

# **Indiana Department of Environmental Management**



## ***Report Responsive to Senate Enrolled Act 103***

**December 31, 2025**

## Background

[Senate Enrolled Act 103](#) (SEA 103) was passed by the Indiana General Assembly in April 2025 and signed by Governor Braun on May 6, 2025. SEA 103 requires the following of the Indiana Department of Environmental Management (IDEM):

*Not later than December 31, 2025, the department shall do the following:*

- (1) Perform a comprehensive evaluation of ambient air quality within any nonattainment areas in Indiana.*
- (2) Identify air pollution reduction or regulatory relief strategies that can do the following with respect to the federal Clean Air Act (42 U.S.C. 7401 et seq.), as amended by the federal Clean Air Act Amendments of 1990 (P.L. 101-549):*
  - (A) Ensure that affected areas within Indiana are no longer designated as nonattainment.*
  - (B) Result in the eventual phase out of the inspection and maintenance program for light duty vehicles.*
  - (C) Meet emissions goals.*
  - (D) Appropriately address air pollution contributions to nonattainment areas in Indiana from sources that cannot be addressed by state or local controls, including contributions from international, natural or background, interstate, mobile, and stationary sources as well as exceptional events that are unlikely to recur.*
  - (E) Result in the withdrawal of Lake County and Porter County from the Metropolitan Chicago Interstate Air Quality Control Region.*

*In identifying strategies under subdivision (2), the department must coordinate with the United States Environmental Protection Agency.*

This report outlines the work that IDEM has conducted over the course of 2025 to address the directives of SEA 103.

## What is Ground Level Ozone?

Ozone is a colorless gas made up of three oxygen atoms. Ozone is not emitted directly into the air but is formed through chemical reactions between natural and man-made emissions of nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the presence of sunlight. These gaseous compounds, referred to as ozone precursors, mix in the ambient, or outdoor, air, and when they interact with sunlight, ozone is formed. Ozone can be split into two major types: good Stratospheric Ozone (because it helps block harmful ultraviolet rays) and bad Ground-Level Ozone (because it triggers health effects). On hot sunny days, ground-level ozone can build to unhealthy levels and be harmful to sensitive people.

## **2015 8-Hour Ozone Standard**

The current 8-hour ozone standard was set by the United States Environmental Protection Agency (U.S. EPA) in 2015 at 0.070 parts per million (ppm) (also expressed as 70 parts per billion (ppb)), with both primary (health) and secondary (welfare) standards set at this level, based on the 3-year average of the annual fourth-highest daily maximum 8-hour concentration to protect public health and welfare from harmful ground-level ozone. An area is determined to be attaining both the 2015 primary and secondary 8-hour ozone NAAQS when the annual fourth-highest daily maximum average concentration, averaged over three consecutive years, does not exceed 0.070 ppm. The first three highest values from each ozone season are excluded from monitor value calculations, and only the fourth highest value is used for averaging purposes. The three-year average of the annual fourth-highest daily maximum average concentration is called the **design value**. Where two or more monitors are located within the same area, the monitor with the highest design value (the controlling monitor) is used for the air quality designation. Monitor design values are calculated at the end of each ozone season once all the data from Indiana's monitoring network has been quality assured. The ozone monitoring season for Indiana is defined by U.S. EPA as March 1<sup>st</sup> through October 31<sup>st</sup>.

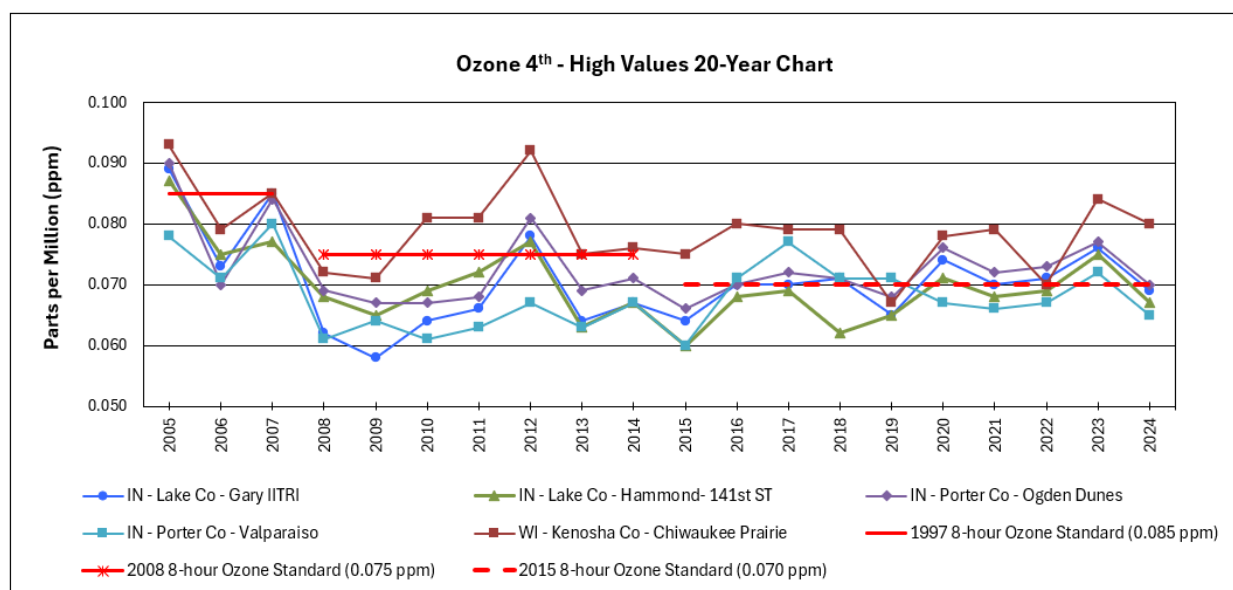
## **Designation and Reclassification History Under the 2015 8-Hour Ozone Standard**

