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**Re: Vehicles' Contribution to Illinois Ozone Pollution:
 Implications for Public Health and Environmental Justice in Illinois**

On behalf of Sierra Club, Respiratory Health Association, Environmental Defense Fund, Natural Resources Defense Council, Little Village Environmental Justice Organization (LVEJO), Active Transportation Alliance, Center for Neighborhood Technology, Illinois Environmental Council, Environmental Defenders of McHenry County, Union of Concerned Scientists, Metropolitan Planning Council, Evanston Transit Alliance, and Bike Wilmette, and our members and supporters, we write to urge the Illinois Environmental Protection Agency (“IEPA”) to adopt three rules that would dramatically reduce air pollution from passenger cars and medium and heavy duty trucks that have been promulgated by the California Air Resources Board: the Advanced Clean Cars II (“ACC II”) Rule, the Advanced Clean Trucks (“ACT”) Rule, and the Heavy-Duty Engine and Vehicle Omnibus (“HDO”) Rule. We urge the Governor’s Office and IEPA to take immediate steps to incorporate these rules into Illinois’ ozone air quality state implementation plan (“SIP”) in 2023. Adoption of these rules would reduce greenhouse gas emissions, make the air cleaner to breathe for all Illinois residents, and provide a critical boost toward meeting Illinois’ goals of ensuring “the protection of the health of the people of Illinois and its environment [and] equity in the administration of the State’s environmental programs.”¹

Based on a Sonoma Technology modeling report that analyzes the amount of statewide ozone pollution attributable to emissions from vehicles driving on Illinois’ roads, these comments explain how adopting vehicle rules requiring reductions in vehicle pollution would improve public health; reduce disproportionate burdens of pollution on environmental justice communities; and assist Illinois in achieving its goals for electrifying its transportation sector and reducing its contribution to climate change.

These rules are also critical to addressing Illinois’ long-standing air quality attainment challenges. The Chicago area is currently designated as Moderate Nonattainment under the 2015 8-hour National Ambient Air Quality Standards (“NAAQS”) issued by the U.S. Environmental Protection Agency (“EPA”), as is the Illinois portion of the St. Louis area.² Roughly 9 million Illinois residents, comprising 71% of the state’s entire population, continue to live in areas that are designated as failing to meet EPA’s health-based NAAQS.³ High ozone levels have documented adverse health impacts, including higher levels of asthma and asthma morbidity.⁴

Ozone formation in Illinois is traceable in significant part to emissions of nitrogen oxides (“NOx”), which are released by the combustion of gasoline and diesel fuel in Illinois’ vehicles.

¹ Illinois Environmental Protection Agency, *Environmental Justice*, <https://epa.illinois.gov/topics/environmental-justice.html>; see also Office of the Mayor, City of Chicago, *Executive Order No. 2023-3* (May 10, 2023), https://www.chicago.gov/content/dam/city/depts/cdph/environment/CoC_Executive-Order-2023-3.pdf.

² EPA, *8-Hour Ozone (2015) Designated Area/State Information* (Mar. 31, 2023), <https://www3.epa.gov/airquality/greenbook/jbtc.html>.

³ <https://www3.epa.gov/airquality/greenbook/jbtc.html>. See *infra* note 13.

⁴ EPA, *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (EPA-HQ-OAR-2008-0699-0404, Aug. 2014). <https://www3.epa.gov/ttn/naaqs/standards/ozone/data/20140829pa.pdf>. See *infra* notes 17-20.

Nearly a quarter of Illinois' total NO_x emissions, approximately 24.9%, are attributable to pollution from vehicles driving on Illinois' roads.⁵

Recent modeling commissioned by the Sierra Club, as set out below, confirms the massive contribution of on-road vehicles to ozone pollution in Illinois. On-road vehicles in Illinois contribute up to a staggering 11.26 parts per billion ("ppb") of ozone, which means that up to 16.1% of the total minimum federal air quality standard of 70 ppb of ozone is driven by pollution from in-state vehicles alone.⁶ In other words, on days with high amounts of ozone, or smog, pollution from cars and trucks alone can bring smog levels in Illinois to 16.1 percent of their allowable healthy limits, leaving total smog more likely to exceed safe levels.

