accordance with the July 11, 2008 decision.

Kentucky developed regulations 401 KAR 51:210,⁴⁷ 401 KAR 51:220,⁴⁸ and 401 KAR 51:230⁴⁹ (effective February 2, 2007) in response to CAIR. However, reductions due to this regulation and CAIR were not included in the inventory and its projections for the Kentucky portion of the Area.

⁴⁵ EPA, Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 FR 57356 (Oct. 27, 1998; effective Dec. 28, 1998).

⁴⁶ EPA, Approval and Promulgation of Implementation Plans: Revisions to the Kentucky Nitrogen Oxides Budget and Allowance Trading Program, 68 FR 37418 (June 24, 2003; effective July 24, 2003).

⁴⁷ Available at <https://apps.legislature.ky.gov/law/kar/401/051/210.pdf>.

⁴⁸ Available at <https://apps.legislature.ky.gov/law/kar/401/051/220.pdf>.

⁴⁹ Available at <https://apps.legislature.ky.gov/law/kar/401/051/230.pdf>.

Cross-State Air Pollution Rule

EPA issued the Cross-State Air Pollution Rule (CSAPR) in July 2011. As amended, CSAPR requires 28 states in the eastern half of the United States to significantly improve air quality by reducing power plant emissions that cross state lines and contribute to ozone and fine particle pollution in other states.⁵⁰ CSAPR was scheduled to replace CAIR starting on January 1, 2012. However, the timing of CSAPR's implementation was affected by D.C. Circuit actions that stayed and then vacated CSAPR before implementation. On April 29, 2014, the U.S. Supreme Court reversed the D.C. Circuit's vacatur, and on October 23, 2014, the D.C. Circuit granted EPA's motion to lift the stay and shift the CSAPR compliance deadlines by three years. Accordingly, CSAPR Phase I implementation began January 1, 2015, with Phase II to begin in 2017. On September 13, 2019, the D.C. Circuit remanded the CSAPR Update, stating it allowed significant contributions from upwind states past downwind attainment deadlines.⁵¹ On March 15, 2021, EPA finalized the Revised Cross-State Air Pollution Rule Update, taking effect in the 2021 ozone season; this updated rule is estimated to further reduce NO_x emissions 17,000 tons in 2021 compared to projections without the rule and will also require new or upgraded NO_x combustion controls in the 2022 ozone season.⁵²

Utility Mercury Air Toxics Standards (MATS) and New Source Performance Standards (NSPS)

On February 16, 2012, the EPA published final rules for both the (1) MATS for new and existing coal- and oil-fired EGUs and (2) NSPS for fossil-fuel fired electric utility, industrial-commercial-institutional and small industrial-commercial-institutional steam generating units. The MATS rule is expected to reduce both NO_x and SO₂ emissions, in addition to mercury and other air toxic emissions. MATS applies to EGUs larger than 25 megawatts that burn coal or oil for the purpose of generating electricity for sale and distribution through the national electric grid to the public. For the NSPS, the EPA revised the standards that new coal- and oil-fired power plants must meet for NO_x, SO₂, and PM.⁵³ The emission reductions associated with the MATS and the revised NSPS are federally enforceable.

⁵⁰ EPA, *Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals*, 76 FR 48207 (Aug. 8, 2011; effective Oct. 7, 2011).

⁵¹ *Wisconsin v. EPA*, 938 F. 3d 303 (D.C. Cir. 2019).

⁵² EPA, *Revised Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS*, 86 FR 23054 (Apr. 30, 2021; effective June 29, 2021).

⁵³ National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 77 FR 9303 (Feb. 16, 2012; effective Apr. 16, 2012).

Boiler and Reciprocating Internal Combustion Engine (RICE) National Emissions Standards for Hazardous Air Pollutants (NESHAP)

The NESHAP for industrial, commercial, and institutional boilers⁵⁴ and the NESHAP for reciprocating internal combustion engines⁵⁵ are projected to reduce VOC emissions.

The NESHAP for industrial, commercial, and institutional boilers and process heaters applies to boiler and process heaters located at major sources of hazardous air pollutants (HAP) that burn natural gas, fuel oil, coal, biomass, refinery gas, or other gas. The compliance deadline for existing boilers was January 31, 2016. The NESHAP includes work practice standards such as regular boiler tune-ups and a one-time energy assessment, emission limitations for pollutants including filterable PM, hydrochloric acid (HCl), mercury, and carbon monoxide (CO), and operating limitations for control devices. The emission limits and operating limits only apply to larger boilers of at least 10 million BTU/hr that burn fuels other than natural gas, refinery gas, or other gas 1 fuels (gaseous fuel containing no more than 10 µg/m³ mercury).

The NESHAP for reciprocating internal combustion engines (RICE) applies to existing, new, or reconstructed stationary RICE located at major or area sources of HAP, excluding stationary RICE being tested at a stationary RICE test cell/stand. The compliance date for existing stationary RICE, excluding existing non-emergency stationary compression ignition (CI) RICE, with > 500 brake HP located at a major source of HAP emissions was June 15, 2007. The compliance date for existing non-emergency stationary CI RICE with > 500 brake HP located at a major source of HAP, existing stationary CI RICE with ≤ 500 brake HP located at a major source of HAP, or existing stationary CI RICE located at an area source of HAP was May 3, 2013. The compliance date for existing stationary spark ignition (SI) RICE with ≤ 500 brake HP located at a major source of HAP emissions, or an existing stationary SI RICE located at an area source of HAP emissions was October 19, 2013. The NESHAP includes work practice standards such as engine maintenance, fuel requirements, regular performance testing, operating limitations, and emission limitations for pollutants including formaldehyde and CO.

(iii) State & Local Control Measures

NO_x SIP Call Rule

In response to the EPA's NO_x SIP call, Kentucky adopted regulations to control the emissions of NO_x from EGUs and large stationary combustion sources,⁵⁶ approved into the SIP in 2009.⁵⁷ These regulations cover (1) fossil fuel-fired stationary boilers, combustion turbines, and

⁵⁴ National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD.

⁵⁵ National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ.

⁵⁶ 401 KAR 51:150, available at <https://apps.legislature.ky.gov/law/kar/401/051/150.pdf>, and 401 KAR 51:160, available at <https://apps.legislature.ky.gov/law/kar/401/051/160.pdf>.

⁵⁷ Approval and Promulgation of Implementation Plans; Kentucky: NO_x SIP Call Phase II, 74 FR 54755 (Oct. 23, 2009; effective Nov. 23, 2009).

combined cycle systems serving a generator with a nameplate capacity greater than 25 megawatts and selling any amount of electricity, (2) fossil fuel-fired stationary boilers, combustion turbines, and combined cycle systems having a maximum design heat input greater than 250 million British thermal units per hour, and (3) reciprocating stationary internal combustion engines rated at equal or greater than 2400 brake horsepower (3000 brake horsepower for diesel engines and 4400 brake horsepower for dual fuel engines). As part of the NO_x SIP call, the EPA rules established a NO_x budget for sources in Kentucky and other states.

Other Sources

The Division regulates NO_x emissions from cement kilns, setting a limit of 6.6 lbs per ton of clinker produced, averaged over a 30-day period.⁵⁸ The District has adopted identical standards for kilns in Louisville Metro.⁵⁹

The Division has specific regulations for new and existing sources in a variety of other source categories, including various limits on emissions of NO_x and VOCs in Chapters 59 and 61 of Title 401 of the Kentucky Administrative Regulations (KAR).⁶⁰ The District similarly regulates a variety of sources through regulations on existing and new sources in Parts 6 and 7 of its regulations.⁶¹ District Regulation 6.42 specifically requires NO_x and VOC-emitting facilities at major NO_x-emitting sources and major VOC-emitting sources, respectively, to propose Reasonably Available Control Technology (RACT) emission-limiting standards and emissions control technology for a determination by the District and submission to EPA as a site-specific SIP revision.⁶²

Open Burning Bans

401 KAR 63:005 *Open Burning* was first incorporated into the Kentucky SIP on July 12, 1982.⁶³ The latest revision to the open burning regulation was finalized on October 17, 2007,⁶⁴ which addressed problems involving the disposal of debris from storms, mixed household garbage and clarified when open burning is permitted. Kentucky's open burning regulations prohibit most

⁵⁸ 401 KAR 51:170.

⁵⁹ District Regulation 6.50, available at <https://louisvilleky.gov/air-pollution-control-district/document/regulation-650-version-1>.

⁶⁰ All Division regulations are available at <https://eec.ky.gov/Environmental-Protection/Air/Pages/Air-Quality-Regulations.aspx>.

⁶¹ All District regulations are available at <https://louisvilleky.gov/government/air-pollution-control-district/air-pollution-regulations-and-laws>.

⁶² District Regulation 6.42 available at <https://louisvilleky.gov/air-pollution-control-district/document/regulation-642-version-2>.

⁶³ 401 KAR 63:005, first approved at Approval and Promulgation of Implementation Plan— Kentucky: Approval of Plan Revisions, 47 FR 30059 (July 12, 1982; effective Sept. 10, 1982); see also Approval and Promulgation of Implementation Plans; Commonwealth of Kentucky, 63 FR 67586 (Dec. 8, 1998; effective Feb. 8, 1999)

⁶⁴ Approval and Promulgation of Implementation Plans Kentucky: Performance Testing and Open Burning, 72 FR 58759 (Oct. 17, 2007; effective Nov. 16, 2007).

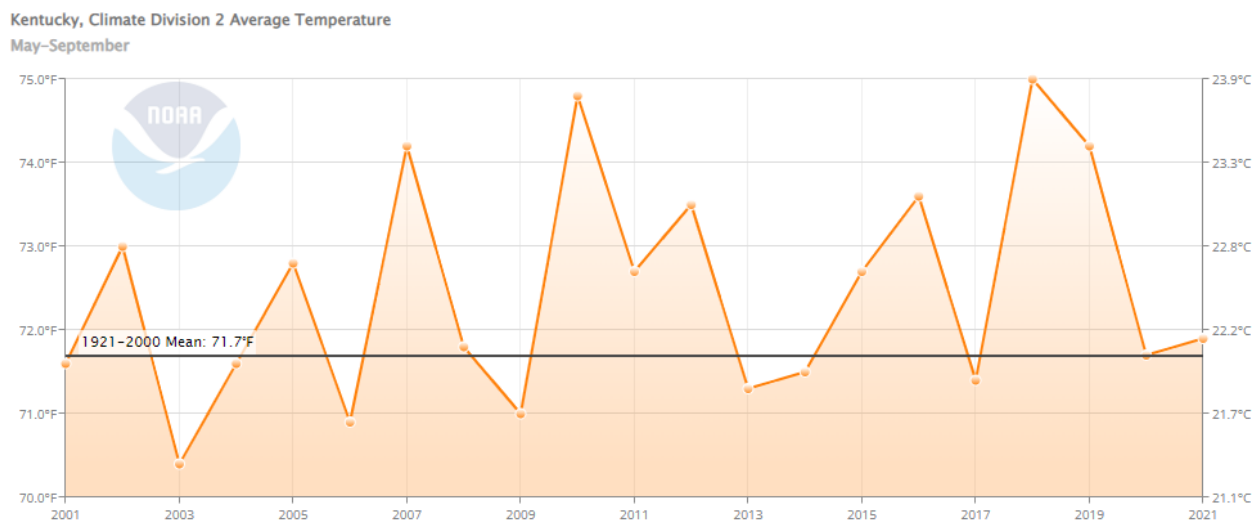
types of open burning in areas that have been or are currently in violation of the 8-hour ozone NAAQS within Kentucky during the period of May-September when ozone development is most likely. This requirement continues in the Area. The District similarly prohibits open fires in Louisville Metro and additionally prohibits any open burning on any day designated by the District as an Air Quality Alert Day, with the exception of a fire set for controlling a declared public health hazard.⁶⁵

(iv) Other Factors

The improvement in the air quality was also not attributable to factors other than permanent and enforceable reductions in emissions.

Meteorological conditions were not unusually favorable for low ozone levels during the three-year attainment period. According to data from the National Oceanic and Atmospheric Administration (NOAA), daily maximum temperatures over the three-year period used for initial designations (2014-2016) were roughly the same or slightly lower than the three-year attainment period (2019-2021), as shown in Figure 10. Furthermore, precipitation, which can reduce ozone, was similarly unchanged over the period from 2014 to 2021, as shown in Figure 11.

Figure 10: Average Temperatures in Central Kentucky, 2001-2021⁶⁶



⁶⁵ District Regulation 1.11, available at <https://louisvilleky.gov/air-pollution-control-district/document/regulation-111-version-10>.

⁶⁶ Obtained from NOAA website at <https://www.ncdc.noaa.gov/cag>; temperature plot available at https://www.ncdc.noaa.gov/cag/divisional/time-series/1502/tavg/5/9/2001-2021?base_prd=true&begbaseyear=1921&endbaseyear=2000

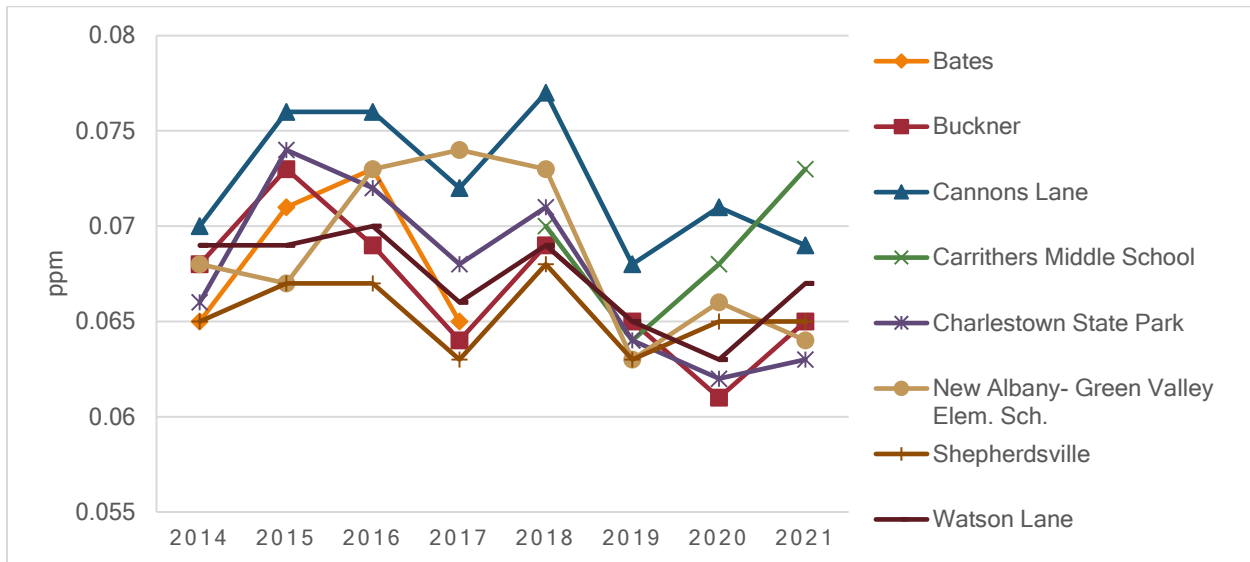
Figure 11: Precipitation in Central Kentucky, 2001-2021⁶⁷



In addition, the COVID-19 pandemic did not influence emissions on a long enough timescale to affect the Area's attainment design value. Emissions comparisons above show a clear reduction from 2017 to 2019, prior to the beginning of the outbreak in the United States. Monitor data in the Area show that the one-year 4th maximum 8-hour observations did not dramatically change between 2019 and 2021, as shown in Figure 12, with 2019 one-year 4th maximums being slightly lower than 2020 and 2021, including at the design value monitor (Cannons Lane).

⁶⁷ Precipitation plot available at https://www.ncdc.noaa.gov/cag/divisional/time-series/1502/pcp/5/9/2001-2021?base_prd=true&begbaseyear=1921&endbaseyear=2000.

Figure 12: Single Year 4th Maximum 8-hour Average Monitored Ozone Levels in the Area⁶⁸



Similarly, the Area’s two largest NO_x sources, onroad mobile emissions and EGU emissions, briefly declined in output at the beginning of the pandemic but recovered quickly. Figure 13 shows bimonthly daily traffic estimates for the Area as a percent of pre-COVID levels by county compared to 2019 annual average daily trips.⁶⁹ Figure 14 shows average ozone-season gross load for the two largest EGUs in the Area. Together, this emissions data and the ambient monitoring data show that the COVID-19 pandemic should not be considered a factor in the Area’s reduced ozone levels.