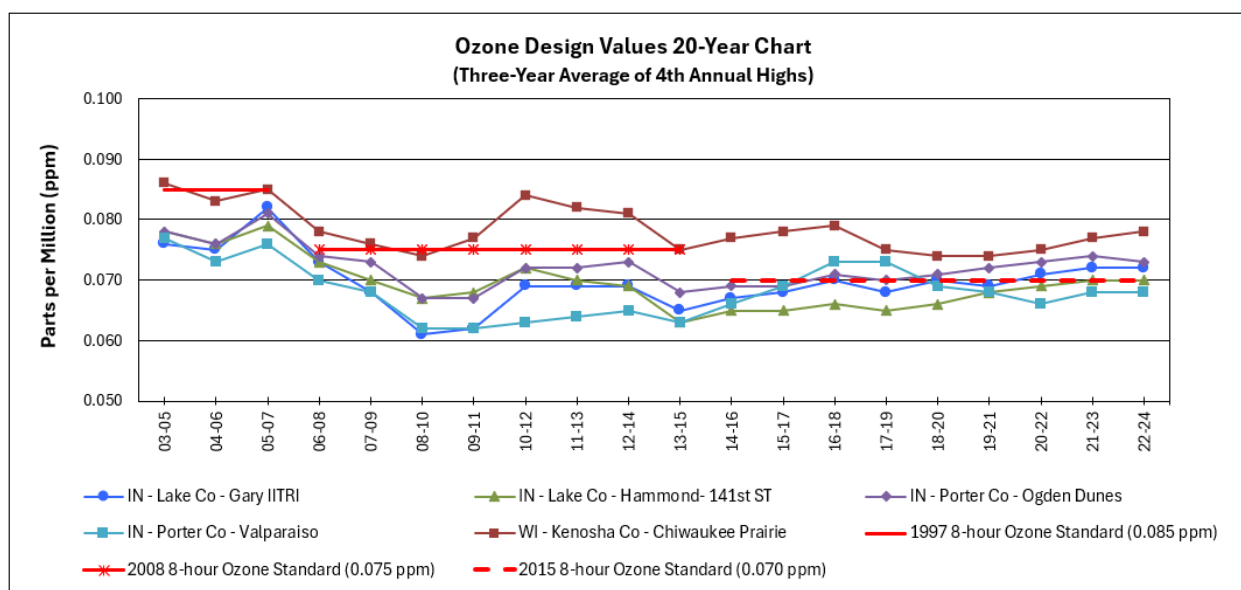
Portions of Lake and Porter counties are the only areas in Indiana to be classified as nonattainment under any of the [National Ambient Air Quality Standards](#) (NAAQS). The affected portion of Lake County was first designated nonattainment under the 2015 ozone standard on August 3, 2018. The affected portion of Porter County was designated nonattainment on July 14, 2021. Both portions of the counties are classified as part of the Chicago, IL-IN-WI Nonattainment Area, which includes portions of Illinois, Indiana, and Wisconsin. The table below outlines the effective dates associated with designations and reclassifications for partial Lake and Porter counties, as well as the attainment deadlines and state implementation plan (SIP) due dates.

Date	Action	Classification	Attainment Deadline	Attainment SIP Due Date
8 / 3 / 2018 (effective)	Partial Lake County Nonattainment Designation	Marginal	8 / 3 / 2021	No plan due for marginal.
7 / 14 / 2021 (effective)	Partial Porter County Nonattainment Designation	Marginal	8 / 3 / 2021	No plan due for marginal.
11 / 7 / 2022 (effective)	Partial Lake/Porter Nonattainment Designation	Moderate	8 / 3 / 2024	1 / 1 / 2023
1 / 16 / 2025 (effective)	Partial Lake/Porter Nonattainment Designation	Serious	8 / 3 / 2027	1 / 1 / 2026
1 / 1 / 2028 (estimate)	Partial Lake/Porter Nonattainment Designation	Severe - 15	8 / 3 / 2033	1 / 1 / 2032 (estimate)

## Ozone Air Quality Trends

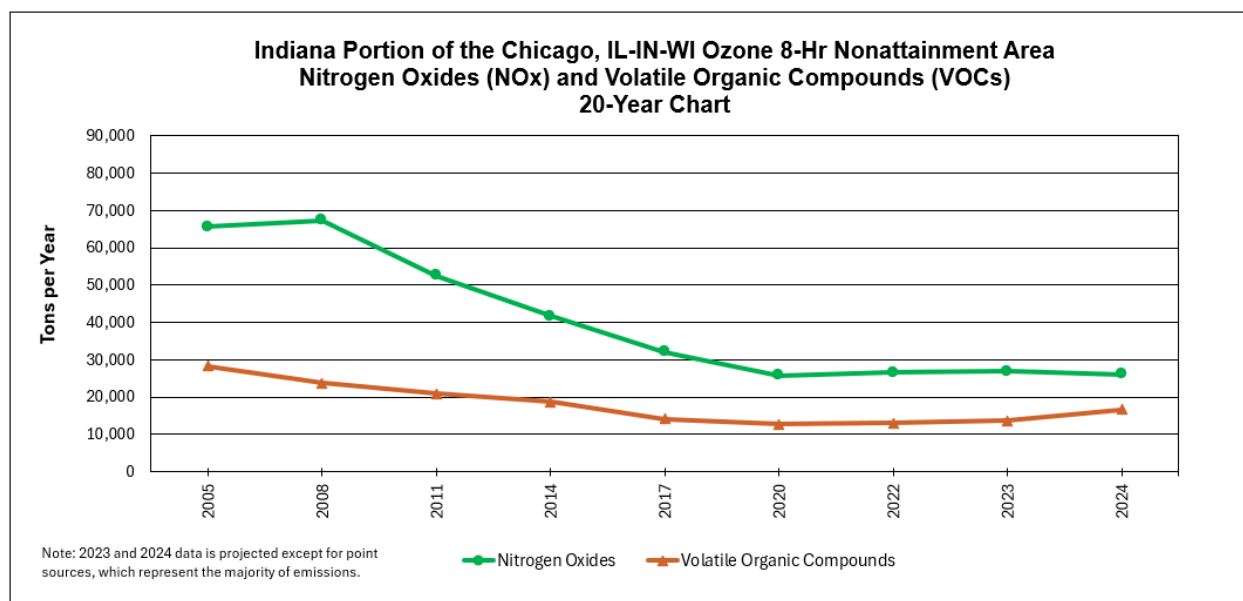
The charts below represent the annual fourth-highest values for 2005-2024 and the three-year design values for 2003-2005 through 2022-2024 for the four active monitoring sites in Lake and Porter counties, as well as the Chiwaukee Prairie monitor in Kenosha County, WI, which is the highest recording monitor in the Chicago, IL-IN-WI ozone nonattainment area. The charts indicate a relatively flat trend in ambient ground-level ozone for the 20-year period.