Illinois' historically high ozone levels are exacerbating race- and income-based health disparities and have an outsized impact on communities of color in Illinois. From 2016 to 2021, Black children in Chicago with asthma went to the emergency room five times more than white children with asthma.⁷ At the city level, EPA's EJScreen Tool indicates that Chicago is in the 88th percentile nationally for the ozone EJ index. EPA's EJScreen is an environmental justice mapping tool that combines environmental, demographic, and socioeconomic indicators. The tool allows users to compare environmental and socioeconomic data in specific geographic areas with state and national populations.⁸ Reducing NO_x emissions, an ozone precursor, is therefore essential for mitigating the adverse and unjust health impacts affecting Illinois residents.

Adopting ACC II, ACT, and HDO Rules will significantly reduce NO_x and greenhouse gas emissions from Illinois' on-road vehicles. Nitrogen oxides (NO_x) are emitted as gasses by automobiles, trucks, and various industrial applications such as construction equipment, boilers, power plants, and cement kilns. When emitted, nitrogen oxides combine with volatile organic compounds (VOCs) to produce ozone (smog), especially on hot summer days.⁹ Adopting these rules is therefore critical for bringing Illinois back into compliance with legally binding federal NAAQS standards for ozone and the state's own goal for reducing greenhouse gas emissions from on-road vehicles by placing one million electric vehicles on the road by 2030.¹⁰ Our modeling demonstrates that adoption of the ACT Rule alone would reduce tailpipe NO_x emissions from medium- and heavy-duty vehicles in Illinois by over 132,000 metric tons through 2050—and adoption and implementation of the ACT and HDO Rules together would reduce NO_x emissions by nearly 188,000 metric tons by 2050. Adopting ACC II could avoid nearly 38,000 metric tons of NO_x

⁵ EPA, *2020 National Emissions Inventory (NEI) Supporting Data and Summaries* (last accessed April 19, 2023), <https://www.epa.gov/air-emissions-inventories/2020-nei-supporting-data-and-summaries>. See *infra* note 41 and accompanying text. Data available at <https://www.epa.gov/air-emissions-inventories/2020-nei-supporting-data-and-summaries>.

⁶ Lynn Alley & Kenneth Craig, Sonoma Technology, *Technical Memorandum Re: Analysis of Air Quality Impacts from Onroad Mobile Sources on Ozone Nonattainment areas in Connecticut, Illinois, Maryland, Michigan, New Jersey, and Pennsylvania* (May 19, 2023). See *infra* note 43 and accompanying text.

⁷ Respiratory Health Association, *Racial Disparities in Childhood Asthma: Chicago, 2016-2021*, at 1 (May 2022), <https://resphealth.org/wp-content/uploads/2022/05/Updated-Asthma-Disparities-Report.pdf>. See *infra* note 32-36 and accompanying text.

⁸ EPA, *EJ and Supplemental Indexes in EJScreen*, <https://www.epa.gov/ejscreen/ej-and-supplemental-indexes-ejscreen>.

⁹ <https://www3.epa.gov/region1/airquality/nox.html>.

¹⁰ Ill. S.B. 1718 (2021).

emissions from the state's light-duty fleet by 2050. In addition to improving statewide air quality, implementing these three rules would significantly reduce the State's transportation related climate pollution. By implementing the ACT Rule, Illinois would also avoid a projected 140.62 million metric tons of greenhouse gas emissions by 2050.¹¹ With ACC II, Illinois would avoid 207.43 million metric tons by that time. Thus, by adopting and implementing the ACC II, ACT, and HDO Rules, the Governor's Office and IEPA would improve air quality for all Illinois residents and ease the heavy burden of transportation-related air pollution on vulnerable populations within the State.