⁶⁸ The Bates Elementary monitoring site closed in 2018 and was relocated to Carrithers Middle School.

⁶⁹ Data provided by KIPDA, included in Appendix E. “ADD” is an abbreviation for Area Development District. “ADDs are partnerships of and provide resources to the local counties and cities in their regions.” KIPDA, *What is an “ADD”?*. These counties are not a part of the nonattainment Area, but are a part of KIPDA, and so are represented here to show that surrounding counties also quickly recovered in activity.

Figure 13: Average Daily Trips for the Area as a Percent of 2019 Annual Average Daily Trips by County

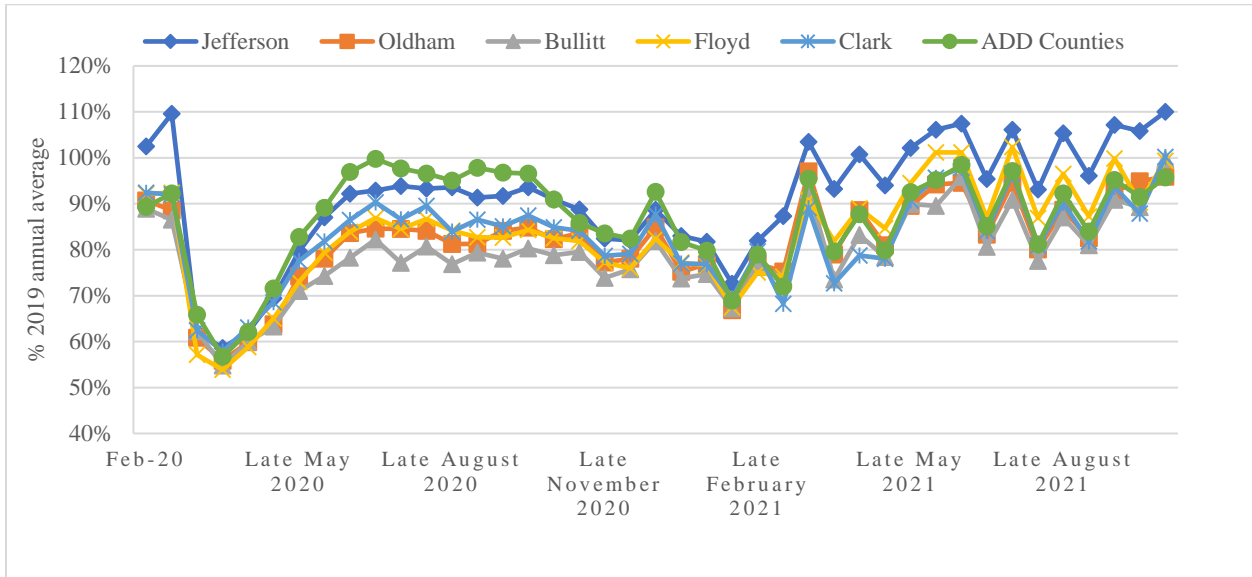
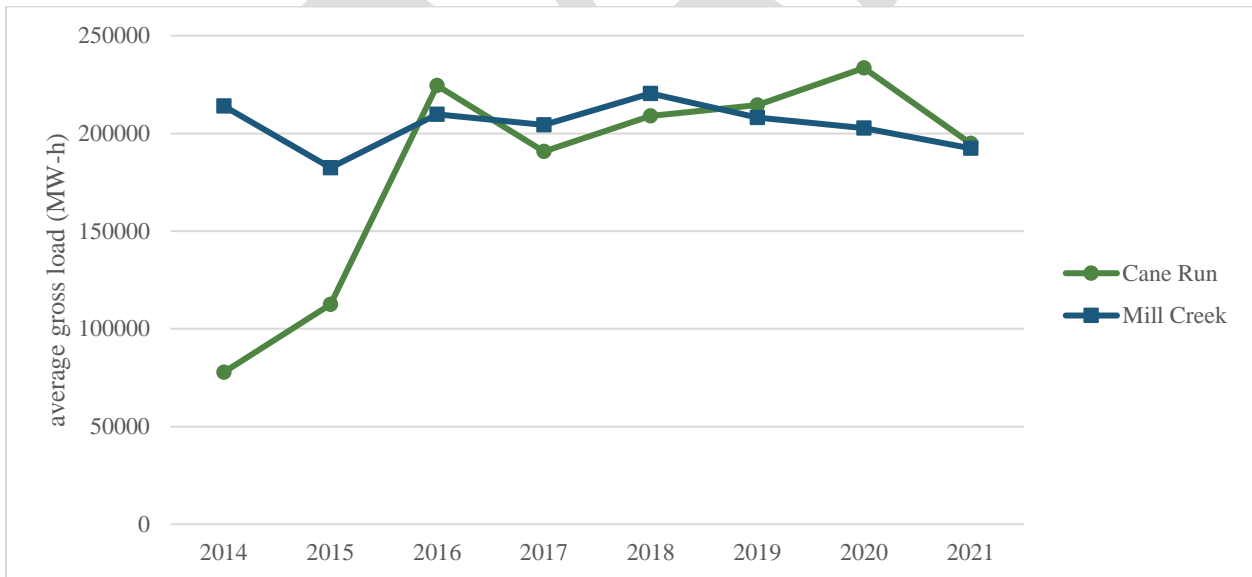


Figure 14: Average EGU Ozone-Season Gross Load



A check of the NAICS codes for the facilities with a valid 6-digit NAICS code in the 2017 point source NEI for the Area⁷⁰ against a list of Essential critical infrastructure industries from the

⁷⁰ 2017 NEI point source data, *supra* note 28.

Centers for Disease Control and Prevention (CDC)⁷¹ shows only one point source in the Area *not* considered “critical infrastructure.”

Finally, comparing flight totals from the Louisville Regional Airport Authority from 2017 through 2021 shows a slight dip in 2020, but a full recovery in total annual flights by 2021, as shown in Table 3.

Table 3
Louisville International (SDF) Total Annual Flights, 2017-2021

Year	Flights
2017 ⁷²	163,676
2018 ⁷³	169,699
2019 ⁷⁴	175,666
2020 ⁷⁵	151,641
2021 ⁷⁶	171,942

For these reasons, the reduction in monitored ozone levels can be attributed to permanent and enforceable reductions rather than fluctuations in meteorological conditions or temporary reductions due to the COVID-19 pandemic.

D. CAA Section 110 and Part D Requirements (CAA §§107(d)(3)(E)(v), 110, and Part D)

(i) CAA §110 Requirements

This document, throughout, demonstrates and contains assurance that the Kentucky portion of the Louisville, KY-IN 2015 8-hour ozone nonattainment area meets and will continue to meet the requirements of CAA Section 110, and therefore, is eligible to be redesignated to attainment.

⁷¹ Available at

https://www.cdc.gov/niosh/topics/coding/essentialworkers/files/Essential_Industries_CISAv4_1_24.xlsx. See CDC, *Learn More about the Methods Applied to Develop the Resources Included in the Code Set*, <https://www.cdc.gov/niosh/topics/coding/essentialworkers/learnmore.html>, for further explanation.

⁷² LRAA, *supra* note 29.

⁷³ LRAA, *Aviation Statistics* (December 2018), available at <https://www.flylouisville.com/wp-content/uploads/2019/05/Aviation-Stats-2018-12-1.pdf>.

⁷⁴ LRAA, *Aviation Statistics* (December 2019), available at <https://www.flylouisville.com/wp-content/uploads/2020/02/Aviation-Stats-2019-12.pdf>.

⁷⁵ LRAA, *Aviation Statistics* (December 2020), available at <https://www.flylouisville.com/wp-content/uploads/2021/01/Aviation-Stats-2020-12.pdf>.

⁷⁶ LRAA, *Aviation Statistics* (December 2020), available at <https://www.flylouisville.com/wp-content/uploads/2022/01/Aviation-Stats-2021-12.pdf>.

(ii) CAA Title I, Part D Requirements

Emissions Inventory (§§172(c)(3) & 182(a)(1))

The Division submitted a nonattainment emissions inventory SIP for the Area on December 22, 2021. Approval is pending.

Emissions statements (§182(a)(3)(B))

The Division submitted a certification on October 16, 2020 demonstrating its existing rules met the requirement to collect emissions statements. The submission was approved April 26, 2022.⁷⁷ The District made updates to an existing regulation to comply with the requirements, approved by the Louisville Metro Air Pollution Control Board on May 20, 2020.⁷⁸

New Source Review (§§182(a)(2)(C) & 182(b))

The Division also submitted a certification that its existing rules met the requirements for a nonattainment new source review (NNSR) program. That submission was made on October 16, 2020, and approved April 5, 2022.⁷⁹ A similar certification was submitted by the Division on behalf of the District for the Jefferson County portion of the Area on July 13, 2021. While approval was pending, updates to the District's regulation were adopted by the Louisville Metro Air Pollution Control Board on March 16, 2022. Updates to the District's regulation were submitted to replace the prior certification on June 13, 2022.

Reasonably Available Control Measures & Reasonably Available Control Technology (RACT/RACT) (§§172(c)(1) & 182(a)(2)(A), *Sierra Club v. EPA*, 793 F.3d 656 (6th Cir. 2015))

Section 182(a)(2)(A) of the 1990 CAA Amendments requires states with marginal nonattainment areas to submit a SIP a revision that includes provisions to correct requirements in (or add requirements to) the plan concerning reasonably available control technologies (RACT).⁸⁰

Kentucky and Louisville have regulations in place that were previously adopted into the SIP. The Division and the District promulgated rules requiring RACT for ozone from stationary sources for particular source categories. The RACT requirements can be found in 401 KAR Chapter 59 and District Regulation 7 for new sources and 401 KAR Chapter 61 and District Regulation 6 for existing sources. Statewide RACT rules have been applied to all major sources of VOCs located in a county or portion of a county which is designated ozone nonattainment, for any

⁷⁷ EPA, *Air Plan Approval; Kentucky; Emissions Statement Requirements for the 2015 8-Hour Ozone Standard Nonattainment Area*, 87 FR 24429 (Apr. 26, 2022; effective May 26, 2022).

⁷⁸ EPA, *Air Plan Approval; KY; Jefferson County Emissions Statements Requirements for the 2015 8-Hour Ozone Standard Nonattainment Area*, 87 FR 13177 (Mar. 9, 2022; effective Apr. 8, 2022).

⁷⁹ EPA, *Air Plan Approval; Kentucky; 2015 8-Hour Ozone Nonattainment New Source Review Permit Program Requirements*, 87 FR 19649 (Apr. 5, 2022; effective May 5, 2022).

⁸⁰ 42 U.S.C. §7511a(a)(2)(A).

nonattainment classification except marginal, and local rules have been applied to all major sources in Louisville-Jefferson County Metro. For those sources that are not subject to RACT requirements in 401 KAR Chapters 59 or 61, the generally applicable Kentucky RACT rules for ozone can be found in 401 KAR 50:012. Additionally, the Area is not subject to the Section 182(a)(2)(A) RACT “fix up” requirement since the Area was designated as nonattainment of the 2015 ozone NAAQS after the enactment of the 1990 CAA amendments. The Area also complied with this requirement under the prior 1-hour ozone NAAQS.⁸¹

⁸¹ Approval and Promulgation of Implementation Plans Kentucky: Approval of Revisions to the Kentucky State Implementation Plan Regulating Volatile Organic Compounds, 59 FR 32343 (June 23, 1994; effective Aug. 22, 1994), *available at* https://archives.federalregister.gov/issue_slice/1994/6/23/32338-32353.pdf#page=6; and Approval and Promulgation of Implementation Plans State: Approval of Revisions to Kentucky, 60 FR 31087 (June 13, 1995; effective July 28, 1995), *available at* <https://www.govinfo.gov/content/pkg/FR-1995-06-13/pdf/95-14447.pdf>.

E. Maintenance Plan (CAA §§107(d)(3)(E)(iv) & 175A))

The CAA requires, among other things, that “(E) The Administrator may not promulgate a redesignation of a nonattainment area (or portion thereof) to attainment unless— ... (iv) the Administrator has fully approved a maintenance plan for the area as meeting the requirements of section [175A of the Act].”⁸² Section 175A requires states to “submit a revision of the applicable State implementation plan to provide for the maintenance of the national primary ambient air quality standard for such air pollutant in the area concerned for at least 10 years after the redesignation.”⁸³ The *Calcagni Memo* defined the core elements of maintenance plans as: a. Attainment Inventory, b. Maintenance Demonstration, c. Monitoring Network, d. Verification of Continued Attainment, and e. Contingency Plan.⁸⁴ These are addressed in turn in subsections 1-5 below.

(i) Attainment Inventory

The attainment design value for the Area is based on monitoring data for the years 2019 through 2021 (See Part 2.A). The Division and the District believe that the COVID-19 pandemic has had little effect on the monitored level of ozone (see Part 2.C.). The year 2019 was chosen as the year of the attainment inventory because it is the first year of the three-year design value demonstrating attainment of the standard of 0.070 ppm, the one-year highest fourth-maximum monitored ozone level (0.068 ppm) was below the standard, and it predates the COVID-19 pandemic.

The process for development of the attainment emissions inventory is discussed above in Part 2.C., section 1. Reduction in Emissions Achieved, where it is compared to the nonattainment inventory from 2017. Further discussion of the development of emissions projections used for all categories for the maintenance demonstration, as well as for interpolating 2019 nonpoint and nonroad emissions, follows below in section 2.

(ii) Maintenance Demonstration

A maintenance demonstration requires a comparison of the projected maintenance emissions inventory for a period of 10 years following redesignation, with the attainment inventory. If the projected emissions remain at or below the attainment inventory, there is a demonstration of maintenance. If, however, the projected emissions are above the attainment inventory, then additional control measures are required to ensure the projected emissions will remain at or below the attainment inventory emissions.⁸⁵ The attainment inventory and annual projections for all pollutant sources can be found in Appendix A.

⁸² 42 U.S.C. §7407(d)(3)(E)(iv).

⁸³ 42 U.S.C. §7505a(a).

⁸⁴ *Calcagni Memo*, *supra* note 9, at 8-13.

⁸⁵ *Id.* at 9-10.

On-road emissions for the attainment inventory and all projected years were developed using the travel demand model (TDM) designed by KIPDA, and EPA's Motor Vehicle Emission Simulator (MOVES). The inputs for the mobile modeling were developed using KIPDA's most recent TDM information, and emissions were developed from these inputs and MOVES version 3.0.2. All inputs and MOVES run specifications are included in Appendix B.

Point, nonpoint, and nonroad emissions were developed from EPA's 2016v2 modeling platform.⁸⁶

According to EPA

The 2016v1 emissions modeling platform is a product from the National Emissions Inventory Collaborative and includes a full suite of base year (2016) and projection year (2023 & 2028) inventories, ancillary emission data, and scripts and software for preparing the emissions for air quality modeling.... The National Emissions Inventory Collaborative is a collaboration between more than 245 employees of state and regional air agencies, EPA, and Federal Land Management agencies. The 2016v1 emissions modeling platform was used for the Revised Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS.⁸⁷

Further:

The 2016v2 emissions modeling platform was developed by EPA as an update to the 2016v1 platform because new data, model versions, and methods have become available following the release of 2016v1. The 2016v2 platform incorporates emissions based on: MOVES3, the 2017 NEI nonpoint inventory (both anthropogenic and biogenic), the Western Regional Air Partnership oil and gas inventory, and updated inventories for Canada and Mexico. In addition, 2016v2 makes use of a new inventory method for solvents, includes minor corrections to the wildfire inventory, and corrects for double counting of the airport emissions. The commercial marine vessel and rail inventories are consistent with the 2016v1 inventories.

⁸⁶ EPA, *2016v2 Platform*.

⁸⁷ EPA, *2016v1 Platform*.