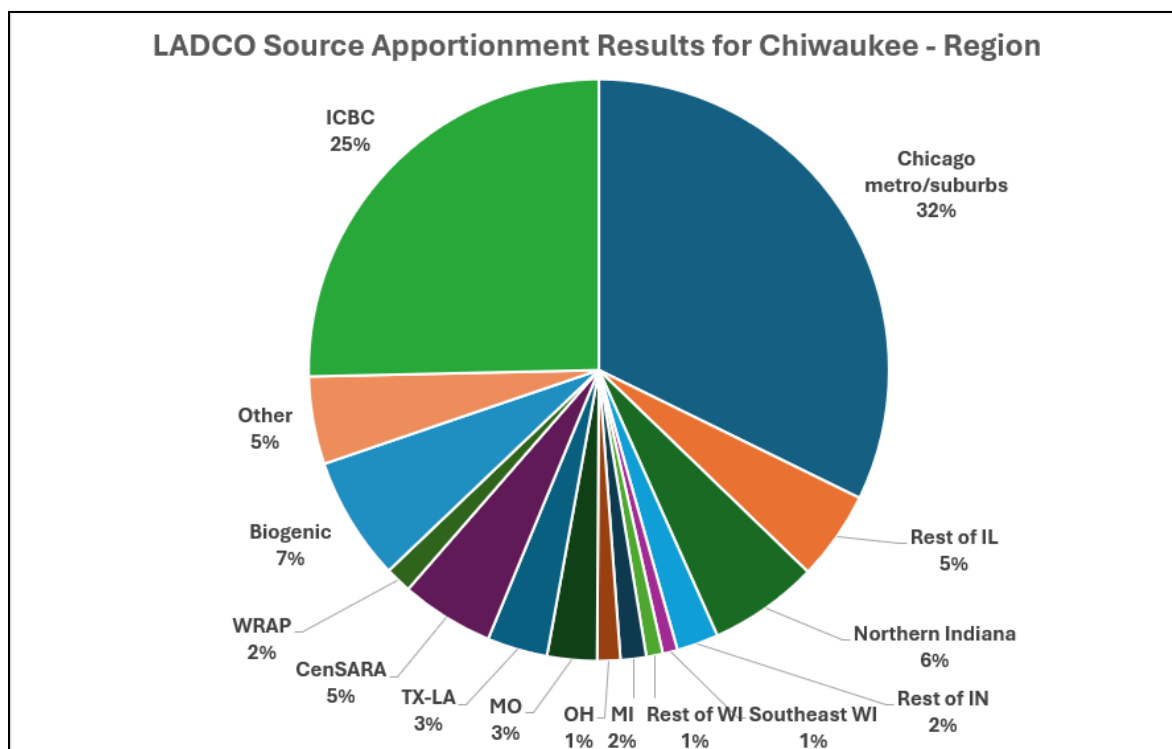


## Emission Trends

The NO<sub>x</sub> and VOCs chart below represents a 20-year depiction of annual tons per year emissions from Lake and Porter counties, adjusted to represent only those emissions from the townships within the 2015 8-hour ozone nonattainment area. The emissions are based on U.S. EPA's National Emissions Inventory. To achieve township-level data, adjustments were made to certain emission categories based on population data, employment data, and percentage of agricultural land area. The chart shows a 60% reduction of NO<sub>x</sub> emissions and a 41% reduction of VOC emissions over the 20-year period due to implementation of targeted emission control strategies. Although there have been steep reductions in precursor emissions within the nonattainment area over time, the measured air quality trend does not depict the same downward slope.



The chart below summarizes geographical contributions at the controlling monitor for the Chicago Nonattainment Area, which is the Chiwaukee Prairie site in Southeast Wisconsin. This information derives from modeling conducted by the Lake Michigan Air Director's Consortium (LADCO) in 2022. Updated modeling will be available in early 2026.

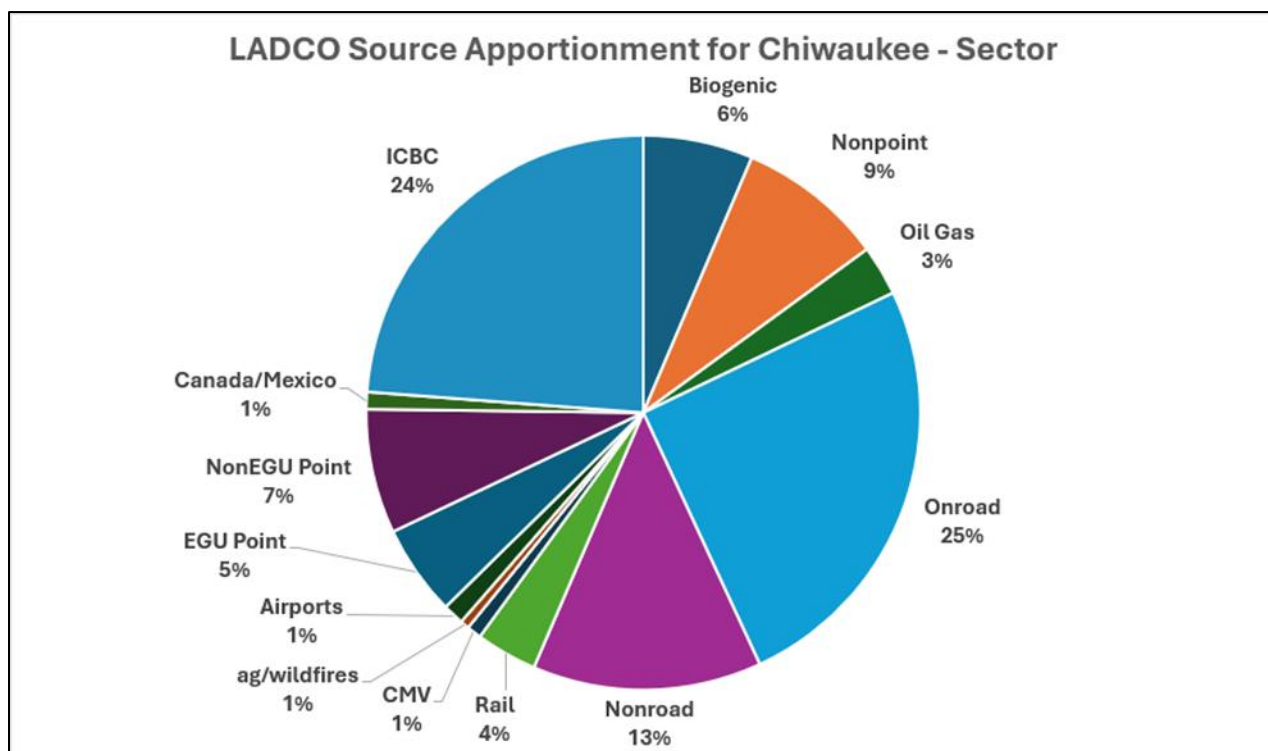


Approximately 65% of the contribution at the Chiwaukee Prairie site derives from outside the nonattainment area.

Approximately 37% of the contribution at the Chiwaukee Prairie site is attributable to boundary conditions (background) and international transport, characterized in the chart as ICBC, Biogenic, and Other. These categories are uncontrollable by Indiana, Illinois, or Wisconsin.

As shown in the pie chart, Northern Indiana contributes approximately 6% at the Chiwaukee Prairie site. The Northern Indiana portion of this pie chart includes Lake and Porter counties, as well as seventeen additional Indiana counties. Therefore, the impact from just Lake and Porter counties is much less than 6% and represents just 16% of the background/international transport. Impacts specific to Lake and Porter counties are being assessed as part of a new round of modeling being conducted by LADCO, which should be released in early 2026.

The chart below summarizes contributions by emission source sector at the controlling Chiwaukee Prairie monitor. This information derives from modeling conducted by LADCO in 2022. Updated modeling will be available in early 2026.



The non-EGU point sources (industry) sector accounts for just 7% of the contribution at the Chiwaukee Prairie site. This is from within the entire modeling domain, which covers most of the United States, not just the nonattainment area.

International transport roughly accounts for a 1 ppb impact at the Chiwaukee Prairie site. However, as much as 20% of the boundary conditions is estimated to be attributable to international emissions. This is based on work conducted by the [Midwest Ozone Group](#) and insight from LADCO.

### **Planning and Coordination with Illinois, Wisconsin via the Lake Michigan Air Directors Consortium**

The [Lake Michigan Air Directors Consortium](#) (LADCO) is an air quality research and planning organization that addresses air quality issues in the Great Lakes region. Initial work focused on the previous 1-hour ozone National Ambient Air Quality Standard (NAAQS) and understanding the meteorological and geography complexities of the influence of Lake Michigan on ozone development and transport. LADCO's responsibilities have expanded over the years to address several revisions to the ozone standard as well as fine particulates, regional haze and air toxics. LADCO's technical work includes developing emissions and meteorological databases to support photochemical modeling. This modeling addresses pollutant emissions and resulting air quality impacts to ensure compliance with ever-changing federal public health and welfare standards, primarily ozone and fine particles (PM<sub>2.5</sub>).