The ACC II Rule is a critical tool in reducing emissions because it requires gradual increases in the sales of zero-emission light-duty vehicles, while the ACT Rule requires increasing sales of zero-emission medium- and heavy-duty vehicles. The HDO Rule serves the important role of reducing pollution from the remaining medium- and heavy-duty internal combustion vehicles on the market by requiring reduced NOx emissions. The signatories to the HDO Rule share a goal to reach at least 30% medium- and heavy-duty zero-emission vehicle sales by 2030 and 100% sales no later than 2050. We urge Illinois to expeditiously adopt these rules and incorporate them into Illinois' federally-enforceable moderate ozone nonattainment SIP.

I. ILLINOIS RESIDENTS CONTINUE TO EXPERIENCE HIGH OZONE LEVELS FAR IN EXCESS OF NATIONAL AMBIENT AIR QUALITY STANDARDS, PARTICULARLY IN URBAN AREAS AND IN COMMUNITIES OF COLOR.

For decades, Illinois has had a persistent problem with high levels of ozone pollution in excess of health-based national ambient air quality standards. As reflected below, the majority of Illinois residents continue to live in nonattainment areas that regularly experience air that EPA has determined is unsafe to breathe. The disproportionate burden of higher pollution levels in disadvantaged, overburdened communities of color creates inequitable, poorer health outcomes among those communities.¹²

A. Most Illinois Residents Live in Nonattainment Areas where Ozone Levels Regularly Exceed Health-Based Limits Set by NAAQS

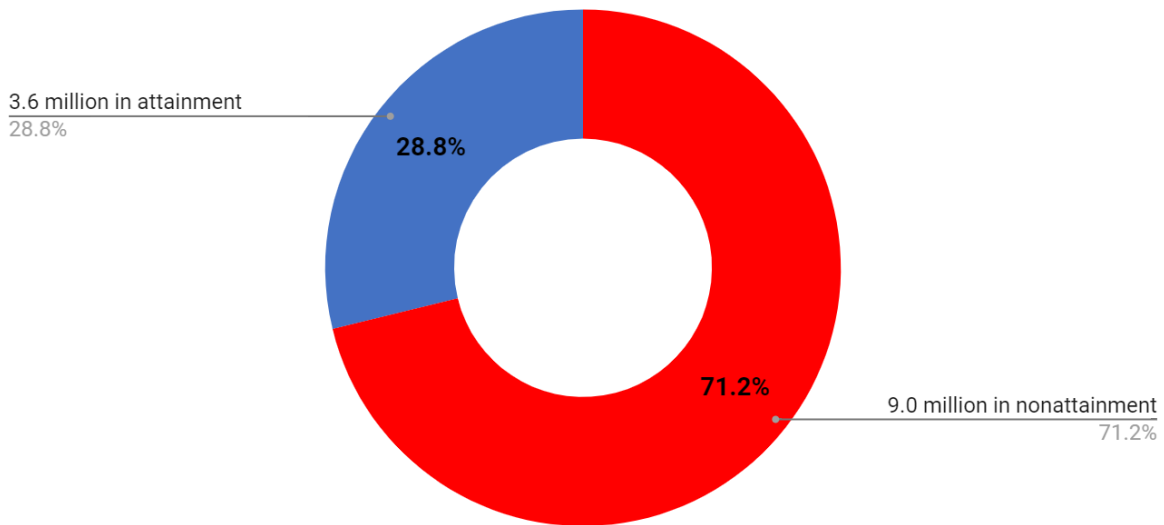
High ozone levels are a persistent public health issue in Illinois, with the vast majority of Illinois residents living in areas that are failing to attain safe, healthy levels of ozone. This has particularly been the case in the Chicago nonattainment area. An alarmingly high 71% of all Illinois residents live in an ozone nonattainment area, based on current nonattainment designations in the Chicago metro area and the Illinois portion of the St. Louis area:¹³

¹¹ ICCT, "Fact Sheet: Benefits of adopting California's Advanced Clean Truck Program, Heavy Duty Vehicle Omnibus Standards and a 100% sales requirement in Illinois," (Sept. 2022), <https://theicct.org/wp-content/uploads/2022/09/HDV-fact-sheet-IL-092122.pdf>. See *infra* note 67 and accompanying text. Data quantify well-to-wheel CO_{2e} emissions reductions under the ACT rule.