The 2016v2 platform includes emissions for the years 2016, 2023, 2026, and 2032. Factors used to perform projections to future years have been updated where new data have become available. For example, where factors based the Annual Energy Outlook (AEO) are used to develop future year emissions, most of those factors have been updated to use AEO 2021. Future year EGU emissions include impacts from the Revised Cross-state Air Pollution Rule Update along with other updated data.⁸⁸

Additional information about EPA’s foundations for the inventories in the 2016v1 and v2 Platforms are included in the recently proposed Good Neighbor Plan for the 2015 Ozone NAAQS.⁸⁹ EPA explained that the 2016 platform “was developed through a national collaborative effort between the EPA and state and local agencies along with MJOs,” and further that the 2016v2 Platform “emissions inventories were developed for the years 2016, 2023, 2026, and 2032 that represent changes in activity data and of predicted emissions reductions from on-the-books actions, planned emissions control installations, and promulgated federal measures that affect anthropogenic emissions.”⁹⁰ For EGUs “[t]he EPA projected future 2023, 2026, and 2032 baseline EGU emissions using the version 6—Summer 2021 Reference Case of the Integrated Planning Model (IPM).”⁹¹

County monthly emissions for 2023, 2026, and 2032 for June-August each year from reports available for the 2016v2 Platform,⁹² were summed by category within each county for each pollutant, and divided by 92 days to calculated tons per summer day and were then added to a spreadsheet with 2017 and 2019 emissions developed as described in Part 2.C., above, and used to interpolate emissions for 2025, 2030, and 2035 using Excel’s “TREND” function. Only the emissions from the 2016v2 platform were used to develop future year inventories, as it was found that the large drop from the 2017 nonattainment inventory to the 2023 inventory from the platform resulted in artificially low projections, in particular for 2035. All three years of projected emissions in the platform were used to interpolate/extrapolate for the inventory, but using the two closest years (e.g., 2023 & 2026 to interpolate 2025) was evaluated as an alternative. The use of the two closest years resulted in less than ~1 ton per summer day difference in NO_x projections each year except 2035, where use of 2026 and 2032 alone resulted

⁸⁸ EPA, *2016v2 Platform*.

⁸⁹ Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, 87 FR 20036 (Apr. 6, 2022) [hereinafter “2015 CSAPR Proposal”].

⁹⁰ *Id.* at 20063.

⁹¹ *Id.* For further explanation on the development of the 2016v2 Platform see *Id.*, Section V.C. generally, as well as EPA, Technical Support Document (TSD): Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform (Feb. 2022), available at https://www.epa.gov/system/files/documents/2022-02/2016v2_emismod_tsd_february2022.pdf.

⁹² Available at https://gaftp.epa.gov/Air/emismod/2016/v2/reports/county_monthly/.

in a greater drop than use of all three years. Use of all three years was retained as the more conservative approach.

The Division and the District evaluated the 2016v2 platform and believes it represents a reasonable projection of point, nonpoint, and nonroad category emissions based on extrapolation of past emissions, as well as growth and control factors. In particular, the District and the Division examined emissions projections for the point category, and believes them to be conservative (i.e., higher than likely), as projections for EGUs, the largest source sector of NO_x in the Area,⁹³ are based only on *committed* retirements, and do not take into account announcements not yet locked-in.⁹⁴ The District and the Division believe this is conservative for the Area, as the largest EGU in the Area, LG&E's Mill Creek Generating Station has announced the expected retirement of one of its four units by 2024, and a second unit by 2028,⁹⁵ shutdowns which are not accounted for in the 2016v2 platform.

Figures 15-18, below, show emissions for 2019 and the projected years by county and category, respectively, for the Kentucky portion of the Area. Detailed in Tables 4 and 5 are the projected tons per summer day emissions for NO_x and VOCs, respectively, through 2035 for all Kentucky counties within the Area, and the overall reduction from 2019 to 2035. The District and the Division anticipate timely redesignation such that 2035 will be at least 10 years after redesignation. Therefore, projected emissions totals (VOCs and NO_x) for 2035 for Bullitt, Oldham, and Jefferson counties are being relied on as a maintenance inventory. 2035 emissions are projected to be below the 2019 attainment inventory emissions totals, thus demonstrating continued maintenance of the 8-hour ozone standard. 2025 and 2030 emissions are being included as interim years demonstrating the continuous downward trend in anticipated emissions, with the exception of a slight increase in estimated VOC emissions projected between 2030 and 2035.⁹⁶

⁹³ Emissions in the nonattainment inventory, attainment inventory, and emissions projections in the maintenance demonstration are not speciated to the source-sector level, but querying 2017 NEI data at <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data> by county in Kentucky shows that for Bullitt, Jefferson, and Oldham counties EGU NO_x emissions were roughly 6983 tons, compared to the next largest sector "Mobile - On-Road non-Diesel Light Duty Vehicles" at 5312 tons.

⁹⁴ 2015 CSAPR Proposal, *supra* note 91, at 20063-64.

⁹⁵ LG&E and KU, *LG&E and KU request bids for energy to continue to reliably serve customers*.

⁹⁶ Because emissions are still far below 2019 emissions, and because the Area is considered NO_x-limited (see Part D, Section 1, above), the emissions projections still demonstrate continued attainment.

Figure 15: 2019-2035 NO_x Emissions by County for the Kentucky Portion of the Area

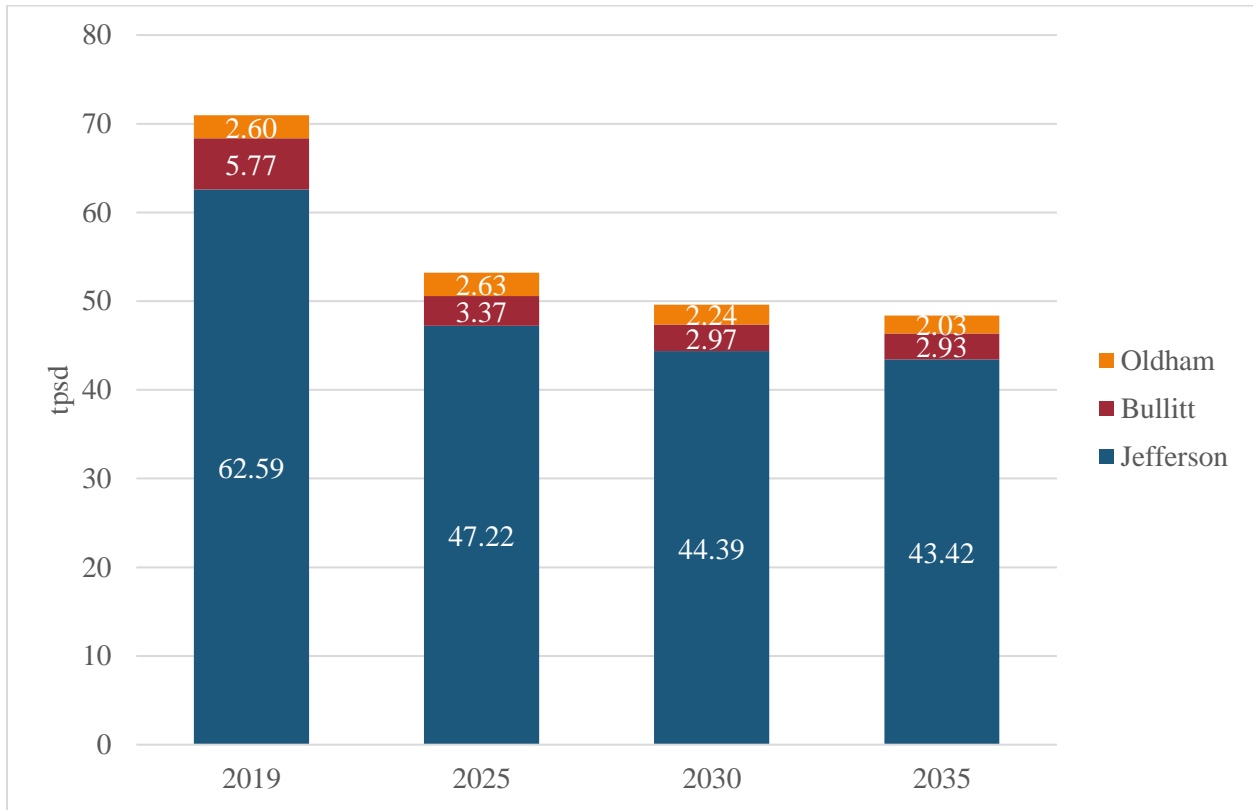


Figure 16: 2019-2035 VOC Emissions by County for the Kentucky Portion of the Area

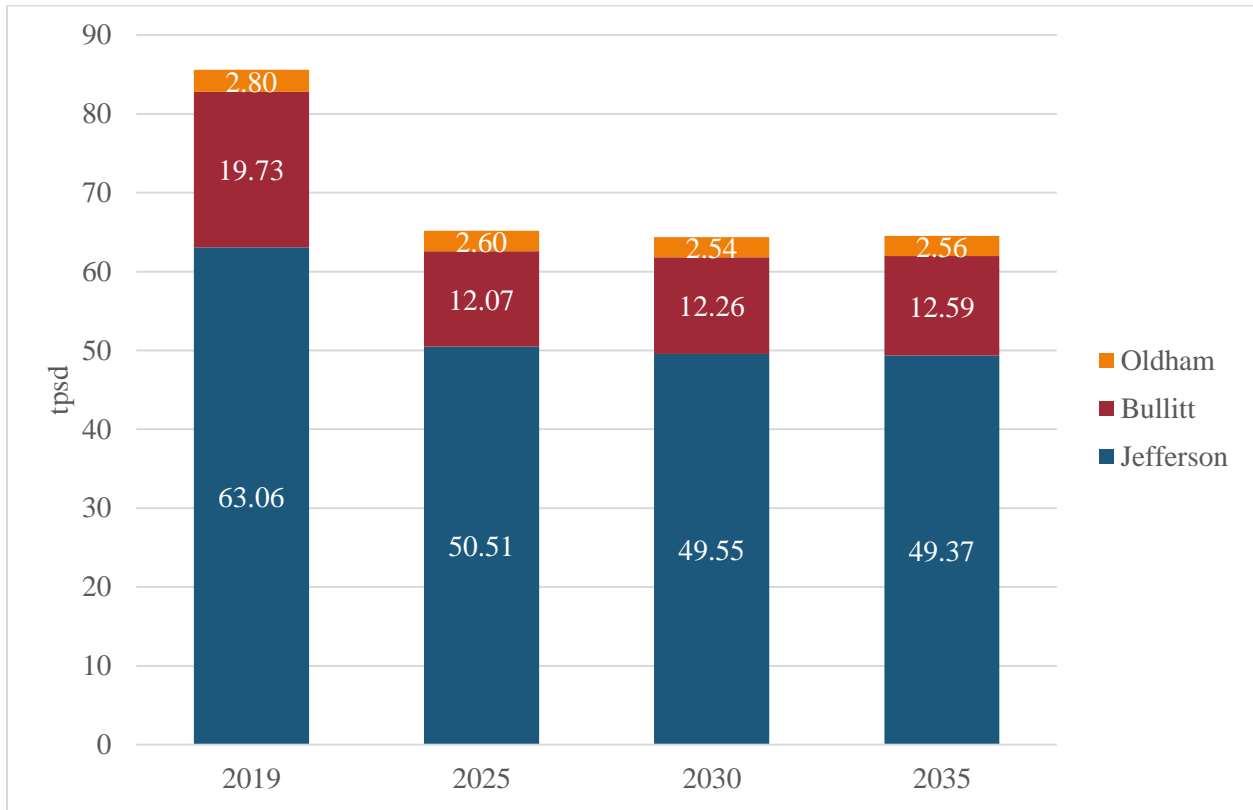


Figure 17: 2019-2035 NO_x Emissions by Category for the Kentucky Portion of the Area

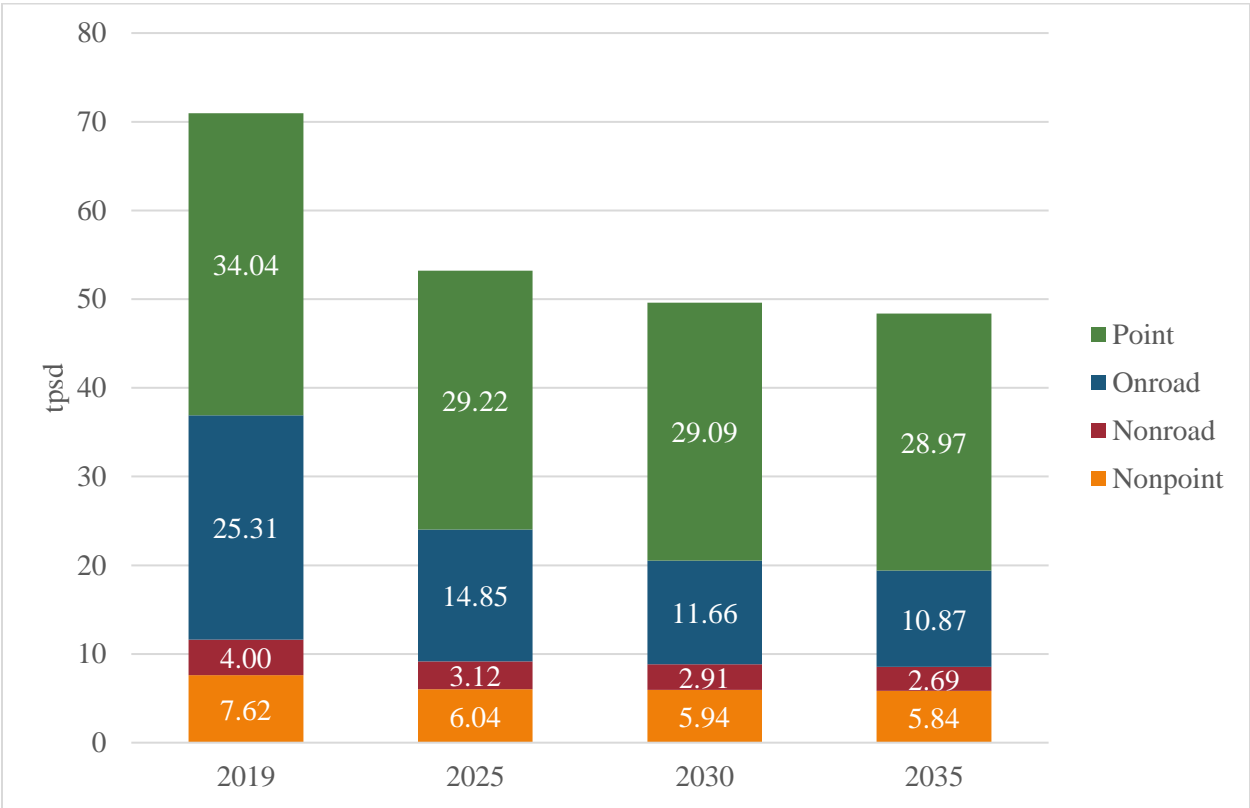


Figure 18: 2019-2035 VOC Emissions by Category for the Kentucky Portion of the Area

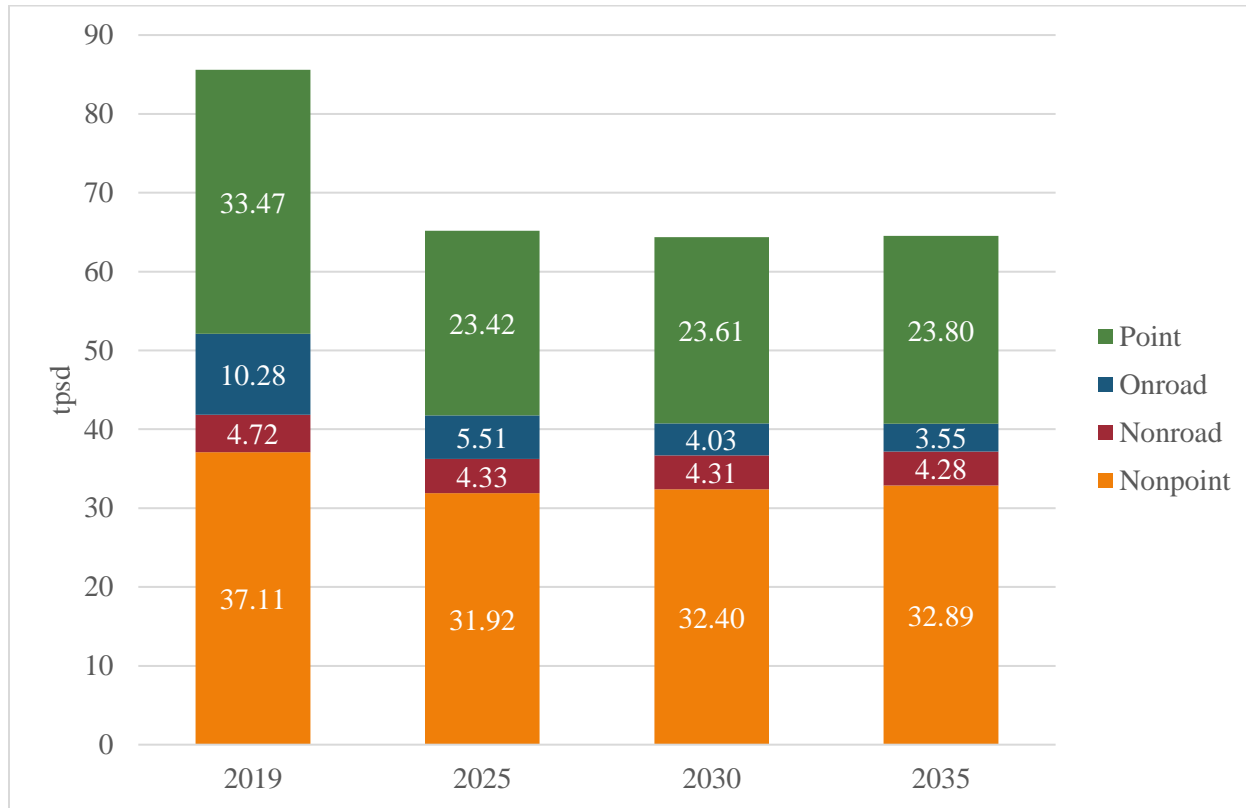


Table 4
2019-2035 NO_x Emissions by County and Category for the Kentucky Portion of the Area
 (tpsd)