LADCO was established in 1989 to address interstate air pollution issues around Lake Michigan specific to the Greater Chicago Area. LADCO represents a cooperative interstate and federal effort to identify and evaluate various control strategies to demonstrate attainment or maintenance of ozone standards in the areas surrounding Lake Michigan. Indiana, Illinois, Michigan, and Wisconsin were original member states, signing a memorandum of agreement (MOA) in 1989. Ohio joined LADCO in 2004 and Minnesota was added in 2012 to make up the six-state consortium. LADCO is chartered and governed by policies and procedures established by the Board of Directors, made up of the air directors for each of the six member states. Indiana's board member is IDEM's Assistant Commissioner of the Office of Air Quality.

Technical work provided by LADCO and supported by various committees and workgroups from the member states include chemical transport/photochemical modeling, emissions modeling, meteorological modeling, ambient air monitoring of criteria and air toxic pollutants, data and trend analyses, and GIS support. Results from the modeling and data analyses can be used to inform policy decisions made by states and help demonstrate compliance with the NAAQS. This technical work also serves as the foundation of State Implementation Plans developed by member states to address NAAQS implementation requirements.

Photochemical modeling incorporates emissions, meteorological and monitoring data which is used to investigate potential emission reduction strategies and determine how those strategies impact current and future year air pollution concentrations to demonstrate attainment. This complex modeling process takes months to complete and includes pre-processing emissions and meteorological data, conducting the modeling, analyzing the modeling results, model performance and post-processing to compare the results to the respective NAAQS. The control



strategy modeling approach reduces emissions from point, mobile and area sources, source emission sectors or makes broad reductions to specific precursor pollutant emissions (sensitivity modeling) to inform states on which pollutant reductions would be most beneficial for attainment purposes. LADCO uses U.S. EPA-approved Comprehensive Air Quality Modeling with extensions (CAMx) to support emission control strategies, sensitivity and attainment modeling which is being migrated to on-demand cloud computing through Amazon Web Services.

Analyses conducted by LADCO are focused on specific areas through the LADCO region, especially along the shores of Lake Michigan, including the Chicago area, northwest Indiana, southeast and eastern Wisconsin, and western Michigan. In 2022, LADCO developed a charter for a Lake Michigan Ozone Workgroup (LMO3) that included the states of Indiana, Illinois and Wisconsin in order to address nonattainment areas in southeast Wisconsin, northwest Indiana and northeast Illinois. The workgroup engaged in activities such as:

- Evaluating chemical conditions in the nonattainment area during high ozone events and in response to changes in NO<sub>x</sub> and VOC emissions;
- Identifying the most effective emission reduction control strategies;
- Conducting modeling and weight of evidence analyses to provide information for ozone supporting precursor emission reduction strategies.

This group was active through mid-2023 and accomplished the goals stated in the charter, which included evaluating NO<sub>x</sub> emission controls on the Chicago nonattainment area and calculating future year 2026 ozone design values, based on emissions data. The workgroup was dissolved and the ozone modeling and analysis responsibilities for the Lake Michigan area shifted to the LADCO Ozone Technical Workgroup to include more areas of the LADCO region.

The states of Illinois, Indiana, and Wisconsin continue to coordinate with LADCO conducting attainment planning activities. LADCO recently updated its base-year emissions and modeling platform to better evaluate ozone formation and concentrations across the region. Early model runs have been completed, and the results are being compiled for LADCO and states to evaluate in early 2026. IDEM expects these results to show improvements to future year projections and better characterize the impact of Lake and Porter counties on ozone concentrations within the region.

In addition to the modeling exercises underway, LADCO is evaluating VOC reactivity and ozone formation at the lakeshore monitors to better understand how to effectively mitigate ozone formation. This will help ensure that potential measures are effective in targeting the VOC emissions that have the greatest impact on air quality in the region.

### **Withdrawal of Lake and Porter Counties from the Air Quality Control Region**

U.S. EPA relies on statistical boundaries as the default nonattainment boundaries. The federal Office of Management and Budget (OMB) is responsible for issuing delineations of population areas for the United States. Standards for the delineations of jurisdictional boundaries were first

issued in 1949 for use with the 1950 census. Standards for delineations are adopted after each decennial census, with delineations issued soon after. OMB uses two data sets to develop delineations: the census, conducted every 10 years, from which it obtains population, and the American Community Survey, conducted continuously, from which it obtains commuting behavior. Delineations are updated, usually, on an annual basis.

The most recent delineations were adopted on July 1, 2023, after the 2020 census (86 FR 37770) as OMB Bulletin No. 23-01. The 2023 delineations were based on the 2020 census and the 2016 – 2020 American Community Survey five-year estimates.

The key terms currently used for delineation boundaries are: Combined Statistical Areas (CSAs), Core Based Statistical Areas (CBSAs), Metropolitan Statistical Areas (MSAs), and Micropolitan Statistical Areas (μSAs). CSAs are comprised of CBSAs. CBSAs are comprised of Metropolitan and Micropolitan Areas.

From the Federal Register notice, “The general concept of a core based statistical area (CBSA) is that of an area containing a large population nucleus, or urban area, and adjacent communities that have a high degree of integration with that nucleus” and “a CBSA is a geographic entity associated with at least one core of 10,000 or more population (10,000 for μSAs and 50,000 for MSAs), plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.” OMB establishes a “central county”, or counties, based on the largest portion of the county’s population. Outlying counties are then included in a CBSA based on commuting patterns. Adjacent CBSAs can be combined into a Combined Statistical Area based on employment integration.

For nonattainment designations, U.S. EPA starts with CSA boundaries and applies a five-factor analysis to determine final nonattainment boundaries. Those five factors are: air quality data, emissions data, meteorology, geography, and jurisdictional boundaries.

The current Chicago-Naperville, IL-IN-WI CSA is comprised of the following CBSAs:

- Chicago-Naperville-Elgin, IL-IN CBSA
- Michigan City-LaPorte, IN CBSA
- Kenosha, WI CBSA
- Kankakee, IL CBSA
- Ottawa, IL CBSA

### Composition of the Chicago-Naperville, IL-IN-WI CSA

<b>Core-Based Statistical Area</b>	<b>County</b>
Chicago-Naperville-Elgin, IL-IN	Illinois Counties: Cook, DeKalb, DuPage, Grundy, Kane, Kendall, Lake, McHenry, Will Indiana Counties: Jasper, Lake, Newton, Porter
Michigan City-LaPorte	LaPorte, IN
Kenosha, WI	Kenosha, WI
Kankakee, IL	Kankakee, IL
Ottawa	Bureau, IL; LaSalle, IL; Putnam, IL

### Northwest Indiana County Delineation History

<b>Year</b>	<b>Area Name</b>	<b>Indiana Counties Included?</b>
1950	Chicago, IL-IN Standard Metropolitan Area (SMA)	Lake County included. Porter County not included.
1960	Chicago, IL Standard Metropolitan Statistical Area (SMSA)	No Indiana counties.
1960	Gary-Hammond-East Chicago, IN SMSA	Lake and Porter.
1963	Chicago, IL SMSA	No Indiana counties.
	Gary-Hammond-East Chicago, IN SMSA	Lake and Porter.
1971	Chicago, IL SMSA	No Indiana counties.
	Gary-Hammond-East Chicago, IN SMSA	Lake and Porter.
1973	Chicago, IL SMSA	No Indiana counties.
	Gary-Hammond-East Chicago, IN SMSA	Lake and Porter.
1981	Chicago, IL SMSA	No Indiana counties.
	Gary-Hammond-East Chicago, IN SMSA	Lake and Porter.
1983	Chicago-Gary-Lake County, IL-IN-WI Consolidated MSA (CMSA)	Lake and Porter.
1990	Chicago-Gary-Lake County, IL-IN-WI CMSA	Lake and Porter.
1993	Chicago-Gary-Kenosha, IL-IN-WI CMSA	Lake and Porter.
1999	Chicago-Gary-Kenosha, IL-IN-WI CMSA	Lake and Porter.