¹² See, e.g., Madison Lisle and Yana Kalmyka, *Warehouse Workers for Justice, For Good Jobs & Clean Air: How A Just Transition to Zero Emission Vehicles Can Transform Warehousing*, https://www.ww4j.org/uploads/7/0/0/6/70064813/wwj_report_good_jobs_clean_air.pdf.

¹³ EPA, *8-Hour Ozone (2015) Designated Area/State Information* (last accessed April 19, 2023), <https://www3.epa.gov/airquality/greenbook/jbtc.html>. Data was sourced from this report and compared to

Proportion of Illinois Residents Living in Ozone Nonattainment Areas



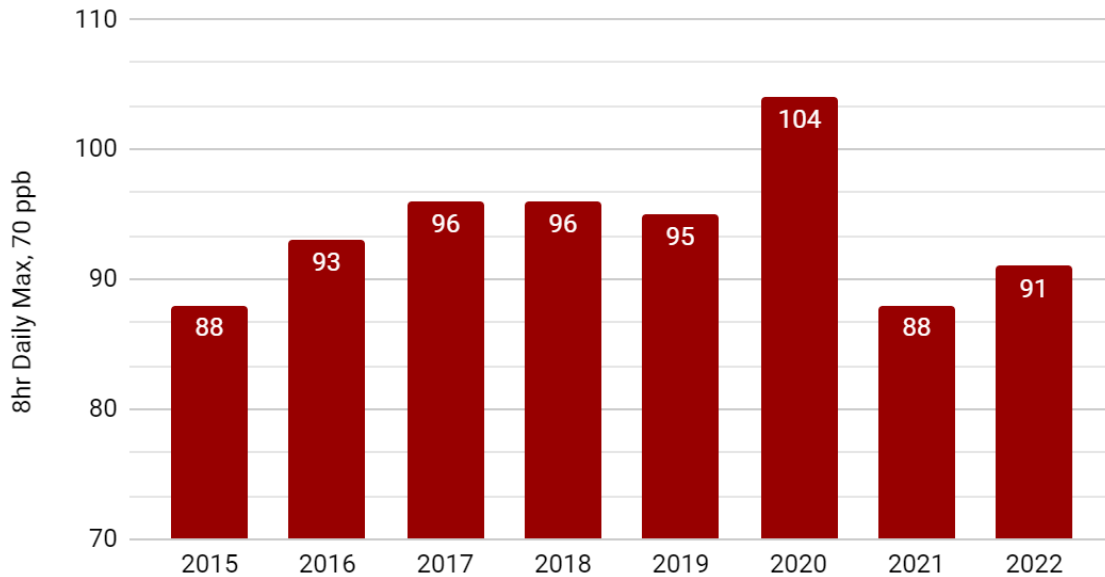
The Chicago nonattainment area has continued to log high 8-hour daily ozone values, reaching as high as 104 ppb in 2020—which is 48% higher than the NAAQS of 70 ppb—as well as 96 ppb in both 2017 and 2018 and 95 ppb in 2019.¹⁴ The number of ozone exceedance days, or days in which the monitored value exceeds 70 ppb, similarly shows chronic air quality violations that are not improving. Chicago residents experienced nearly an entire month of unhealthy ozone pollution in 2016, and 20 days of exceedances in both 2020 and 2021. Even as recently as 2022, ozone levels reached 91—21 ppb in excess of the 70 ppb standard—and the Chicago region exceeded the 70 ppb limit on 12 different days.¹⁵

the latest Census numbers for Illinois. EPA reports 2010 population in nonattainment, meaning the above percentage is likely a very slight overcount, as Illinois' total shrank from 12.84 million in 2010 to 12.67 million today. For a map of nonattainment areas, see EPA, *Interactive Map of Air Quality Monitors* (last accessed April 19, 2023), <https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors>.