<i>County</i>	Category	2019	2025	2030	2035	Reduction (2019-2035)
<i>Bullitt</i>	Nonpoint	0.33	0.30	0.29	0.28	0.05
	Nonroad	0.26	0.20	0.18	0.16	0.10
	Onroad	3.67	2.26	1.88	1.85	1.82
	Point	1.51	0.61	0.63	0.64	0.87
<i>Bullitt Total</i>		5.77	3.37	2.97	2.93	2.85
<i>Jefferson</i>	Nonpoint	6.88	5.37	5.32	5.27	1.61
	Nonroad	3.39	2.65	2.48	2.31	1.08
	Onroad	19.97	11.38	8.80	8.07	11.90
	Point	32.35	27.82	27.79	27.77	4.58
<i>Jefferson Total</i>		62.59	47.22	44.39	43.42	19.17
<i>Oldham</i>	Nonpoint	0.41	0.37	0.33	0.29	0.12
	Nonroad	0.35	0.28	0.25	0.23	0.12
	Onroad	1.67	1.20	0.99	0.95	0.72

	Point	0.18	0.79	0.68	0.56	-0.38
<i>Oldham Total</i>		2.60	2.63	2.24	2.03	0.57
<i>Grand Total</i>		70.96	53.23	49.60	48.37	22.59

Table 5
2019-2035 VOC Emissions by County and Category for the Kentucky Portion of the Area
 (tpsd)

<i>County</i>	Category	2019	2025	2030	2035	Reduction (2019-2035)
<i>Bullitt</i>	Nonpoint	5.03	4.68	5.08	5.47	-0.44
	Nonroad	0.55	0.48	0.47	0.46	0.08
	Onroad	1.26	0.68	0.48	0.43	0.82
	Point	12.90	6.23	6.23	6.23	6.68
<i>Bullitt Total</i>		19.73	12.07	12.26	12.59	7.14
<i>Jefferson</i>	Nonpoint	30.53	25.60	25.60	25.61	4.92
	Nonroad	3.66	3.43	3.44	3.45	0.22
	Onroad	8.41	4.41	3.23	2.83	5.58
	Point	20.45	17.08	17.28	17.48	2.97
<i>Jefferson Total</i>		63.06	50.51	49.55	49.37	13.69
<i>Oldham</i>	Nonpoint	1.56	1.63	1.72	1.81	-0.25
	Nonroad	0.51	0.42	0.40	0.37	0.14
	Onroad	0.61	0.42	0.32	0.29	0.33
	Point	0.12	0.12	0.10	0.09	0.03
<i>Oldham Total</i>		2.80	2.60	2.54	2.56	0.24
<i>Grand Total</i>		85.59	65.17	64.35	64.52	21.07

(iii) Monitoring Network

According to the *Calcagni Memo*, areas should continue to operate an air quality monitoring network in accordance with 40 CFR Part 58 to verify continued attainment once redesignated, and the “maintenance plan should contain provisions for continued operation of air quality monitors that will provide such verification.”⁹⁷

The Division and the District will continue to operate an ambient air quality monitoring network consistent with the network plan and assessments required by 40 CFR §58.10 and 40 CFR Part 58, Appendix D. Any modification to the network will be conducted in accordance with 40 CFR

⁹⁷ *Calcagni Memo*, *supra* note 9, at 11.

§58.14. As required by 40 CFR §58.16, all data collected will be recorded in the AQS database and will therefore be available to the public.

(iv) Verification of Continued Attainment

If a maintenance demonstration is based on projected future inventories, the state submitting a maintenance plan should indicate how it will track progress against this metric to ensure assumptions about growth and other factors are accurate.⁹⁸

Both the Division and the District require major point sources in all counties to submit air emissions information annually.⁹⁹ The Division and the District assist in preparation of new periodic inventories for all sectors every three years pursuant to the Air Emissions Reporting Rule (AERR), 40 CFR Part 51 Subpart A. These inventories will be prepared for future years as necessary to comply with the inventory reporting requirements established in the Code of Federal Regulations. Emissions information will be compared to the 2019 attainment year and the 2035 projected maintenance year inventories to assess emission trends, as necessary, and to assure continued compliance with the standard. Part 2.C., above, provides further discussion of the permanent and enforceable reductions that have led to an improvement in air quality.

(v) Contingency Plan

Section 175A(d) of the CAA requires maintenance plans to include provisions for the timely correction of any violation of the NAAQS.¹⁰⁰ At a minimum such contingency measures must include all measures contained in the SIP for the Area prior to redesignation. In addition to measures to be adopted to correct any violation, the plan should also contain “a schedule and procedure for adoption and implementation, and a specific time limit for action” as well as “specific indicators, or triggers” for action.¹⁰¹

Future reviews of actual emissions for this redesignated Area will be performed using the latest emission factors, models, and methodologies. For these periodic inventories, the Division will review the assumptions made for the purpose of the maintenance demonstration concerning projected growth of activity levels. If any of these assumptions appear to have changed substantially, the Division will re-project emissions. If an annual fourth high monitored value of 0.071 ppm or greater occurs in a single ozone season or if periodic emission inventory updates reveal excessive or unanticipated growth greater than 10% in ozone precursor emissions within the maintenance Area, the Division will evaluate existing control measures to see if any further emission reduction measures should be implemented at that time. Implementation of necessary

⁹⁸ *Id.* at 11.

⁹⁹ 401 KAR 52:020, 401 KAR 52:030, and District Regulation 1.06, available at <https://louisvilleky.gov/air-pollution-control-district/document/regulation-106-version-11>.

¹⁰⁰ 42 U.S.C. §7505a.(d).

¹⁰¹ *Calcagni Memo*, *supra* note 9, at 12-13.

controls will take place as expeditiously as possible, but in no event later than 12 months from a monitored value of 0.071 ppm or greater at the conclusion of the most recent ozone season (October 31). Implementation of necessary controls in response to an initial "indicator" response will take place as expeditiously as possible, but in no event later than 12 months from the conclusion of the most recent ozone season.

If a three-year average fourth high monitored value of 0.071 ppm or greater or a violation of the standard occurs within the maintenance Area an action level response will take effect. The Division, in conjunction with the metropolitan planning organization or regional council of governments, will determine additional control measures needed to assure future attainment of the NAAQS for ozone. Contingency measures that can be implemented in a short time will be selected in order to be in place within 24 months of a triggered violation.

F. Motor Vehicle Emissions Budget (CAA §176(c) & 40 CFR §91.118(e))

The transportation conformity regulation, 40 CFR Part 93, Subpart A, *Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved under Title 23 U.S.C. or the Federal Transit Laws*, requires that mobile source emissions submitted or approved to a state's SIP be used in determining conformity of transportation plans for the Area. This regulation also allows the addition of a safety margin to the mobile emissions budgets. According to 40 CFR §93.101, the safety margin is defined as “the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for reasonable further progress, attainment or maintenance.” In accordance with 40 CFR §93.105, interagency consultation was used to select a maintenance year of 2035 and an interim year of 2019 to set motor vehicle emissions budgets (MVEBs). Two meetings of the local interagency consultation group (ICG) were convened to discuss MVEBs proposed to the group by the Division and the District along with the Indiana Department of Environmental Management (IDEM).¹⁰² The IAC consists of representatives from the Area's metropolitan planning organization (MPO), KIPDA; the Federal Highway Administration (FHWA) in both Kentucky and Indiana; state transportation departments (Kentucky Transportation Cabinet and Indiana Department of Transportation); EPA Regions 4 and 5; Federal Transit Administration Regions 4 and 5; the Transit Authority of River City (TARC); and the Division and the District. After the first meeting comments were received from KIPDA, which were discussed at the second meeting.¹⁰³ After the second meeting the District, the Division, and IDEM decided to retain the MVEBs as proposed to the ICG, and a response to comment was developed and distributed to the ICG.¹⁰⁴

Table 6 shows estimated total emissions for the Area, including the Indiana portion, as well as the difference in total emissions available to allocate a portion of as a safety margin to set MVEBs.¹⁰⁵ Table 7 demonstrates the emission estimation totals for on-road mobile sources within the Area. Table 8 demonstrates the mobile emission budgets for the Area and includes estimated emissions calculated for the 2019 attainment year and for 2035 with an additional 15 percent (of 2035 on-road emissions) margin of safety allocated to those estimates. The 15 percent portion was determined to be adequate after consideration of continued air quality improvements, known future motor vehicle and fuels controls, projected fleet turnover, expected future growth, possible future regulation, and model uncertainty.

¹⁰² Agendas for the meetings are contained in Appendices F and G. Minutes for each meeting are in Appendices H and I.

¹⁰³ KIPDA's comments and related spreadsheet are contained in Appendix J.

¹⁰⁴ The response to comments is in Appendix K.

¹⁰⁵ The total emissions for the area differ slightly from those shown in the agenda to the first meeting because 2017 emissions have been updated as described in Part 2.C., above. Onroad emissions remain the same, as do the MVEBs as proposed.

A 15 percent safety margin was calculated by taking 15 percent of the projected on-road source emission estimates. The 2035 mobile budget safety margin allocation for the Kentucky portion of the Area is 0.72 tpsd for VOCs and 2.24 tpsd for NO_x.

Table 6
Louisville, KY-IN 2015 8-Hour Ozone Nonattainment Area Emission Reductions/Safety Margin (tpsd)

<i>Pollutant</i>	2019	2035	Safety Margin
<i>NO_x</i>	86.05	56.61	29.44
<i>VOC</i>	98.92	75.84	23.08

Table 7
Louisville, KY-IN 2015 8-Hour Ozone Nonattainment Area Emission Estimation Totals for On-road Mobile Sources (tpsd)

<i>Pollutant</i>	2019	2025	2030	2035	Reduction (2019-2035)
<i>NO_x</i>	33.04	14.85	15.97	14.94	18.10
<i>VOC</i>	13.65	5.51	5.44	4.79	8.86

Table 8
Louisville, KY-IN 2015 8-Hour Ozone Nonattainment Area Highway Mobile Emissions Budgets with Safety Margins (tpsd)

<i>Pollutant</i>	2019 Onroad Emissions & Budget	2035 Projected Onroad Emissions	15% Safety Margin Allocation	2035 Motor Vehicle Emissions Budget
<i>NO_x</i>	33.04	14.94	2.24	17.18
<i>VOC</i>	13.65	4.79	0.72	5.51

3. Public Participation

In accordance with 40 CFR 51.102, the SIP revision was available for public review and comment from June 21, 2022 through July 27, 2022.

The SIP revision package was made available on the Division's website during the 37-day comment period from June 21, 2022 until July 27, 2022. The District also published a public notice with a 37-day comment period. The Division received written comments from X during the public comment period and no other comments were received. The Division's response to those comments is provided in Appendix X along with a copy of the public hearing notice.

DRAFT

4. Conclusion

The most recent three years of ozone monitoring data (2019-2021) for the Louisville, KY-IN nonattainment area demonstrate compliance with the 2015 8-hour ozone NAAQS. There have been many major programs enacted that have led to significant emissions reductions since the area was first designated as nonattainment. Since that time, the air quality has improved significantly and has attained the ozone NAAQS. Additionally, the maintenance plan demonstrates that the projected emissions inventories for all future projected years, including the final year of the maintenance plan (2035) are all less than the base year emissions inventory. Therefore, maintenance of the 2015 8-hour ozone NAAQS has also been demonstrated.

Kentucky hereby requests that the Louisville, KY-IN 2015 8-hour Ozone nonattainment area be redesignated to attainment simultaneously with EPA approval of the maintenance plan provisions contained herein.

Appendix A
Full Emissions Inventory and Projections (attached .xlsx file)

DRAFT

Appendix B
MOVES Inputs and Run Specifications (attached .zip file)

DRAFT

Appendix C
2019 Emissions Inventory – Point Sources Reporting to the
District (attached .csv file)

DRAFT

Appendix D
2019 Emissions Inventory – Point Sources Reporting to the
Division (attached .xlsx file)

DRAFT

Appendix E
COVID-19 Related Traffic Impact Data Prepared by KIPDA
(attached .xlsx file)

DRAFT

Appendix F
Agenda of ICG Meeting Held January 12, 2022

DRAFT



AIR POLLUTION CONTROL DISTRICT
LOUISVILLE, KENTUCKY

GREG FISCHER
MAYOR

RACHAEL HAMILTON
DIRECTOR

January 12, 2022

The Interagency Consultation Group for the Louisville KY-IN area met January 12, 2021 at 3 p.m. to discuss Motor Vehicle Emissions Budgets to be incorporated into the Redesignation Request and Maintenance Plan for the area under the 2015 Ozone National Ambient Air Quality Standard (NAAQS). Associated documentation, and proposed budgets, are attached to this agenda.

Agenda

Item	Lead	Time
Introductions	Byron Gary – APCD	10 min
Motor Vehicle Emissions Budgets (MVEBs) – requirements and proposal	Byron Gary – APCD	15 min
Discussion	All	30 min
Adjourn		

Emissions Projections

**Total Projected Emissions for the Louisville, KY-IN 2015 8-Hour Ozone Nonattainment Area TOTAL
Projected VOC Emissions
Tons per ozone season day (TPOSD)**

VOC	Total Projected Emissions					
County	2017	2019	2025	2030	2035	Safety Margin
Bullitt, KY	16.35	19.65	14.81	12.98	11.30	8.35
Oldham, KY	2.71	2.74	2.60	2.55	2.56	0.18
Jefferson, KY	65.66	62.47	53.74	48.81	44.64	17.83
Indiana	18.91	13.33	12.14	11.48	11.32	2.01
TOTAL VOC	103.63	98.19	83.29	75.82	69.82	28.37

**Total Projected Emissions for the Louisville, KY-IN 2015 8-Hour Ozone Nonattainment Area TOTAL
Projected NO_x Emissions
(TPOSD)**

NO _x	Total Projected Emissions					
County	2017	2019	2025	2030	2035	Safety Margin
Bullitt, KY	4.87	5.70	3.77	3.00	2.59	3.11
Oldham, KY	2.65	2.54	2.35	2.28	2.40	0.14
Jefferson, KY	64.54	61.25	45.67	39.52	35.23	26.02
Indiana	17.70	15.09	10.39	8.89	8.24	6.85
TOTAL NO_x	89.76	84.58	62.18	53.69	48.46	36.12

Louisville, KY-IN 2015 8-Hour Ozone Nonattainment Area Emission Estimation Totals for On-road Mobile Sources

	2019	2025	2030	2035
VOC (TPOSD)	13.65	7.68	5.45	4.79
NO _x (TPOSD)	33.03	20.42	15.97	14.94
VMT (miles/day)	33,186,821	35,191,288	37,144,379	39,006,172

Proposed Motor Vehicle Emissions Budgets

Total Louisville, KY-IN Nonattainment Area 2015 8-Hour Ozone Nonattainment Area Highway Mobile Emissions Budgets with Safety Margins (TPOSD)

	2019 Estimated Emissions	2035 Estimated Emissions	2035 Mobile Safety Margin Allocation*	2035 Total Mobile Budget
VOC (TPOSD)	13.65	4.79	0.72	5.51
NOx (TPOSD)	33.03	14.94	2.24	17.18
VMT (miles/day)	33,186,821	39,006,172	-	-

Appendix G
Agenda of ICG Meeting Held February 10, 2022

DRAFT

Louisville KY-IN Interagency Consultation Group Meeting Agenda

February 10, 2022

The Interagency Consultation Group for the Louisville KY-IN area will meet February 10, 2022 at 1:00 p.m. to discuss comments on the Motor Vehicle Emissions Budgets to be incorporated into the Redesignation Request and Maintenance Plan for the area under the 2015 Ozone National Ambient Air Quality Standard (NAAQS) presented to the group at a January 12, 2022 meeting. Minutes of that meeting, and the comments from KIPDA were distributed beforehand. The originally-proposed budgets are included with this agenda.