2000 delineations established Metropolitan and Micropolitan Statistical Areas (MSAs, $\mu$ SAs), Core Based Statistical Areas (CBSAs) and Combined Statistical Areas (CSAs).		
2003 (Jun)	Chicago-Naperville-Michigan City, IL-IN-WI Combined Statistical Area (CSA)	Lake, Porter, Jasper, Newton, LaPorte.
	Chicago-Naperville-Joliet, IL-IN-WI CBSA	Lake, Porter, Jasper, Newton.
	Michigan City-LaPorte, IN CBSA	
2003 (Dec)	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2004	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2005	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2006	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2007	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2008	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2009	Chicago-Naperville-Michigan City, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2013	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2015	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2017	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2018 (Apr)	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2018	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
2020	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.

2023	Chicago-Naperville, IL-IN-WI CSA	Lake, Porter, Jasper, Newton, LaPorte.
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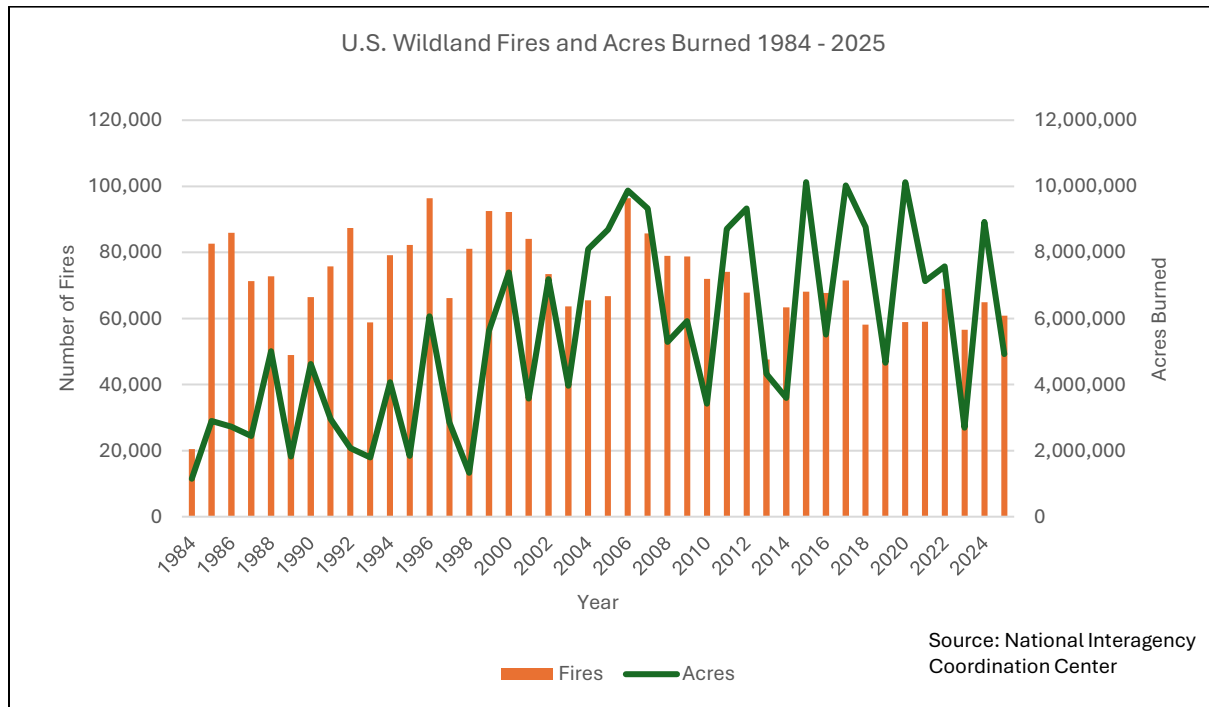
Based on the historical and statistical precedent associated with Lake and Porter counties being included as part of the Greater Chicago Area, it is unlikely that Indiana can successfully separate them for air quality planning purposes in defining nonattainment boundaries. One exception would be if Lake and Porter counties were to be reclassified as being affected by overwhelming transport, which is discussed further herein. IDEM provided technical support to minimize the nonattainment boundaries in the past, with no success. Lake and Porter counties were designated nonattainment under the 2008 8-hour ozone standard without a monitor violating the standard. IDEM recommended that Lake and Porter counties be designated attainment based on measured air quality and having minimal impact on violating monitors elsewhere within the region, yet both counties were designated nonattainment. Additionally, IDEM tried to reduce the size of the nonattainment boundary for Porter County under the 2015 ozone standard based on strong technical support prior to U.S. EPA classifying a much larger portion of the county as nonattainment in 2021. However, IDEM has been successful in keeping the Indiana portion of the boundary limited to the northern portions of just Lake and Porter counties, while excluding Jasper, LaPorte, and Newton counties, which are also part of the CSA.