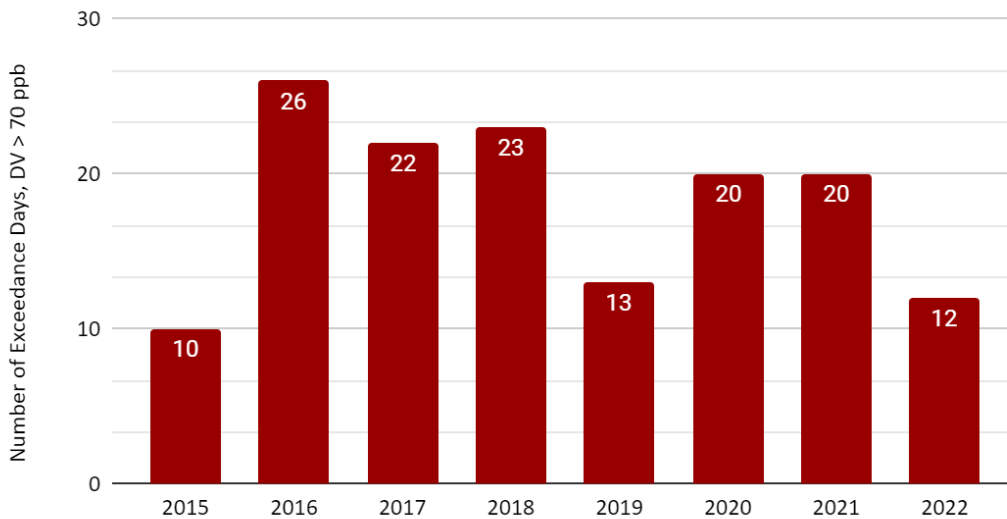
¹⁴ EPA, *Outdoor Air Quality Data, Monitor Values Report* (last accessed April 19, 2023), <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>. This data excludes exceptional events.

¹⁵ EPA, *Outdoor Air Quality Data, Air Data - Ozone Exceedances* (last accessed April 19, 2023), <https://www.epa.gov/outdoor-air-quality-data/air-data-ozone-exceedances>. The number of exceedance days (DV > 0.070 ppm) from 2015 to 2022 for the specified nonattainment area was downloaded and graphed. For the Chicago nonattainment area, these values are likely an undercount, as they were sourced from EPA's Air Quality System based on the Chicago-Naperville-Elgin Core Based Statistical Area and therefore may not be inclusive of every monitor in the Chicago nonattainment area.

Chicago-Naperville-Elgin, 8hr Daily Ozone Max



Chicago-Naperville-Elgin, Number of Exceedance Days, DV > 70 ppb vs.



As the numbers above demonstrate, the Chicago nonattainment area is failing to make meaningful and lasting progress toward meeting the ozone NAAQS, and communities in and surrounding urban areas are routinely exposed to extremely high ozone concentrations. This ozone exposure has a negative impact on human health, as explained in the following section.

B. Ozone Exposure At Levels Below What Illinois Regularly Experiences Has Significant Adverse Health Impacts

Ozone emissions are harmful to people at any level, particularly young children, the elderly, and those with existing respiratory conditions. Even where ozone levels are recorded below the EPA NAAQS threshold, harmful effects can still occur. Indeed, at its most recent meeting in March, the ozone panel of EPA's Clean Air Scientific Advisory Committee—composed of preeminent national experts on ozone air pollution—voted to recommend tightening the primary health-based ozone standard from its current 70 ppb level to a range of 55-60 ppb.¹⁶

Exposure to ozone, the main component of smog, has detrimental effects on human health. Even short-term ozone exposure is linked to chronic conditions affecting the respiratory, cardiovascular, reproductive, and central nervous systems, as well as mortality.¹⁷ Respiratory symptoms of ozone exposure include coughing, wheezing, and shortness of breath.¹⁸ Notably, ozone exacerbates asthma and can contribute to new onset asthma.¹⁹ Accordingly, ozone exposure is associated with increased asthma attacks, emergency room visits, hospitalization, and the need for asthma medications.²⁰