Agenda

Item	Lead	Time
Introductions	Byron Gary – APCD	5 min
Motor Vehicle Emissions Budgets (MVEBs) – review requirements and proposal	Byron Gary – APCD	5 min
KIPDA Comments	Randy Simon, Andy Rush – KIPDA	15 min
Other Budgets – Cincinnati/Northern Kentucky Wisconsin	Lauren Hedge – DAQ Shawn Seals – IDEM	15 min
Discussion	All	20 min
Adjourn		

Proposed Motor Vehicle Emissions Budgets

Total Louisville, KY-IN Nonattainment Area 2015 8-Hour Ozone Nonattainment Area Highway Mobile Emissions Budgets with Safety Margins (TPOSD)

	2019 Estimated Emissions	2035 Estimated Emissions	2035 Mobile Safety Margin Allocation*	2035 Total Mobile Budget
VOC (TPOSD)	13.65	4.79	0.72	5.51
NOx (TPOSD)	33.03	14.94	2.24	17.18
VMT (miles/day)	33,186,821	39,006,172	-	-

Appendix H
Minutes of ICG Meeting Held January 12, 2022

DRAFT

**Minutes
Louisville, KY-IN
Interagency Consultation Group Meeting**

January 12, 2022

A meeting of the Interagency Consultation Group (ICG) for the Louisville, KY-IN area was called on January 12, 2022 at 3:00 p.m. via video teleconference

The following members representing their agencies were present:

Agency	Attendees
Federal Highways Administration (FHWA) Kentucky	Bernadette Dupont, and Noura Akkad
FHWA Indiana	Erica Tait
Indiana Department of Environmental Management (IDEM)	Brian Callahan, Scott Deloney, and Shawn Seals
Kentuckiana Regional Planning and Development Agency (KIPDA)	Andy Rush, Randy Simon, and Jeremeih Shaw
Kentucky Division for Air Quality (KYDAQ)	Ashlee Smither, Kevin Davis, Lauren Hedge, and Milady Meadows
Kentucky Transportation Cabinet (KYTC)	Isidro Delgado, and Jahan Khan
Louisville Metro Air Pollution Control District (LMAPCD)	Byron Gary, Craig Butler, Michelle King, and Rachael Hamilton
Transit Authority of River City (TARC)	Carrie Butler
U.S. Environmental Protection Agency (U.S. EPA) Region 4	Dianna Myers, Josue Ortiz, Sarah LaRocca, and Will Kramer
U.S. EPA Region 5	Michael Leslie and Tony Maietta

Presentation

Byron Gary, LMAPCD, gave a presentation on the 2015 ozone national ambient air quality standard requirements, current monitoring data, current and projected emissions inventories, and motor vehicle emissions budgets (MVEBs) that KYDAQ and LMAPCD intend to propose in a request for redesignation to attainment for the area for the standard, allocating a portion of the safety margin (projected decline in emissions) a 15% margin over projected onroad emissions.

Discussion

After the presentation discussion on the proposed MVEBs was opened up, facilitated by Gary. Representatives from KIPDA urged consideration in setting of the budgets of the following factors: the number of steps in modeling motor vehicle emissions, the uncertainty or margin of error at each step, the large decline in projected motor vehicle emissions, and the length of time between state implementation plan (SIP) submittals setting or adjusting budgets. KIPDA analysis shows that a margin of 15% of projected onroad emissions in the past would have been far too conservative, that there is likely greater than 15% margin of error in each step of the modeling process, and changes in vehicle miles traveled did not directly (or indirectly) correlate to changes in emissions, rather the largest changes in emissions inventories were due to changes in the modeling.

An LMAPCD representative pointed out that the length before re-evaluation is dictated by the requirement for a second ten-year maintenance plan to be submitted prior to the end of the first ten-year maintenance period for this submittal, and described the uncertainty brought about by previous U.S. EPA rulemaking that was vacated by the D.C. Circuit Court.

IDEM representatives pointed out in response to KIPDA concerns that engine standards and potentially fuel standards are likely to be strengthened, there is an ability to revise the SIP if needed within 6-8 months, the need to balance air quality improvements and transportation planning, that other sectors are not allocated any portion of the safety margin, the variability in monitored ozone from year to year, and the likelihood of U.S. EPA strengthening of the ozone standard.

Representatives of both U.S. EPA regions responded upon inquiry that there is no standard amount of the safety margin to be allocated to MVEBs, and that it varies greatly from state to state.

IDEM inquired as to the reason for not setting an interim year budget between the attainment year (2019) and maintenance year (2035). LMAPCD responded that after discussion with U.S. EPA it became apparent that an interim year budget was not necessary and provided no benefit, as conformity evaluation for years up to the maintenance year could be against the attainment year budget.

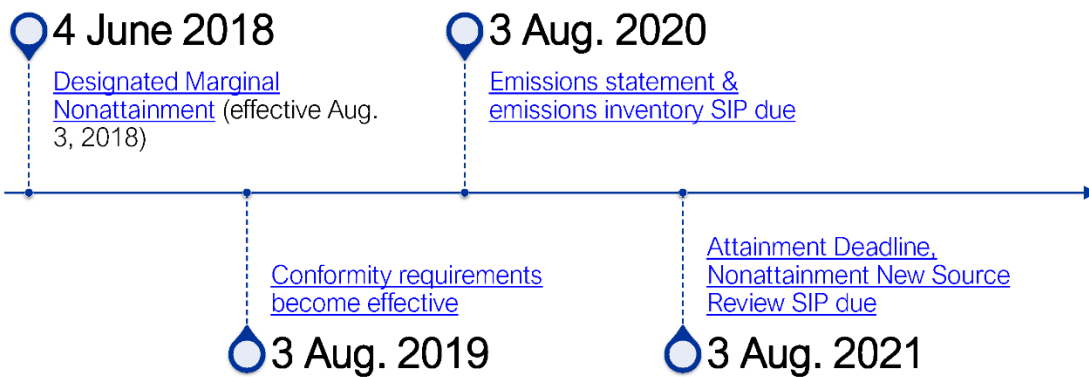
Interagency Consultation Group Meeting

Air Pollution Control District
January 12, 2022



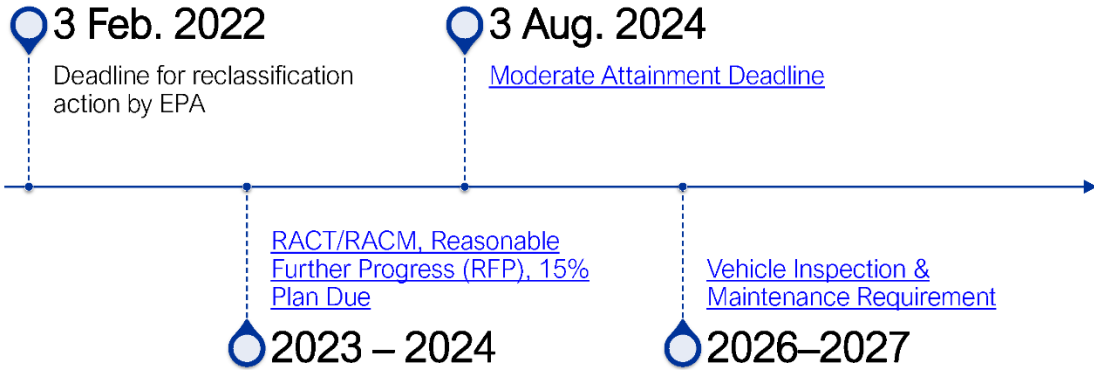
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2015 Ozone Standard

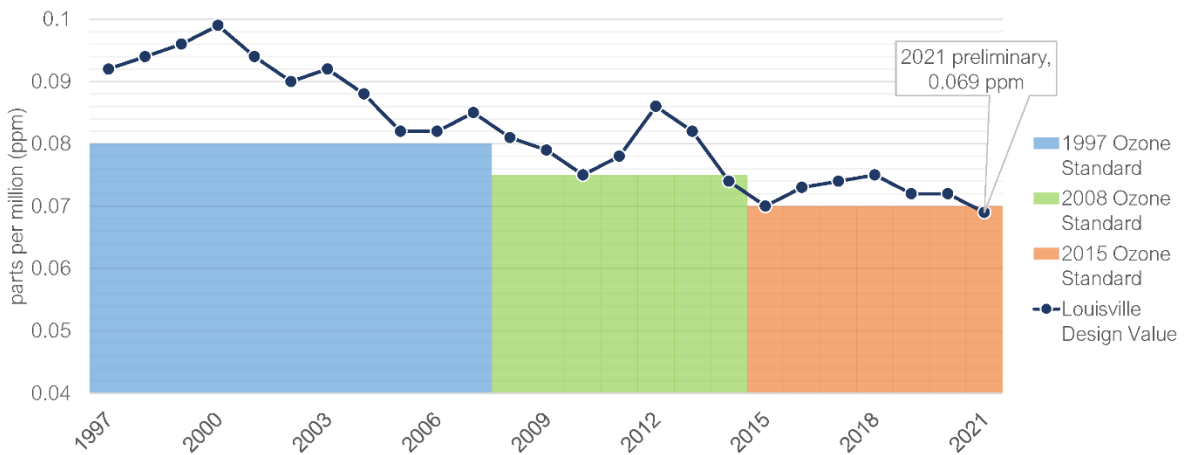


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2015 Ozone Standard, cont'd



Monitored Ozone Levels



Redesignation Request Requirements

- CAA Section 107(d)(3)(E)
 - Monitored attainment (107(d)(3)(E)(i))
 - Fully approved implementation plan for the area (107(d)(3)(E)(ii))
 - The improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP, federal requirements, and other permanent and enforceable reductions (107(d)(3)(E)(iii))
 - Fully approved a **maintenance plan**, including a contingency plan, under Section 175A. (107(d)(3)(E)(iv))
 - The state has met all requirements under Section 110 and Part D of Title I of the Act. (107(d)(3)(E)(v))

Maintenance Plan Requirements

- [*Procedures for Processing Requests to Redesignate Areas to Attainment*](#) (["Calcagni Memo", Sep. 4, 1992](#))
 - **Attainment inventory**
 - Maintenance demonstration
 - **Future emissions will not exceed attainment inventory**, or
 - Future Modeling
 - Monitoring network
 - Verification of continued attainment
 - Contingency plan

Motor Vehicle Emissions Budgets in C.F.R.

- [40 C.F.R. Part 93, Subpart A, Definitions](#)
 - **Motor vehicle emissions budget** is that portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions.
 - **Safety margin** means the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for reasonable further progress, attainment, or maintenance.









Interagency Consultation

- [40 C.F.R. §93.118\(e\)\(4\)](#) “EPA will not find a motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan to be adequate for transportation conformity purposes unless the following minimum criteria are satisfied: ...
- “(ii) Before the control strategy implementation plan or maintenance plan was submitted to EPA, **consultation among federal, State, and local agencies occurred**; full implementation plan documentation was provided to EPA; and EPA's stated concerns, if any, were addressed;”



Motor Vehicle Emissions Budgets Considerations

-  Air quality improvements
-  Known future motor vehicle and fuels controls
-  Projected fleet turnover
-  Expected future growth
-  Possible future regulation
-  Model uncertainty

Emissions Projections - VOCs

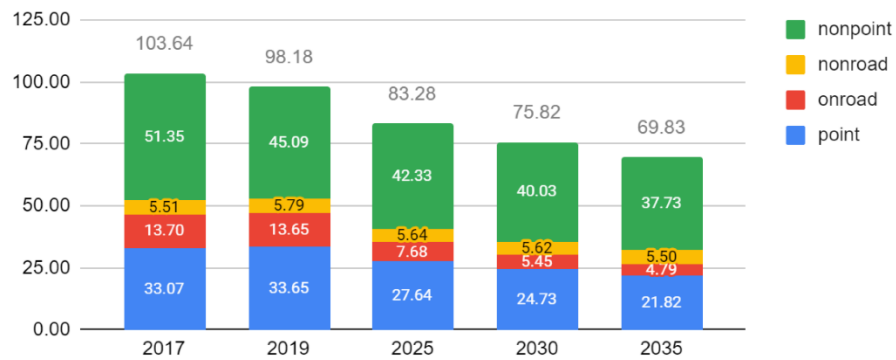
County	Total Projected Emissions					Reduction (2019-2035)
	2017	2019	2025	2030	2035	
Bullitt, KY	16.35*	19.64	14.81	12.98	11.30	8.34
Oldham, KY	2.70	2.75	2.59	2.55	2.57	0.18
Jefferson, KY	65.67	62.46	53.74	48.81	44.65	17.81
Indiana	18.91	13.33	12.14	11.48	11.32	2.01
TOTAL NO_x	103.64	98.18	83.28	75.82	69.83	28.35

*All emissions are in tons per ozone season day (tposd)

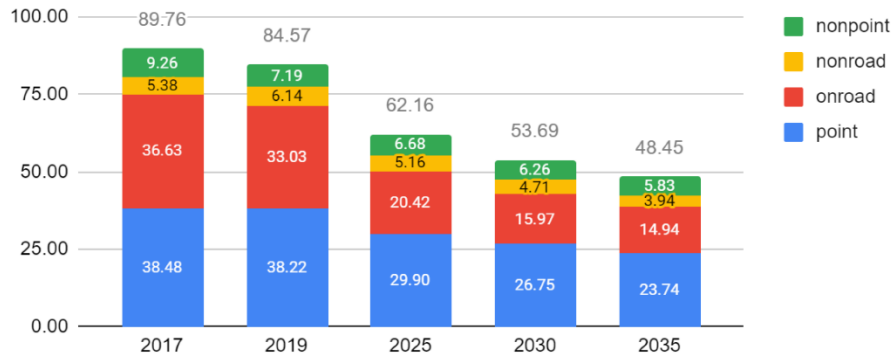
Emissions Projections - NO_x

County	Total Projected Emissions					Reduction (2019-2035)
	2017	2019	2025	2030	2035	
Bullitt, KY	4.87	5.71	3.76	3.00	2.58	3.12
Oldham, KY	2.65	2.53	2.34	2.28	2.39	0.14
Jefferson, KY	64.54	61.25	45.66	39.52	35.23	26.01
Indiana	17.70	15.09	10.39	8.89	8.24	6.84
TOTAL NO_x	89.76	84.57	62.16	53.69	48.45	36.12

Emissions Projections - VOCs



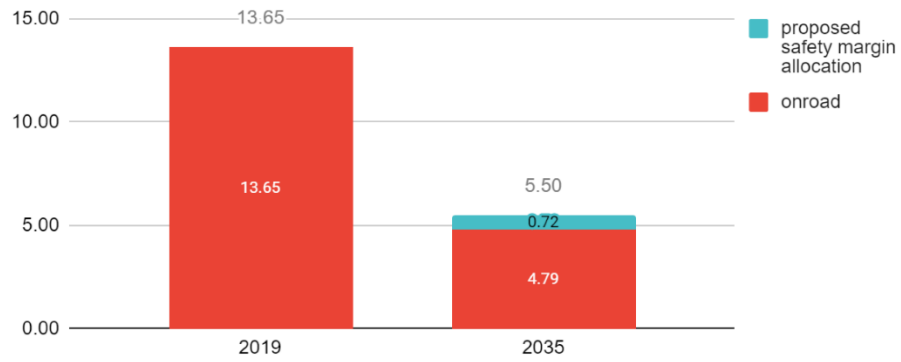
Emissions Projections - NO_x



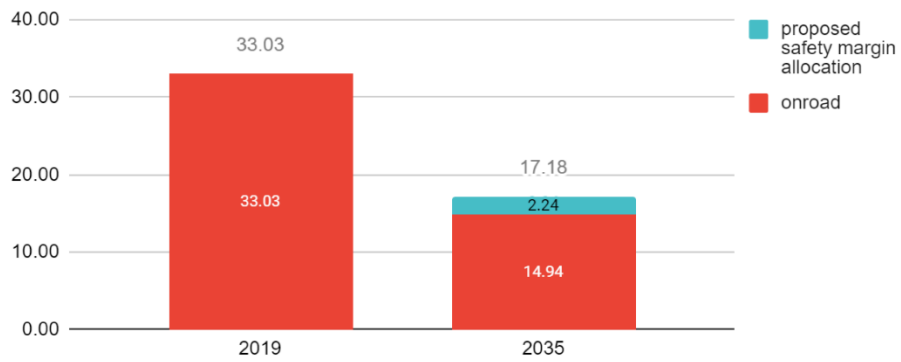
MVEBs - Proposed

	2019 Estimated Emissions	2035 Estimated Emissions	2035 Mobile Safety Margin Allocation*	2035 Total Mobile Budget
VOC (TPOSD)	13.65	4.79	0.72	5.51
NO _x (TPOSD)	33.03	14.94	2.24	17.18
VMT (miles/day)	33,186,821	39,006,172	-	-