## **Exploration of Alternative Pathways to Attainment/Reclassification**

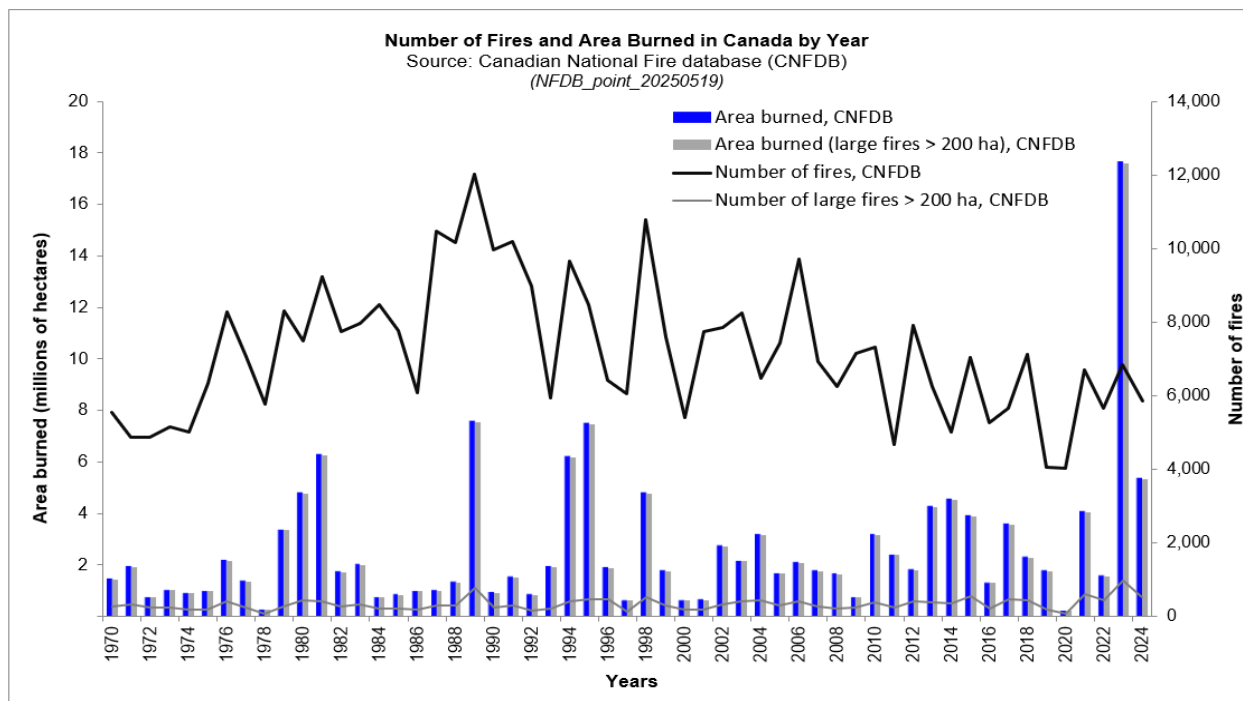
### ***Exceptional Events***

Ozone air quality in Indiana, including the Greater Chicago Area, has been adversely affected in recent years by smoke deriving from wildfires. Many of the fires impacting Indiana's air quality have been in Canada. Calendar days that wildfire smoke is present are eligible to be characterized as "Exceptional Events", meaning that those days can be flagged in the monitoring database and excluded in calculating monitor values if certain conditions are met. IDEM is carefully evaluating 12 days from the 2023 ozone season and five days from the 2025 ozone season to determine whether an exceptional event demonstration can be made to have these days excluded from the monitor value calculations for Lake and Porter counties. Concurrence by U.S. EPA is required to support the exclusion of these days from the calculations. IDEM has discussed this matter with U.S. EPA and is seeking support to move forward with a demonstration and federal concurrence.

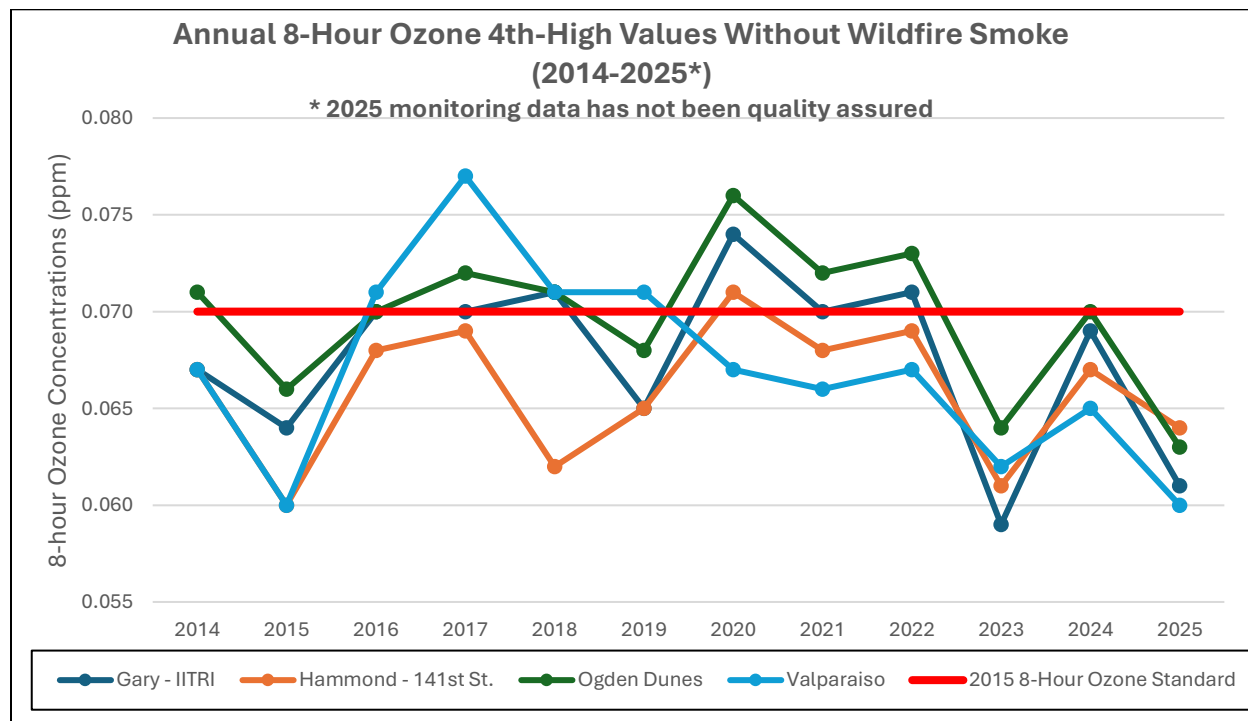
This following chart depicts the number of wildfires and acreage burned in the United States by calendar year from 1984 to 2025.



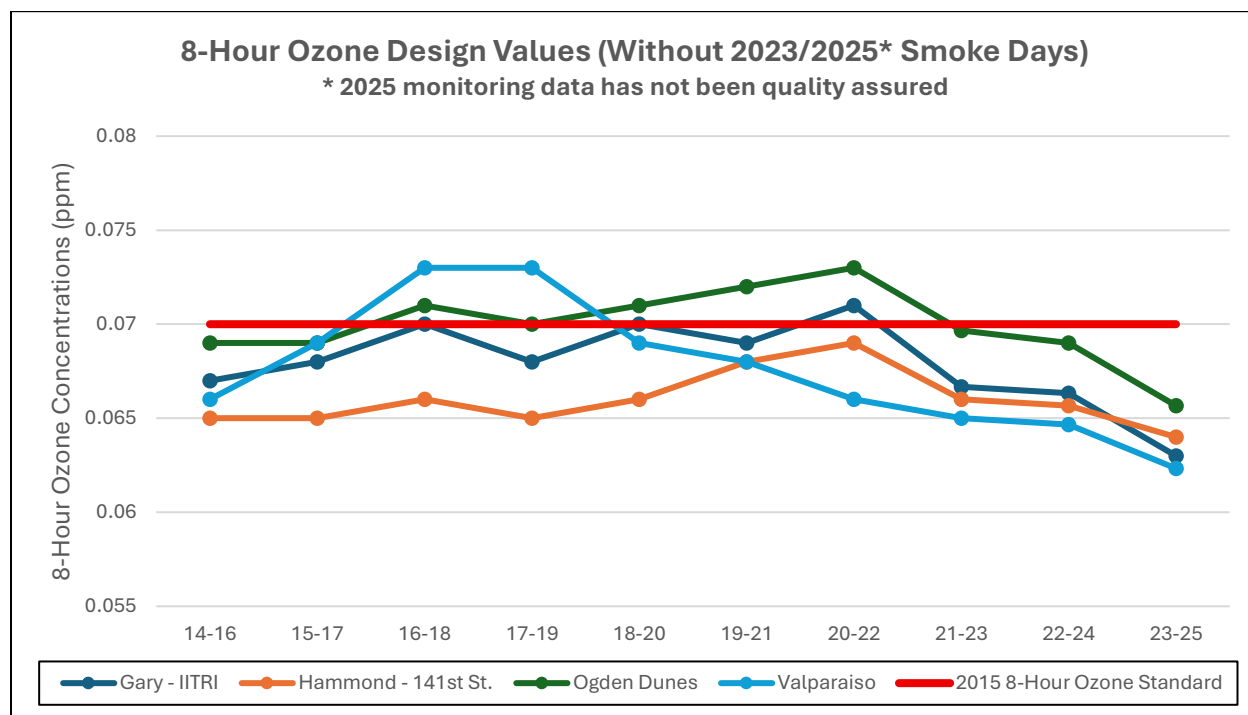
This following chart depicts the number of wildfires and acreage burned in Canada from 1970 through 2024.