The health effects of ozone exposure are cumulative, increasing with higher ozone concentrations and increased exposure time.²¹ The impacts of ozone exposure on the respiratory system can occur at concentration levels below the 2015 8-hour ozone NAAQS of 70 ppb.²² In fact, ozone concentrations as low as 60 ppb can cause inflammation and decreased lung function in healthy, exercising adults after 6.6 hours of exposure.²³ Furthermore, studies have observed an association between short-term ozone exposure and hospital admission or emergency department visits at concentrations as low as 31 ppb.²⁴

While the health impacts of ozone are ubiquitous, certain populations are at an increased risk of ozone-related health effects. Those populations include people with asthma and/or lung disease, children, people over the age of 65, pregnant people, people of color, and outdoor workers.²⁵ Factors contributing to an individual's risk of ozone-induced health burdens include exposure,

¹⁶ See Sean Reilly, E&E News, "EPA advisers recommend steep cut to ozone standards" (May 2, 2023), <https://subscriber.politicopro.com/article/eenews/2023/05/02/epa-panel-recommends-to-steep-cut-to-ozone-standards-00094886>.

¹⁷ See EPA, *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (EPA-HQ-OAR-2008-0699-0404, Aug. 2014), <https://www3.epa.gov/ttn/naaqs/standards/ozone/data/20140829pa.pdf>.

¹⁸ *Id.* at 3-27.

¹⁹ *Id.* at 3-28.

²⁰ See *id.*; see also Respiratory Health Association, *The Dirty Dozen: The Impacts of Diesel Engine Pollution in Illinois* (May 2022), <https://resphealth.org/wp-content/uploads/2022/05/Dirty-Dozen-Impact-of-Diesel-Engine-Pollution-in-Illinois.pdf>; Clean Air Task Force, *Deaths by Dirty Diesel: Mapping the health impacts of diesel nationwide*, <https://www.catf.us/deathsbydiesel/>.

²¹ See *id.*

²² EPA, *National Ambient Air Quality Standards for Ozone*, 80 Fed. Reg. 65,292, 65,292 (Oct. 26, 2015).

²³ EPA, *Integrated Science Assessment for Ozone and Related Photochemical Oxidants at IS-1* (2020), <https://www.epa.gov/isa/integrated-science-assessment-isa-ozone-and-related-photochemical-oxidants/>.

²⁴ *Id.* at IS-27.

²⁵ *Id.* at 2-30; EPA, *National Ambient Air Quality Standards for Ozone*, 80 Fed. Reg. 65,292, 65,310 (Oct. 26, 2015).

susceptibility, access to healthcare, and psychosocial stress.²⁶ These factors can intersect to place certain individuals at even greater risk. For example, children experience increased exposure to ozone because they are more likely to spend time being active outdoors, and increased susceptibility to the health impacts of ozone due to their developing lungs and higher occurrences of respiratory infections than adults.²⁷

The pervasive impacts of ozone exposure disproportionately burden communities of color and economically marginalized populations. Higher levels of exposure can be attributed to the historical siting of polluting facilities in marginalized communities as opposed to more affluent, predominantly white neighborhoods.²⁸ Accordingly, people of color, especially Black individuals, carry a higher asthma burden than white people, and are overrepresented in the nation's ozone nonattainment areas. Furthermore, people of color are more susceptible to the impacts of air pollution, such as asthma, diabetes, and heart conditions, because they are more likely than white individuals to be living with one or more chronic conditions.²⁹

C. Elevated Ozone Levels In the Chicago Nonattainment Area Are Having Significant Adverse Impacts On Environmental Justice Communities

The adverse health impacts of ozone exposure do not affect all Illinois residents equally. EPA's EJScreen tool shows that communities in the Chicago nonattainment area have high environmental justice index values for ozone, considering both exposure to pollution and socioeconomic indicators. These impacts are reflected in disproportionately poor health outcomes for people of color.