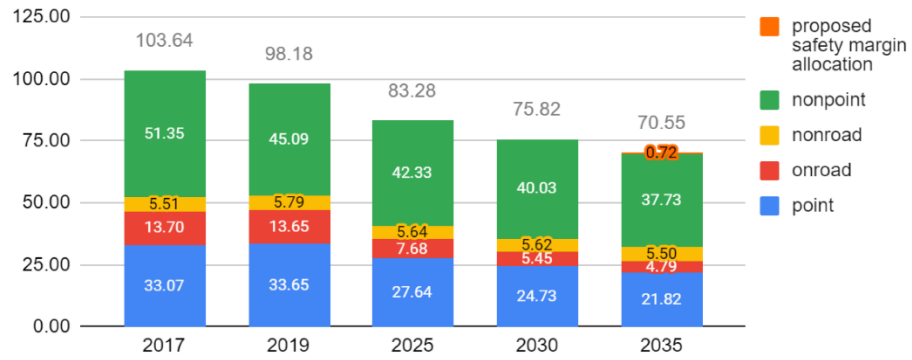
MVEBs - VOCs



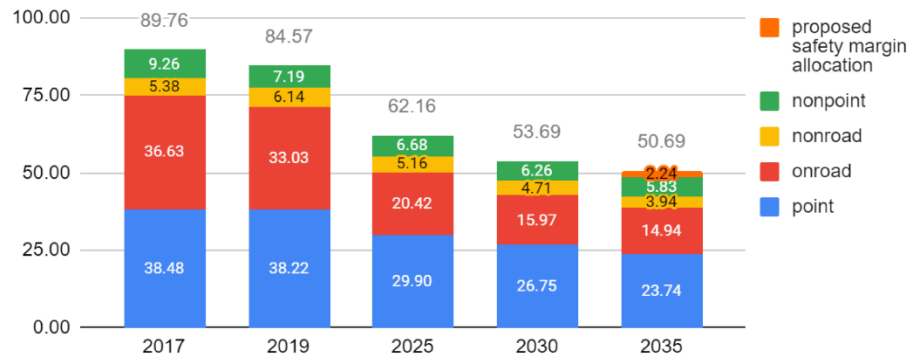
MVEBs - NO_x



MVEBs - VOCs



MVEBs - NO_x



Comments

- Byron.Gary@LouisvilleKy.gov
- Lauren.Hedge@Ky.gov

Please submit any comments in writing by Friday, January 21, 2022



Questions?



Louisville Metro
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Control District

Rachael Hamilton, Director

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Louisville, KY 40203
(502) 574-6000

www.louisvilleky.gov/APCD



Appendix I
Minutes of ICG Meeting Held February 10, 2022

DRAFT

**Minutes
Louisville, KY-IN
Interagency Consultation Group Meeting**

February 10, 2022

A meeting of the Interagency Consultation Group (ICG) for the Louisville, KY-IN area was called on February 10, 2022 at 1:00 p.m. via video teleconference

The following members representing their agencies were present:

Agency	Attendees
Federal Highways Administration (FHWA) Kentucky	Bernadette Dupont, and Noura Akkad
Indiana Department of Environmental Management (IDEM)	Scott Deloney, and Shawn Seals
Indiana Department of Transportation (INDOT)	Jay Mitchell
Kentuckiana Regional Planning and Development Agency (KIPDA)	Andy Rush, and Randy Simon
Kentucky Division for Air Quality (KYDAQ)	Kelly Lewis, Kevin Davis, Lauren Hedge, Leslie Poff, and Milady Meadows
Kentucky Transportation Cabinet (KYTC)	Isidro Delgado, and Jahan Khan
Louisville Metro Air Pollution Control District (LMAPCD)	Byron Gary, Craig Butler, and Michelle King
Transit Authority of River City (TARC)	Carrie Butler
U.S. Environmental Protection Agency (U.S. EPA) Region 4	Josue Ortiz-Borrero, Sarah LaRocca, and William Carnright
U.S. EPA Region 5	Tony Maietta

Presentations

Byron Gary, LMAPCD, gave reviewed his presentation on the 2015 ozone national ambient air quality standard requirements, current monitoring data, current and projected emissions inventories, and motor vehicle emissions budgets (MVEBs) that KYDAQ and LMAPCD intend to propose from the January 12, 2022 meeting.

Randy Simon, with assistance from Andy Rush, from KIPDA, went over their comments on the proposed budgets presented at the last ICG meeting. They showed data from past projections of 2020 emissions, utilizing Chart 1 from their comments, and emphasizing the amount that the emissions projected for 2020 changed over time, that projected emissions grew more than 15%, and that they did not directly correlate to a change in projected vehicle miles traveled (VMT). The second part of their comments discussed was that past changes to transportation plans did not have a significant impact on projected emissions.

Lauren Hedge, KY DAQ, explained the decisions of air quality planners in the Cincinnati area, with input from their regional interagency partners, had settled on MVEBs which were a 15% increase over projected emissions, based on potential variation in VMT, modifications to the travel demand model, and emissions model. Shawn Seals, IDEM, stated that reviewing other redesignation requests and maintenance plans he's been involved in developing or reviewed all similarly used a 15% increase over projected emissions for budgets, and set both interim and maintenance year budgets. He cited the Milwaukee, and Kenosha, WI; and Columbus, OH, areas as recent examples.

Discussion

After the presentations discussion on the proposed MVEBs and KIPDA's comments was opened up, facilitated by Gary.

Conversation centered on KIPDA's concerns that changes to the Metropolitan Transportation Plan, due to be amended this year, or to the emissions model required to be used by EPA could result in a conformity failure without a significant change in the usual factors underlying a real change in emissions. In response, air quality partners pointed out that previous changes have not caused conformity failures, and that if U.S. EPA changes the model used to calculate emissions there is generally a two-year grace period before it must be used for transportation conformity purposes, during which time air quality partners can amend their State Implementation Plans.

KIPDA further inquired as to the purpose of setting low budgets, particularly when even significant changes in transportation planning such as the bridges project did not significantly change emissions. IDEM representatives stated that the goal of conformity is to assure air quality improvements, and that transportation planning doesn't conflict. DOT representative Bernadette Dupont said it prevents the addition of non-conforming projects. EPA Region 5 representative Tony Maietta state that it stops planning from running too far away.

Appendix J
**KIPDA Comments on Proposed MVEBs (includes separate
attached .xlsx file)**

DRAFT

Comments concerning the 2022 Ozone SIP for the
Louisville, KY-IN Ozone Nonattainment Area

Concerning the ongoing discussion about the motor vehicle emission budgets (MVEBs) for the SIP to address the 2015 Ozone standard, KIPDA staff has several comments. They are presented in two sections. The first section involves matters related to the metrics of VMT and emission levels. The second section involves a qualitative discussion of the feasibility of various approaches that might be used by KIPDA and other agencies to meet the proposed budget if KIPDA staff cannot convince that there is objective evidence that the budget should be larger than what has been proposed. In the comments of the first section, it may be noted that most of these comments involve NOx rather than VOCs. There are three reasons for this. First, it is more difficult to find measures to reduce NOx. Therefore, if there is a conformity failure, it is less likely that KIPDA—or any transportation agency, for that matter—to be able find additional NOx reduction measures to mitigate the situation. Second, since passing conformity is a prime concern of KIPDA staff, it makes no sense to pursue a course of action that would provide a sufficient budget for VOCs if a similarly sufficient budget for NOx cannot be provided. Third, it is the understanding of KIPDA staff that the ozone in this area is NOx-limited. Therefore, we believe that achieving real and sustainable NOx reductions and not just “paper” reductions should be a goal of the budget-setting process.

Section 1

First, KIPDA staff wish to comment on the data that has been developed to support the development of the MVEBs. In particular, we have included additional analysis to that which was presented during the IAC call last week. Along with these comments, we have included a summary of the additional data that support our calculations and charts. We have also updated the chart which was presented during the IAC “zoom” meeting last Wednesday to include some additional data and have prepared an additional chart. In this regard, please refer to the Excel file titled “VMT, VOCs, and NOx (Conformity) Trends from 2008.” The Excel file contains three sheets. one that contains the data from the Ozone conformity analyses since 2008. This is the data which is used for the charts shown on the other two sheets. There have been two notable additions to this data since the IAC “zoom” meeting last week. First, the emissions model for each analysis is shown. This should allow readers the opportunity to relate the VOC and NOx emissions to the particular emissions model that was used for that analysis. The second addition is the calculation of the ratio of NOx emissions to the VMT. This metric separates—to the degree possible—the effect of the VMT (transportation) trend and the NOx emissions trend. This ratio is the metric graphed on Chart 2, and the metric is discussed below with the comments about Chart 2.

Chart 1 contains the trends of VMT and VOC and NOx emissions since 2008. It is the chart which was shown at the IAC “zoom” meeting last week. To be clear, KIPDA staff want to emphasize what the data points represent. The data points on this chart

represent the VMT and emission levels for 2020 calculated at various times. For example, the data points just to the right of the vertical line representing 2008 are not 2008 VMT and emissions. Rather, they represent the 2020 VMT and emissions as they were calculated in 2008 (in February of 2008 to be precise).

There have been two changes to Chart 1 since it was presented at the IAC meeting. First, the data points calculated in 2015 have been removed because additional investigation indicated that they were calculated during a PM 2.5 conformity determination rather than an Ozone conformity determination, as the other data points were. Second, data points for VMT and emissions have been added at the right side (the right side of the vertical line at 2022) to reflect some additional work by the staff of the Louisville Metro Air Pollution Control District. It is the understanding of KIPDA staff that these points represent the 2020 VMT from the previous analysis and the 2020 emissions calculated using MOVES 3.0.2 rather than MOVES 2014b. The results of this run have been reported as an approximate reduction of 3.5 tons per summer day of VOCs and an approximate reduction of 0.5 tons per summer day of NOx. As can be seen on the chart, the VOCs reduction is quite significant while the NOx reduction is not so much. The 0.5 ton reduction in NOx is approximately a 2% reduction. By comparison, reviewing the changes in NOx from the previous three analyses (the point immediately to the left of the 2020 vertical line and the two following points), there is an approximate 10% reduction in NOx followed by an approximate 8% increase, and these changes are due to just normal variability in the results of the analyses.

At this point, KIPDA staff wish to make a point that has not been mentioned previously in the discussion. Reviewing the chart and looking at the bigger picture, it should be noted that VMT has gone down while the emissions of NOx have risen significantly. Specifically, the VMT has gone down by about 16.5% while the emissions of NOx have increased by over 50%. KIPDA staff do not claim that the VMT reduction is entirely due to efforts of KIPDA or any other agency. The VMT reductions may be due to a recalibration of the KIPDA travel model. However, this does point out that it is difficult to separate what is actual reduction what is due to the methods used to calculate VMT and emissions.

There are two reasons for making this point. The first reason is to point out that KIPDA staff are in the process of recalibrating the travel model. This means that the results of the analyses presented at this time may change. The recalibration is expected to be finished no earlier than the end of February. The second reason is to provide an idea about what KIPDA can do to decrease emissions versus what part is beyond KIPDA's control. In general, the VMT is what KIPDA can "control." Actually, control is too strong a term. The requirements for the travel model found in section 122 of the Conformity Rule (40 CFR 93, Subpart A) are what really "controls" much of what the travel model provides as results. In that regard, it is probably fair to say that the mixture of projects in the metropolitan transportation plan can directly affect the VMT to some degree, but

that degree is small. There is more about this topic near the end of the comments in the paragraphs concerning the mix of projects in the metropolitan transportation plan. In contrast about the changes in VMT, the emissions are affected not only by the VMT but also by the emission rates (formerly known as emission factors) that are developed as part of the process used in MOVES to develop an emission inventory or which were output directly by MOBILE, when it was the “emissions” (actually the emission factor) model.

To provide an estimate of the relative effects of the two parts of the calculations of the emissions, KIPDA staff relied on the behavior of VMT, which are shown on Chart 1 and calculated the ratio of kg of NO_x to VMT. This second metric is basically a gross overall emission rate. It is similar to the emission factors which were used when MOBILE was the emissions model. (It may be noted that the units of both the emission factors from MOBILE and the ratio of kg of NO_x to VMT are the mass of the pollutant divided by the distance traveled.) It is plotted on Chart 2, otherwise labeled as kg of NO_x/VMT. As can be seen in Chart 2, this ratio has increased significantly (by more than 85% during the 14 years covered by the chart). During the discussion at the IAC meeting last Wednesday, several speakers alluded to the idea that there will be “cleaner” vehicles entering the fleet and reducing the emissions. That is an idea which would seem to make sense. However, KIPDA staff point out that generally “cleaner” vehicles have entered the fleet in the past and should have lowered emissions. Instead, the growth of the ratio of emissions relative to VMT does not reflect that. In fact, the opposite is reflected to a significant degree. While it is not clear why the MOVES model provides these results, it is clear that the reason for that behavior lies generally in the MOVES model. Those members of the IAC who actually run the MOVES model may have a better explanation for why this behavior occurs, but it is clear that the reason that the emissions grew during the 14 years of the data is the growth of the ratio of NO_x to VMT. KIPDA staff ask the question, “If the CAFE standards are improving vehicles (presumably better fuel economy and reduced emissions), why is this ratio increasing rather than decreasing?” Obviously, the turnover of the vehicle fleet does not happen overnight, but shouldn’t the trend of the emission rates be diminishing—or at least staying approximately level—instead of increasing significantly as they have done? Further, if the introduction of “cleaner” vehicles to the fleet have led to higher emission rates in the past, why should the IAC assume that “cleaner” vehicles in the future will not result in higher emission rates in the future? KIPDA staff suggest that the IAC put off making that assumption until there is a longer period of steady emission rates. If the emission rates during the period of this first maintenance SIP show reasonably consistent values over time, then the assumption used in the development of the second maintenance plan can be that a steady of values for emission rates.

Section 2

Having discussed why KIPDA staff believe there is a need for a larger budget and consequently safety margin, this section deals with the issue of what KIPDA might be able to do or not do to deal with the smaller budget. Actually, much of this discussion explains why what KIPDA can do may not be very effective in reducing emissions and why.

Before starting that discussion, there are a few points that need to be made. The primary one is that KIPDA (as an agency) generally cannot be a project sponsor. KIPDA—or actually the Metropolitan Planning Organization (MPO)—has the authority to distribute some funds (generally federal funds). These funds are often referred to as “dedicated” funds because the MPO can determine who receives the funds. There may also be similar funds which are controlled by the state DOTs. These funds include Surface Transportation Block Grant and Transportation Alternative (TA) funds in both states and local Congestion Mitigation / Air Quality funds and Highway Safety Improvement Program (HSIP) funds in Southern Indiana. Most, if not all, of the funds controlled by either the state DOTs or the MPO require a state or local match. This match is provided by the project sponsor, and KIPDA cannot be a project sponsor. This rest of this section is divided into two parts. They are technological changes and behavioral changes, although admitted some of the changes include both technological and behavioral changes. Below are a series of possible changes with a little discussion of each one.

The first set of possible changes are the technological ones. These would include improving vehicle technology, a program to attempt to ensure that vehicles are maintained better, and replacement of the vehicle fleet more quickly.

Improving vehicle technology

The main way that improving technology would be implemented would be through the marketplace. Certainly, improved technology may be available, but it is not something that KIPDA could mandate. The most KIPDA—and more correctly the metropolitan planning organization (MPO)— could do would be to approve federal funding to support the placement of infrastructure, such as charging stations for electric vehicles. As stated above, the project would require a sponsor, who would pay the state/local match. The actual use of such vehicles would be the choice of private citizens and companies. It is the understanding of KIPDA staff that since this would be a voluntary program, there are limits concerning how much credit can be taken for the emission reduction of such projects. KIPDA staff believe that the emission reductions from all voluntary programs that could be counted in the SIP must be limited to 3% of the total projected future year emissions reductions required to attain the appropriate NAAQS. Further, it is also the understanding of KIPDA staff that the fleet mix used in the emission calculations has to be based on what the fleet mix is “at this time” and cannot be based on the estimation of what the fleet will be if the charging stations are implemented.