The following chart illustrates what the annual 4<sup>th</sup> high values would be in Northwest Indiana if the days impacted by wildfire smoke are excluded from monitor value calculations.



The following chart and subsequent tables illustrate what the design values (the value compared to the standard) would be in Northwest Indiana if the days impacted by wildfire smoke are excluded from monitor value calculations.



**4<sup>th</sup>-High Maximum Daily Ozone Averages for 2023**  
 (With and Without Smoke Days)

Monitor	4th High 8-Hour Ozone (ppb)	
	Smoke	No Smoke
Gary-IITRI, Lake County	76	59
Hammond-141 <sup>st</sup> , Lake County	75	61
Ogden Dunes, Porter County	77	64
Valparaiso, Porter County	72	62



4<sup>th</sup>-High Maximum Daily Ozone Averages for 2025  
(With and Without Smoke Days)

Monitor	4th High 8-Hour Ozone (ppb)	
	Smoke	No Smoke
Gary-IITRI, Lake County	68	61
Hammond-141 <sup>st</sup> , Lake County	76	64
Ogden Dunes, Porter County	74	63
Valparaiso, Porter County	70	60

Securing concurrence from U.S. EPA on an exceptional events demonstration for ozone is not a given. U.S. EPA has historically required significant technical support and often has not taken any action on such demonstrations. However, the agency has recently demonstrated greater flexibility in handling exceptional events demonstrations for areas like Detroit and Louisville. Cleveland and St. Louis also seem to be on similar paths towards achieving U.S. EPA concurrence.

If IDEM is successful in getting concurrence from U.S. EPA on an exceptional events demonstration for Lake and Porter counties, all monitors within the two counties would be in compliance with the standard. This would be a critical step towards being able to petition for the area to be reclassified to attainment.

### ***International Transport***

Section 179B of the Clean Air Act (42 USC 7509a) provides that state nonattainment areas can avoid consequences if it demonstrates - to the satisfaction of U.S. EPA Administrator - that the area would have attained the NAAQS “but for emissions emanating from outside the United States”. Under such a scenario, nonattainment areas considered to be affected by international transport cannot be classified greater than “marginal”.

U.S. EPA’s withdrawal of 179B guidance in early 2025, along with broad discretion for U.S. EPA action if a state “establishes to the satisfaction of the Administrator” should lower the bar for source contribution information necessary to support a “stay-at-marginal” approval.

Modeling conducted by LADCO and the [Midwest Ozone Group](#) suggests that as much as 15 - 20 percent of ozone concentrations in the Lake Michigan region are attributable to international transport. This equates to an ozone concentration of approximately 11 - 15 ppb in concentration in the region, which far exceeds the 3 ppb that the controlling monitor in Lake and Porter

counties is above the standard, as well as the 9 ppb that the Chiwaukee Prairie, WI site is above the standard.

If Indiana were to secure U.S. EPA's approval of a petition under Section 179B of the Clean Air Act, Lake and Porter counties would be reclassified to a "marginal" nonattainment classification under the 2015 8-hour ozone standard. Vehicle emissions testing and reasonably available control technology (RACT) for industrial sources would no longer be mandated by the U.S. EPA as a result of this reclassification. This would enable Indiana to explore less onerous options for eliminating the vehicle emissions testing program.

### ***Rural Transport/Areas Affected by Overwhelming Transport***

Section 182(h) of the Clean Air Act (42 USC 7511a(h)) also provides for avoidance of nonattainment requirements beyond marginal. Under this section of the Clean Air Act, the U.S. EPA Administrator may treat an ozone nonattainment area as a rural transport area if the Administrator finds that sources of VOC (and, where the Administrator determines relevant, NO<sub>x</sub>) emissions within the area do not make a significant contribution to the ozone concentrations measured in the area or in other areas.

Nonattainment area sensitivity analysis conducted by LADCO in 2025 indicated the vast majority of monitor receptors throughout the Greater Chicago Area are VOC-limited. This means that reducing VOC emissions is much more effective than reducing NO<sub>x</sub> emissions in order to reduce ozone concentrations in the Greater Chicago Area. Per Indiana's most recent attainment demonstration, Lake and Porter counties accounted for just 7% of total VOCs within the Chicago Nonattainment Area in 2023 and industry within Lake and Porter counties account for just over 2% of the total VOCs for the area. Additionally, based on U.S. EPA modeling to support the Cross State Air Pollution Rule (CSAPR) Update in 2018, Indiana's contribution to the controlling monitor receptor in Lake and Porter counties is just 17%, while Illinois' contribution to the same receptor is estimated to be 23%.

If Indiana successfully secured U.S. EPA's approval of a petition under 182(h) for Lake and Porter counties to be reclassified as "an area affected by overwhelming transport," the counties would be classified as "marginal" nonattainment, again under which vehicle emissions testing and reasonably available control technology (RACT) for industrial sources would no longer be mandated. This would enable Indiana to explore less onerous options for eliminating the vehicle emissions testing program.

### **Pursuit of a Widespread Use Finding for Second Generation Onboard Diagnostics (OBDII)**

Enhanced vehicle emissions testing for Lake and Porter counties was required under Section 182(c)(3) of the Clean Air Act Amendments of 1990 (CAAA of 1990) based on the Chicago area's classification of "severe" under the 1979 1-hour ozone standard. Indiana was required to prepare and submit a SIP that addressed these requirements within two years of the CAAA of 1990. However, U.S. EPA did not publish program guidelines until November 5, 1992 ([57 FR](#)

[52950](#)). Due to the time it took for the guidelines to publish and for Indiana to procure services and build centralized testing stations, Indiana submitted its SIP to address enhanced vehicle emissions testing requirements in 1996 and began operation of the program in May of 1996. The program has remained intact due to Section 110(l) backsliding provisions of the CAAA of 1990, and classifications of “moderate” nonattainment or above under subsequent ozone standards. The northern portions of Lake and Porter counties are currently classified as “serious” under the 2015 8-hour ozone standard, thus enhanced vehicle emissions testing remains a prescribed requirement for the area under the CAA.

When U.S. EPA published the original vehicle inspection and maintenance requirements to address enhanced vehicle emissions testing under the CAAA of 1990, the cost-effectiveness per ton of ozone precursor emissions reduced was estimated at \$500 per ton and would cost just \$12.50 per vehicle tested. This was deemed to be highly cost-effective compared to other emission control measures available. However, as engine standards, motor fuel standards, and onboard diagnostic systems evolved over time, the cost-effectiveness of vehicle inspection and maintenance programs has declined substantially. In 2023, when IDEM certified that the enhanced vehicle emissions testing program for Lake and Porter counties remained in compliance with federal requirements as part of the Infrastructure SIP for the “moderate” nonattainment classification ([Appendix F](#)), the overall ozone precursor emission reductions associated with the program was just 0.54 tons per summer day (0.30 VOC and 0.24 NO<sub>x</sub>), with a total cost of \$5.4 million annually, or \$14,794 per day. This results in a cost per vehicle tested of \$27.00 (\$5.4 million/201,000 vehicles tested), and using the 2023 emissions inventory from Indiana’s most recent [Attainment Plan](#) for Lake and Porter counties, a cost-effectiveness per ton of emissions is reduced to \$27,396 per ton per summer day of precursor emissions reduced (\$14,794/0.54 tons per summer day). This does not factor in the cost associated with repairs incurred by citizens subject to testing, which is estimated to be an additional \$16 million (\$400 average per vehicle that fails an initial test (40,000 vehicles)), making the overall cost effectiveness \$108,574 per ton of precursor emissions reduced (\$5.4 million + \$16 million/365=\$58,630/0.54). Additionally, though U.S. EPA estimated enhanced vehicle emissions testing would achieve nearly 30% emissions reduction in the early stages of implementation in 1992, for 2023, Indiana’s enhanced vehicle emissions testing program achieved 0.5% reduction in total anthropogenic precursor emissions for ozone for Indiana’s portion of the nonattainment area, and only 0.07% of the total anthropogenic ozone precursor emissions for the entire nonattainment area. The reductions associated with the program are so miniscule that they fall outside the bounds of photochemical model sensitivity. This means that the program now effectively has no impact in actually reducing ozone concentrations within the nonattainment area.

U.S. EPA published its first onboard diagnostics (OBD) requirements in 1995 ([40 CFR Parts 9 and 86](#)). OBD is a vehicle’s built-in computer system that monitors engine performance and emission-related components. Shortly thereafter, the second generation of onboard diagnostics

(OBDII) was established by U.S. EPA in conjunction with the California Air Resources Board (CARB). OBDII is the second generation of on-board self-diagnostic equipment requirements for light-duty and medium-duty vehicles. OBD capabilities are incorporated into the hardware and software of a vehicle's on-board computer to monitor virtually every component that may impact emission performance. Each component is checked by a diagnostic routine/relay to verify that it is functioning properly. If a problem or malfunction is detected, the OBDII system illuminates a warning light on the vehicle instrument panel to alert the driver. This warning light will typically display the phrase "Check Engine" or "Service Engine Soon," and will often include an engine symbol. The system will also store important information about any malfunctions detected so that a repair technician can accurately diagnose and fix the problem. All light-duty gasoline vehicles model year 1996 and newer are equipped with OBDII systems.

In 2024, 98.8% of all light-duty vehicles subject to Indiana's enhanced vehicle emissions testing program were OBDII equipped. Additionally, the vast majority of test failures are "rejects" due to an unset monitor within the OBDII system. This condition simply means that the computer cannot verify whether the vehicle components covered by that monitor are performing properly, whether the components are associated with emission control or not. In most cases, this condition is resolved without repairs or additional maintenance but still results in substantial costs to the motorist to have a qualified emissions repair technician diagnose the problem and reset the monitor to factory specifications. Thus, these failures do not result in emission reductions, only additional costs and inconvenience to the motorist.

As OBDII equipped vehicles have become more prevalent in the testable fleet, the emission reductions associated with enhanced vehicle emissions testing programs have declined substantially. This is the result of how U.S. EPA's motor vehicle emissions factor models have been calibrated specific to the OBDII portion of the fleet. In short, the model treats the vast majority of OBDII equipped vehicles as compliant with the tailpipe standards without being subject to vehicle emissions testing. The assumption is that vehicle owners promptly address vehicle maintenance and repair issues that triggered the OBDII system notification. In other words, the emissions factor models have historically assumed that if the check engine light is on, the vehicle is properly serviced and is therefore compliant. As a result, when air quality and transportation planning agencies evaluate emission reduction potential for enhanced vehicle emissions testing, the minimal reductions being achieved are primarily derived from the 1.2% of the fleet that is not OBDII equipped. For Indiana, that is model years 1995 and older. Vehicles prior to 1995 are very difficult to bring into compliance following a failed test. This is likely due to multiple vehicle components failing at the same time due to aging and weatherization, factory equivalent parts no longer being available, and the fact that motorists meet the minimum expenditure requirement before the vehicle actually passes the emissions test. Therefore, the emissions testing program fails to achieve quantifiable emissions reductions from this portion of the fleet.

As with enhanced vehicle emissions testing, Stage II vapor recovery was a prescribed requirement of the CAAA of 1990. However, on May 16, 2012 ([40 CFR Part 51](#)) the U.S.EPA issued a widespread use finding that enabled states to remove the control measure from federally approved SIPs. U.S. EPA determined that onboard refueling vapor recovery (ORVR) technology was in widespread use throughout the motor vehicle fleet for purposes of controlling motor vehicle refueling emissions, and, therefore, by this action, U.S. EPA waived the requirement for states to implement Stage II gasoline vapor recovery systems at gasoline dispensing facilities in nonattainment areas classified as “serious” and above for the NAAQS. U.S.EPA approved a revision to Indiana’s SIP removing Stage II vapor recovery requirements on June 6, 2016 ([40 CFR Part 52](#)) based on the widespread use finding.

Indiana can petition the U.S. EPA to evaluate the penetration of OBDII equipped vehicles in the light-duty fleet to determine if a widespread use finding could be issued to relieve states of implementing enhanced vehicle emissions testing requirements. Although this was a cost-effective control in the early 1990’s, like other prescriptive requirements in the CAAA of 1990 that are no longer being implemented (namely clean fuel fleets and Stage II Vapor Recovery), enhanced vehicle emissions testing is no longer effective in reducing quantifiable emissions and is cost-ineffective for states to continue administration of the program. This is in part due to better tailpipe and fuel standards being implemented over the past thirty-five years but is mostly attributable to the vast penetration of OBDII equipped vehicles into the motor fleet.

If a widespread use finding for OBDII is in place, states could rely on a widespread use demonstration to remove the control measure from the SIP. This could be achieved regardless of an area’s classification, even if it is “moderate” nonattainment or greater.

### **Engagement with U.S. EPA**

IDEM has engaged U.S. EPA in exploring the various pathways to attainment outlined herein. IDEM will continue to seek U.S. EPA’s support in determining a viable and timely course of action to alleviate the burdensome requirements associated with a nonattainment classification greater than “marginal”, as well as options for the discontinuation of vehicle emissions testing requirements.

### **Next Steps**

IDEM will continue to coordinate with the states of Illinois and Wisconsin via LADCO in exploring pathways toward attainment. Additionally, IDEM will collaborate with other states, as well as regional and national organizations to engage U.S. EPA in establishing national consistency on a variety of policy issues, including viable and timely pathways to attainment for problematic nonattainment areas like that of the Greater Chicago Area. This includes ongoing consideration of the alternative pathways discussed herein. IDEM will also continue engaging with other states, regional and national organizations, and U.S. EPA on the concept of issuing a widespread use finding and may proceed with a petition to U.S. EPA encouraging the agency to

initiate a rulemaking to issue a finding that widespread use of OBDII technology is in place and is an adequate replacement for enhanced vehicle emissions testing requirements under Section 182 of the CAA. Lastly, IDEM will evaluate whether a non-interference demonstration for the vehicle emissions testing program could be supported, even if the area remains classified as “moderate” or above. This would be a revision to the State Implementation Plan, supported by a demonstration that the removal of the program does not result in interference with the area’s ability to meet its obligations under the Clean Air Act.