Program to ensure that vehicles are maintained better

As for a program to ensure that the vehicles are maintained better, that would be something akin to an inspection/ maintenance program. Anyone familiar with the VET program in Jefferson County or the companion program in Southern Indiana knows that those programs were hugely unpopular, and there was state legislation to end them. If they are ever required again, there will be a question about whether that can happen. There was a lawsuit (probably Cunningham vs. Air Pollution Control District of Jefferson County) which will probably have to be revived and resolved. To summarize this approach, given the “unpopularity” along with the normal challenges necessary to implement a program, KIPDA staff doubt that any agency would want to be a project sponsor for this approach.

Programs to quicken the fleet turnover

As for a program to quicken the fleet turnover, that would have its challenges. While there are many air-quality improving projects that can be funded by Congestion Mitigation/Air Quality funding, replacement of private vehicles has been discouraged/prohibited except for commercial fleets normally replacing an old technology with a new one. The main challenge would probably be finding a project sponsor. The sponsor would likely be the owner of the private fleet, which means the program would almost have to be voluntary, which places it within the 3% reduction limit mentioned above.

Limit the areas of development

The second set of possible changes are behavioral ones. Perhaps the most obvious change would be to have some of the more outlying areas zoned to prohibit or limit development and, therefore, keep development in areas where it would be more compact, and trips would be shorter. It is possible that this approach could probably provide some emission reductions if it could be done. Before discussing this further, it should be noted that KIPDA is not a regional planning commission, nor does it provide staff support for one. (This point is being made because it is the understanding of KIPDA staff that several of the MPO agencies in Indiana are a regional planning commission or provide support for one.) The challenge in undertaking this approach relates to a Supreme Court decision involving the property adjacent to the Bull Run/Manassas Junction battlefield. The local planning commission or historic preservation commission had “zoned” it to have little or no development. The property owner sued, and the case eventually went to the Supreme Court. The high court ruled the planning commission’s or historic preservation commission’s “zoning” represented a taking. That is, it diminished the value of the property. The ruling indicated that the commission had to compensate the property owner for the loss of value of the property. KIPDA staff suggest that what this mean is that the local planning commissions would have pay a property owner to not develop her/his land which means the tax revenue from that land would be less. Stated more simply, the planning commission and/or local

jurisdiction would have to spend money to collect less tax money than would be collected if they did nothing. The bottom line is that this approach is not one likely to be adopted by a local jurisdiction, and KIPDA cannot does not the power to force them to do so. Given the financial ramifications of a program like this, KIPDA staff expect that attempting to get an agency to adopt practices like those necessary to do this would be about as popular as operating an inspection/maintenance even without the legal challenges.

Ridesharing and Transit Use

The other possible behavioral programs are generally ones which would encourage an increase in some form of ridesharing (carpooling, vanpooling, riding of transit, etc.) Given the COVID situation, it is unlikely that the use of ride sharing will increase in the near future. In fact, it is more likely that the operators of ridesharing and transit programs will have to work hard to not lose market share. Once again, the 3% reduction limit would apply to the behavioral approaches. In summary, the emission reductions due to behavioral changes are not likely to produce a significant reduction in emissions. In some cases, there could be a project which changes technology and also attempts to change behavior at the same time. An example of this might be implementation of an advanced transit facility such as a rail transit system. This could provide some degree of emission reductions, but they still may be limited. For example, TARC, the local transit authority, proposed an advanced transit system several years. During the project, some members of KIPDA staff worked with the project's consultant concerning modeling, etc. During the interactions with those consultants, KIPDA staff learned that the additional ridership of advanced transit often came from riders who drove to park-n-ride lots located at the stations of the advanced transit rather than those walked to the station. This means that the air quality benefits may not be as great as they would appear based on increased ridership. However, as it turned out, the real challenge was in the financing. As mentioned previously, TARC actually proposed an advanced transit (light rail) system and was attempting to develop the first line through FTA's New Starts program. However, FTA required that TARC have a more robust local dedicated funding source. When FTA found out that that the funding source had not been secured, they insisted that the light rail system be removed from the local MTP.

Changing the mix of projects in the metropolitan transportation plan

Saving the best—or at least the most obvious—for last, there is the possibility of changing the mix of projects in the metropolitan transportation plan (MTP). Generally, it is difficult to comment on this possibility because it is difficult to determine the emission reductions or increases due to individual projects. For this reason, KIPDA staff have rarely done so. However, during the late 1990's, there was uncertainty about the Louisville Bridges Project, which was then finishing the major investment study phase and moving to the environmental impact statement phase. For a short while, the conformity determinations for the updates/amendments of the MTP (at that time known

as the Long-Range Plan) were done for the three options under consideration for the Bridges Project. Since the baseline-action test was being used at that time, the baseline scenario probably included the option without the Bridges Project. If memory serves, the NOx emission reductions for any of the Bridges Project options were about 10 to 15 kg per day out of approximately 53,000 kg per day. The Bridges Project was probably the one project which, at the time, had the largest impact on transportation in the Louisville area, but it can be seen how relatively small the emissions impact was. There is one point that should be made concerning the efforts of KIPDA staff to estimate emission reductions/increases of single or a small of projects. In the early 1990's (during the pre-conformity rule days), KIPDA was instructed to perform the air quality for the Transportation Improvement Program in a certain way. The result was that the air quality analysis failed. When KIPDA staff attempted to determine the emission increases of individual projects, those were all small, but some were found. Unfortunately, when several of those projects were all removed at the same time, the emission reduction of removing them all did not equal the sum of the emission reductions of removing them individually. Apparently, emission reductions from individual projects are not additive.

Summary of comments

What has been presented in a tremendous amount of information. KIPDA staff decide to provide all of this because it would obviously not to be possible to do so at a "zoom" meeting. To summarize the key points that we wish to express include the following:

- (1) The travel model is undergoing recalibration; so what has been the results of the analyses in the past may not be the same as they are at present. KIPDA staff do not expect the base year to change much, but the rate of growth may change.
- (2) There is a significant amount of analysis and discussion of that analysis included in these comments. It is intended to provide the IAC with reasons to rethink the proposed budgets.
- (3) KIPDA staff believe there is adequate evidence in these comments to support a reconsideration of what has been proposed and reach a consensus rather than a majority decision, which seems to be the way things are heading.
- (4) Although somewhat implied, the decision as to the final course of action will likely be made based on the degree of risk that one is willing to accept. KIPDA cannot afford a great risk because we are the ones who will likely "get the black eye" if the budget(s) are too tight and this causes a conformity failure.

Since KIPDA staff have obviously had a lot to say, allow us to offer a proposed alternative approach. We believe EPA, Region 5 mentioned that Wisconsin used an approach where a worst-case scenario was developed, and a smaller safety margin was used. KIPDA staff would like for the IAC to discuss and consider that approach to see if there is some "middle ground."

Appendix K
Response to ICG Comments prepared by the Division, the
District, and IDEM

DRAFT

Response of State Implementation Plan (SIP) authorities¹ to comments on motor vehicle emissions budgets (MVEBs) proposed to the Louisville KY-IN Interagency Consultation Group (ICG)

On January 12, 2022, as part of the process of developing a request to redesignate the Louisville KY-IN 2015 ozone national ambient air quality standard (NAAQS) marginal nonattainment area to attainment, the SIP authorities proposed motor vehicle emissions budgets to be contained in the associated maintenance plan to the ICG. Budgets were proposed for 2019, at the level of modeled onroad emissions for that year, and for 2035 at 15% over projected 2035 onroad emissions, as shown in the below table.

Total Louisville, KY-IN Nonattainment Area 2015 8-Hour Ozone Nonattainment Area Highway Mobile Emissions Budgets with Safety Margins (TPSD)

	2019 Estimated Emissions	2035 Estimated Emissions	2035 Mobile Safety Margin Allocation*	2035 Total Mobile Budget
VOC (TPOSD)	13.65	4.79	0.72	5.51
NOx (TPOSD)	33.03	14.94	2.24	17.18
VMT (miles/day)	33,186,821	39,006,172	-	-

Comments were requested in writing by January 21, 2022. One set of comments was received, from the Kentuckiana Regional Planning & Development Agency (KIPDA), the metropolitan planning organization (MPO) for the area. A follow-up meeting of the ICG was held February 10, 2022, to discuss KIPDA's comments. This document is the response of the SIP authorities to those comments.

KIPDA's comments were divided into two parts. "The first section involves matters related to the metrics of VMT and emission levels. The second section involves a qualitative discussion of the feasibility of various approaches that might be used by KIPDA and other agencies to meet the proposed budget if KIPDA staff cannot convince that there is objective evidence that the budget should be larger than what has been proposed." KIPDA's comments focus on emissions estimates

¹ The State of Indiana, through the Indiana Department of Environmental Management (IDEM), and the Commonwealth of Kentucky, through the Energy and Environment Cabinet (EEC), Division for Air Quality (DAQ) are the authorities responsible for submitting State Implementation Plans (SIPs) to the U.S. Environmental Protection Agency (EPA) for the Louisville KY-IN marginal ozone nonattainment area. The Louisville Metro Air Pollution Control District (APCD), through memorandums of understanding (MOUs) with DAQ and the Kentuckiana Regional Planning & Development Agency (KIPDA) maintains authority for developing SIPs and motor vehicle emissions estimates and budgets for Jefferson County, KY. As used in this document, the term "SIP authorities" refers to IDEM, DAQ, and APCD collectively.

of nitrogen oxides (NO_x), for several reasons, the most important of which for the SIP authorities is the fact that ozone formation in the area is generally NO_x-limited.²

Regarding the first section, KIPDA's comment observes that despite steady or declining vehicle miles travelled (VMT) estimates for a given year (2020), various modeling has shown increased emissions of NO_x from onroad sources in the area. This variability in the modeling results gives KIPDA reason to believe that overly conservative budgets could cause conformity failure at some point in the future despite no real-world increase in NO_x emissions.

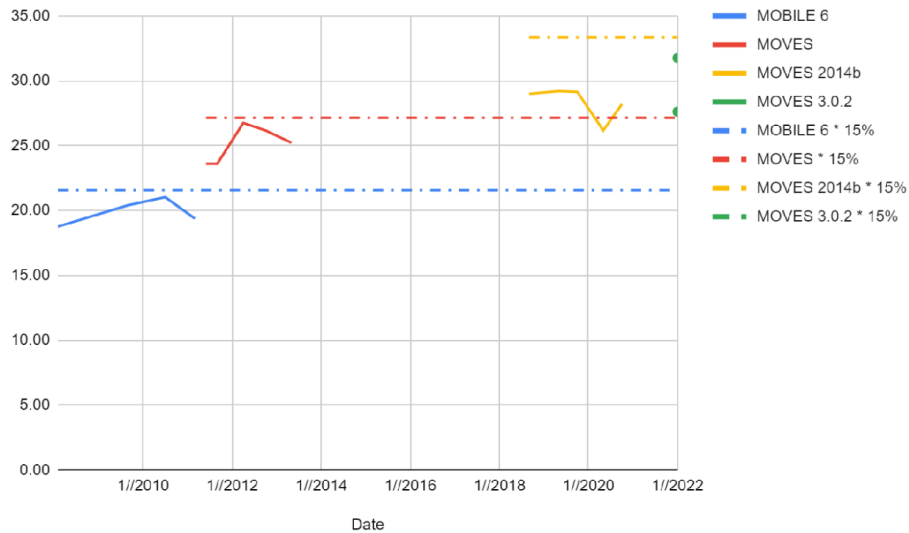
As noted by KIPDA, much of the variability in emissions estimates seems to be due to changes in the emissions model required to be used by EPA, currently MOVES3. The SIP authorities are required to use the model designated by EPA.³ As noted in EPA's Notice of Availability announcing MOVES3, "[t]he model is based on analyses of millions of emission test results and considerable advances in the Agency's understanding of vehicle emissions."⁴ Each step in the evolution of EPA's mobile modeling technology represents an improvement in emissions estimations, further improving accuracy – thus, NO_x emissions were in fact projected to be higher than originally thought. This is not necessarily always going to be the case in changes to EPA's required model.

KIPDA's Chart 1, presented in the spreadsheet accompanying their comments, shows the different projections of 2020 emissions modeled at different points in time, as well as projected VMT for 2020 at different points in time. The chart below presents the same data for NO_x emissions for 2020 as KIPDA's Chart 1, but adds lines connecting the different projections modeled using the same emissions model. It further adds dotted lines showing a 15% margin above the initial emissions projection from each emissions model.

² See, e.g., Ramboll Corporation, *Ozone Formation Study: Model Performance Evaluation and NO_x/VOC Sensitivity*, prepared for the APCD, November 2019, available at *Ozone Formation Study: Model Performance Evaluation and NO_x/VOC Sensitivity*.

³ [86 FR 1106](#) at 1107-08.

⁴ *Id.* At 1107.



In each instance, that data presented by KIPDA shows that in fact, absent a model change, an allocation of 15% margin above modeled emissions has consistently been sufficient to account for variability in modeled projections.

When releasing a new mobile emissions model, EPA, in consultation with the Department of Transportation (DOT), sets a grace period of between three and twenty-four months before it is required to be used for conformity purposes.⁵ In determining how long the grace period should be EPA considers the impact of the changes made by the model on emissions estimates and potential disruption to transportation planning. As stated in the preamble to the 1993 transportation conformity rule:

EPA and DOT will consider extending the grace period if the effects of the new emissions model are so significant that previous SIP demonstrations of what emission levels are consistent with attainment would be substantially affected. In such cases, States should have an opportunity to revise their SIPs before MPOs must use the model's new emissions factors.⁶

Regarding SIP changes, the SIP authorities also note that this submission includes the first maintenance plan for the area, which is required to cover a minimum 10 year horizon from redesignation.⁷ A second maintenance plan, with a further 10-year horizon is required to be

⁵ [40 C.F.R. §93.111\(b\)\(1\)](#).

⁶ EPA, *Air Quality: Transportation Plans, Programs, and Projects; Federal or State Implementation Plan Conformity*; Rule [58 FR 62187](#) (Nov. 24, 1993).

⁷ [Clean Air Act \(CAA\) §175A\(a\)](#).

submitted within 8 years of redesignation.⁸ Any new model or inputs would be taken into account in setting (or re-setting) budgets in that submission. The current span of time since previous budgets were set has been abnormally extended due to EPA's decision to revoke the 1997 ozone standard after the area was redesignated to attainment,⁹ and the U.S. Circuit Court of Appeals decision to vacate EPA's revocation with regards to the requirements for a second maintenance plan and continued transportation conformity.¹⁰ In addition, as alluded to in the 1993 preamble to the conformity rule quoted above, changes in EPA's regulatory model are potential cause for earlier SIP revisions to the budgets should they be necessary.¹¹

KIPDA also states that "[t]he requirements for the travel model found in section 122 of the Conformity Rule (40 CFR 93, Subpart A) are what really 'controls' much of what the travel model provides as results. In that regard, it is probably fair to say that the mixture of projects in the metropolitan transportation plan can directly affect the VMT to some degree, but that degree is small."

In response, the SIP authorities point out that comments on the requirements of the Conformity Rule are beyond the scope of their authority and should be directed to the EPA. However, as pointed out by representatives from EPA and the Federal Highways Administration (FHWA) during the February 10, 2022 ICG meeting, the purpose of conformity is to ensure that transportation development projects don't "run away" without consideration of air quality. It is, at a minimum, a chance to pause and ensure that continued improvements in air quality are considered.

This also relates to KIPDA's second comment, where KIPDA "explains why what KIPDA can do may not be very effective in reducing emissions and why." The SIP authorities cannot dispute what is within or without KIPDA's specific authority or ability to control regarding transportation planning. They note, instead, that they are themselves generally without any authority to control air pollutant emissions from motor vehicles. Generally, under the Clean Air Act, the SIP authorities are delegated authority over a variety of matters, almost all of which pertain to regulation of stationary sources. They may implement 40 C.F.R. §52.21, *Prevention of significant deterioration of air quality* (PSD); 40 C.F.R. Part 61, *Standards of Performance for New Stationary Sources* ("New Source Performance Standards" or NSPS); 40 C.F.R. Part 63, *National Emission Standards for Hazardous Air Pollutants for Source Categories* (NESHAP), and 40 C.F.R. Part 70, *State Operating Permit Programs* (also known as "Title V" for the related portion of the Clean Air Act); or their state/local rules relating to each. But neither IDEM, DAQ, or the APCD have extensive authority to regulate tailpipe emissions. Setting MVEBs, therefore, is the primary opportunity for the SIP authorities "to protect the integrity of the implementation plan by ensuring that its growth protections are not exceeded without additional measures to counterbalance the excess growth, that progress targets are achieved and that air quality maintenance efforts are not undermined," as EPA explained the purpose of conformity in its Conformity Rule.¹²

Finally, the SIP authorities note that while KIPDA proposed in its comments that an alternative approach would be to consider a "worst-case scenario," no specific numbers for such a worst-case

⁸ CAA §175A(b).

⁹ [80 FR 12263](#).

¹⁰ *South Coast Air Quality Management District v. EPA*, 882 F.3d 1138 (D.C. Cir. 2018), ("*South Coast II*").

¹¹ *Supra*, note 6, [58 FR 62187](#).

¹² *Supra*, note 6, [at 62190](#).

scenario were offered. Absent a specific alternative, and after consideration of KIPDA's comments and data presented, as well as the other documents cited in this response, the SIP authorities consider the 15% margin over projected emissions to be an adequate motor vehicle emissions budget for the maintenance year of 2035, balancing such worst-case possibilities for model uncertainty and expected future growth with the need for continued air quality improvements.

Appendix L
Public Notice

DRAFT

**KENTUCKY DIVISION FOR AIR QUALITY
PUBLIC NOTICE FOR
REQUEST TO REDESIGNATE THE KENTUCKY COUNTIES LOCATED WITHIN
THE LOUISVILLE, KY-IN 2015 8-HOUR OZONE NONATTAINMENT AREA**

The Kentucky Energy and Environment Cabinet (Cabinet) is proposing a redesignation request for the Kentucky counties located in the Louisville, KY-IN 2015 8-hour O₃ Nonattainment Area. On August 3, 2018, the United States Environmental Protection Agency (EPA) designated the Kentucky counties of Bullitt, Jefferson, and Oldham, and the Indiana counties of Clark and Floyd as marginal nonattainment for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS). The draft SIP revision proposes that the Louisville, KY-IN 2015 8-hour ozone nonattainment area be redesignated to attainment, due to improved air quality and attainment and maintenance of the ozone NAAQS.

In accordance with 40 CFR 51.102, the Cabinet is making this proposed plan available for public inspection and provides the opportunity for public comment regarding Bullitt and Oldham counties. The proposed plan can be found at <https://eec.ky.gov/Environmental-Protection/Air/Pages/Public-Notices.aspx>. The public comment period will be open from June 21, 2022 through July 27, 2022. Comments should be submitted in writing to the contact person by either mail or email. The Louisville Metro Air Pollution Control District is also providing the opportunity for public comment regarding Jefferson County. The Jefferson County Public Notice can be found at <https://louisvilleky.gov/government/air-pollution-control-district/services/proposed-actions-apcd>.

The Cabinet will conduct a virtual public hearing on July 27, 2022, at 10:00 a.m. (Eastern Time). This hearing will be held to receive comments on the proposed redesignation request. This hearing is open to the public and all interested persons will be given the opportunity to present testimony. To assure that all comments are accurately recorded, the Division requests that oral comments presented at the hearing are also provided in written form, if possible. It is not necessary that the hearing be held or attended in order for persons to comment on the proposed administrative regulation. If no request for a public hearing is received by July 20, 2022, the hearing will be cancelled, and notice of the cancellation will be posted at <https://eec.ky.gov/Environmental-Protection/Air/Pages/Public-Notices.aspx>. Written comments should be sent to the contact person and must be received by July 19, 2022, to be considered part of the public record.

Please note that registration is required to participate in this hearing. You must either email your name and mailing address to ashlee.smither@ky.gov or mail this information to Ashlee Smither, Division for Air Quality, 300 Sower Building, 2nd Floor, Frankfort, KY 40601. Please put "Registration for Louisville, KY-IN Redesignation Request Public Hearing" as the subject line, and state in the body of the message if you plan to speak during the hearing.
CONTACT PERSON: Ashlee Smither, Environmental Scientist III, Evaluation Section, Division for Air Quality, 300 Sower Boulevard, Frankfort, Kentucky 40601. Phone: (502) 782-4716; Email: ashlee.smither@ky.gov.

The Energy and Environment Cabinet does not discriminate on the basis of race, color, national origin, sex, age, religion or disability and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in all services, programs and activities.

DRAFT

Appendix M
Monitoring Data

DRAFT



ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

**ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

November 18, 2021

Ms. Caroline Y. Freeman, Director
Air and Radiation Division
US EPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303

Dear Ms. Freeman:

Pursuant to 40 CFR 58.15, each air monitoring agency must certify the previous year of AQS-submitted data as accurate by May 1 of the following year. The Kentucky Division for Air Quality (Division) is respectfully submitting 2021 ozone pollutant data collected at four sites for early certification. The data for which certification is requested are outlined below, as well as on the attached AQS-generated AMP600 report:

- Hourly-averaged ozone data (parameter code 44201)
 - NKU: 21-037-3002
 - East Bend: 21-015-0003
 - Shepherdsville: 21-029-0006
 - Buckner: 21-185-0004

I hereby certify that the ambient concentration data and the quality assurance data are completely submitted to AQS. I also certify that, to the best of my knowledge, the ambient air concentration data are accurate, taking into consideration the quality assurance findings.

If there are any questions or concerns, please contact Ms. Jenna Nall, Environmental Scientist with our Technical Services Branch, at (502) 782-7353.

Sincerely,

Melissa Duff,
Director

MKD/jfm
Enclosures

Ms. Caroline Freeman
November 18, 2021
Page 2 of 2

Electronic Copy:

- Daniel Garver, USEPA Region 4
- Anthony Bedel, USEPA Region 4
- Rachael Hamilton, LMAPCD
- Holly Kaloz, OH EPA
- Leslie Poff, KDAQ



**AIR POLLUTION CONTROL DISTRICT
LOUISVILLE, KENTUCKY**

GREG FISCHER
MAYOR

RACHAEL A. HAMILTON
DIRECTOR

January 21, 2022

Caroline Y. Freeman, Director
Air and Radiation Division
US EPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth St., SW
Atlanta, GA 30303

Re: Request for Early Certification of 2021 Ozone Data

Dear Ms. Freeman:


On January 7, 2021, the Louisville Metro Air Pollution Control District (LMAPCD) requested that ozone data from March 1, 2021, through October 31, 2021 at the following LMAPCD ozone monitoring sites be considered for early certification:

- Cannons Ln (21-111-0067)
- Carrithers (21-111-0080)
- Watson Ln (21-111-0051)

Please note that the operating schedules for these monitors differ in accordance with 40 CFR Part 58. The Carrithers and Watson monitors only operate during the prescribed ozone season, while Cannons Ln operates year-round (January-December) as an NCore sited monitor.

The LMAPCD now has completed review of all 2021 ozone data and respectfully requests these data to be considered for early certification. This data set includes ozone data for Cannons Lane acquired outside of the ozone season, i.e., January – February 2021 and November – December 2021. The ambient concentration data and the quality assurance data have been reviewed and completely submitted to AQS. Taking into consideration the quality assurance findings, the ambient data are accurate to the best of my knowledge. Attached is the AQS report AMP600 that list the data to be certified. If you have any questions, please feel free to contact me at 502-574-7274.

Sincerely,

DocuSigned by:

Billy DeWitt, QAO

Air Monitoring Program Manager

WWW.LOUISVILLEKY.GOV

WWW.LOUISVILLEKY.GOV/APCD 701 WEST ORMSBY AVENUE, SUITE 303 LOUISVILLE, KENTUCKY 40203

User ID: BNE

CERTIFICATION EVALUATION AND CONCURRENCE

Report Request ID: 1985397

Report Code: AMP600

Jan. 21, 2022

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	21	111									

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	44201		

SELECTED OPTIONS

Option Type	Option Value
MERGE PDF FILES	YES
AGENCY ROLE	CERTIFYING

DATE CRITERIA

Start Date	End Date
2021	2021

Evaluation and Concurrence Report Summary

Certification Year: 2021

Certifying Agency (CA): Louisville, KY Metro Air Pollution Control District (0549)

Pollutants in Report:

<u>Parameter Name</u>	<u>Code</u>	<u>Monitors Evaluated</u>	<u>Monitors Recommended for Concurrence by AQS</u>	<u>Monitors NOT Recommended for Concurrence by AQS</u>
Ozone	44201	3	3	0

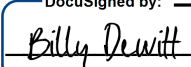
PQAOs in Report:

<u>PQAO Name</u>	<u>PQAO Code</u>	<u>TSA Date</u>
Louisville, KY Metro Air Pollution Control District	0549	04/20/21

Summary of 'N' flags for all pollutants:

<u>Parameter</u>	<u>AQS Recommended</u>	<u>Cert. Agency Recommended</u>	<u>AQS Site-ID</u>	<u>POC</u>	<u>Flag</u>	<u>Reason for AQS Recommendation</u>

Signature of Monitoring Organization Representative:

DocuSigned by: Flag

 2975D369BD13470...

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Louisville, KY Metro Air Pollution Control District (0549)
Parameter Ozone (44201) (ppm)

PQAO Name Louisville, KY Metro Air Pollution Control District (0549)
QAPP Approval Date 04/30/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
1	6.03612	Y

AQS Site ID	POC Monitor Type	Routine Data						One Point Quality Check			Annual PE		NPAP		Concur. Flag			
		Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
21-111-0051	1 SLAMS	0.046	0.019	0.086	0	0	97	3.36	+/-2.73	94	4.03	100		Y	Y	Y	Y	Y
Submitter Comment Early certification for ozone season data																		
21-111-0067	1 SLAMS	0.044	0.015	0.089	0	0	99	2.95	+/-2.62	100	0.93	100	6.04	Y	Y	Y	Y	S
Submitter Comment CLAMS ozone data certified a second time following submittal of remaining 2021 ambient and QA/QC data and performing associated data review procedures		EPA Comment: EPA concurs with certification of Jan-Oct 2021 ozone data. LMAPCD will submit an updated certification in the coming weeks that includes certification of the Nov-Dec 2021 data.																
21-111-0080	1 SLAMS	0.048	0.016	0.086	0	0	92	1.80	+/-1.46	100	2.47	100		Y	Y	Y	Y	Y
Submitter Comment Early certification for ozone season data																		

Data Evaluation and Concurrence Report for Particulate Matter

Data Concurrence and Evaluation Report for Lead

User ID: JNALL

DESIGN VALUE REPORT

Report Request ID: 1977725

Report Code: AMP480

Dec. 15, 2021

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	21	029									
	21	185									

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
DESIGN VALUE	44201		

SELECTED OPTIONS

Option Type	Option Value
WORKFILE DELIMITER	,
SINGLE EVENT PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
QUARTERLY DATA IN WORKFILE	NO
AGENCY ROLE	PQAO
USER SITE METADATA	STREET ADDRESS
MERGE PDF FILES	YES
USE LINKED SITES	YES

DATE CRITERIA

Start Date	End Date
2019	2021

APPLICABLE STANDARDS

Standard Description
Ozone 8-hour 2015

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 15, 2021

Pollutant: Ozone(44201)

Standard Units: Parts per million(007)

NAAQS Standard: Ozone 8-hour 2015

Statistic: Annual 4th Maximum **Level:** .07

Design Value Year: 2019

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State: Kentucky

Site ID	Poc STREET ADDRESS	2019				2018				2017				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Percent Complete	Design Value	D. V. Validity
21-029-0006	SECOND & CARPENTER STREETS	241	98	.063	Y	230	94	.068	S	232	95	.063	Y	96	.064	Y
21-185-0004	KYTC MAINTENANCE FACILITY, 1601 SOUTH HWY 393	241	98	.065	Y	242	99	.069	S	236	96	.064	Y	98	.066	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 15, 2021

Pollutant: Ozone(44201)
Standard Units: Parts per million(007)
NAAQS Standard: Ozone 8-hour 2015

Design Value Year: 2020

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

Statistic: Annual 4th Maximum **Level:** .07

State: Kentucky

Site ID	Poc STREET ADDRESS	2020				2019				2018				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Percent Complete	Design Value	D. V. Validity
21-029-0006	SECOND & CARPENTER STREETS	237	97	.065	Y	241	98	.063	Y	230	94	.068	S	96	.065	Y
21-185-0004	KYTC MAINTENANCE FACILITY, 1601 SOUTH HWY 393	237	97	.061	Y	241	98	.065	Y	242	99	.069	S	98	.065	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
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 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 15, 2021

Pollutant: Ozone(44201)

Standard Units: Parts per million(007)

NAAQS Standard: Ozone 8-hour 2015

Statistic: Annual 4th Maximum **Level:** .07

Design Value Year: 2021

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State: Kentucky

Site ID	Poc STREET ADDRESS	2021				2020				2019				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Percent Complete	Design Value	D. V. Validity
21-029-0006	SECOND & CARPENTER STREETS	233	95	.065	Y	237	97	.065	Y	241	98	.063	Y	97	.064	Y
21-185-0004	KYTC MAINTENANCE FACILITY, 1601 SOUTH HWY 393	242	99	.065	Y	237	97	.061	Y	241	98	.065	Y	98	.063	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 15, 2021

CERTIFICATION EVALUATION AND CONCURRENCE FLAG MEANINGS

FLAG	MEANING
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP255 report or the certification and quality assurance report.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
X	Certification is not required by 40 CFR 58.15 and no conditions apply to be the basis for assigning another flag value
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

User ID: BNE

DESIGN VALUE REPORT

Report Request ID: 1985238

Report Code: AMP480

Jan. 21, 2022

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
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31140

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
DESIGN VALUE			44201

SELECTED OPTIONS

Option Type	Option Value
SINGLE EVENT PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
MERGE PDF FILES	YES
AGENCY ROLE	PQAO
USER SITE METADATA	STREET ADDRESS
QUARTERLY DATA IN WORKFILE	NO
WORKFILE DELIMITER	,
USE LINKED SITES	YES

DATE CRITERIA

Start Date	End Date
2021	2021

APPLICABLE STANDARDS

Standard Description
Ozone 8-hour 2015

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Jan. 21, 2022

Pollutant: Ozone(44201)

Standard Units: Parts per million(007)

NAAQS Standard: Ozone 8-hour 2015

Statistic: Annual 4th Maximum Level: .07

Design Value Year: 2021

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State: Indiana

Site ID	Poc STREET ADDRESS	2021				2020				2019				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Percent Complete	Design Value	D. V. Validity
18-019-0008	12500 St. Rd. 62- Charlestown State Park/ Indiana Armory	245	100	.063	M	240	98	.062	Y	244	100	.064	Y	99	.063	Y
18-043-1004	2230 GREEN VALLEY ROAD/GREEN VALLEY ELEMENTARY SCHOOL	244	100	.064	M	244	100	.066	Y	240	98	.063	Y	99	.064	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Jan. 21, 2022

Pollutant: Ozone(44201)

Standard Units: Parts per million(007)

NAAQS Standard: Ozone 8-hour 2015

Statistic: Annual 4th Maximum **Level:** .07

Design Value Year: 2021

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State: Kentucky

Site ID	Poc STREET ADDRESS	2021				2020				2019				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Valid Days	Percent Complete	4th Max	Cert& Eval	Percent Complete	Design Value	D. V. Validity
21-029-0006	SECOND & CARPENTER STREETS	233	95	.065	Y	237	97	.065	Y	241	98	.063	Y	97	.064	Y
21-111-0051	7201 WATSON LN, WATSON LN ELEMENTARY SCH	240	98	.067	Y	244	100	.063	Y	244	100	.065	Y	99	.065	Y
21-111-0067	2730 CANNONS LANE, BOWMAN FIELD	363	99	.069	M	363	99	.071	Y	358	98	.068	Y	99	.069	Y
21-111-0080	4320 Billtown Road	224	91	.073	Y	242	99	.068	Y	236	96	.064	Y	95	.068	Y
21-185-0004	KYTC MAINTENANCE FACILITY, 1601 SOUTH HWY 393	242	99	.065	Y	237	97	.061	Y	241	98	.065	Y	98	.063	Y

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Jan. 21, 2022

CERTIFICATION EVALUATION AND CONCURRENCE FLAG MEANINGS

FLAG	MEANING
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP255 report or the certification and quality assurance report.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
X	Certification is not required by 40 CFR 58.15 and no conditions apply to be the basis for assigning another flag value
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
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