The environmental justice ("EJ") index for ozone is calculated by combining the environmental factor of ozone concentration with demographic factors, including populations of low-income individuals and people of color residing in a geographic area.³⁰ In Chicago, the EJ index for ozone is in the 77th percentile compared to the state of Illinois and the 88th percentile compared to the United States. This means that only 23% of the state and 12% of the country's population have worse EJ index values for ozone than Chicago.³¹ This illustrates that ozone nonattainment in Illinois is especially harmful when considering the impacts of ozone pollution on people of color and low-income populations in nonattainment areas.

The unequal burden of ozone-caused public health impacts in Illinois is affirmed by asthma data. Asthma is one of the primary public health impacts of ozone exposure and affects Black communities, especially Black children, at disproportionate rates in Illinois, as shown by emergency department visits, hospitalizations, and death rates. A May 2022 study conducted by the Respiratory

²⁶ American Lung Ass'n, *State of the Air 2022, Tracking Air Pollution & Championing Clean Air 25* (2022), <https://www.lung.org/getmedia/74b3d3d3-88d1-4335-95d8-c4e47d0282c1/sota-2022/>.

²⁷ *Id.* at 26.

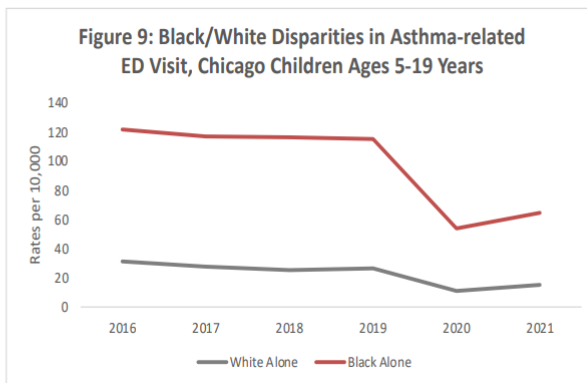
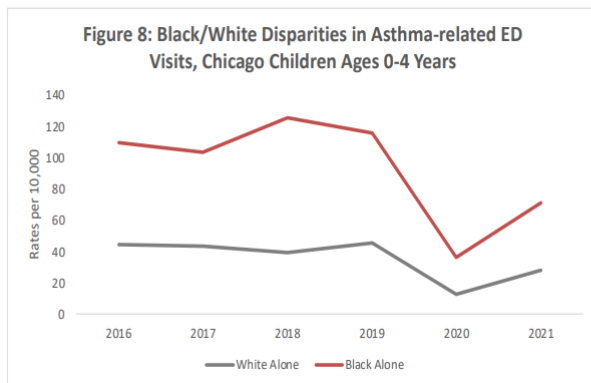
²⁸ *Id.*

²⁹ *Id.*

³⁰ For EPA's explanation of this indicator, see EPA, *EJ and Supplemental Indexes in EJScreen* (last accessed Feb. 13, 2023), <https://www.epa.gov/ejscreen/ej-and-supplemental-indexes-ejscreen>.

³¹ See EPA, *EJScreen* (last accessed April 19, 2023), <https://ejscreen.epa.gov/mapper/>. Numbers for Chicago were generated by selecting the city and generating the "Printable Standard Report."

Health Association illustrates that emergency department visits for asthma are much more frequent—nearly four times higher—among Black children aged 5-19 years than white children:³²



Apart from the obvious health impacts of these disparities, asthma and asthma-related conditions also disrupt students’ education. The same study found that between 2016 and 2021, there were 3,603 ambulance visits to Chicago schools for asthma emergencies. Of the 3,148 visits in which the student’s race was recorded, 84% were black; only 3% were white. In fact, “just over 45% of these [EMS] visits were to schools in just 10 zip codes: 60628, 60621, 60637, 60620, 60617, 60644, 60649, 60624, 60636, and 60623.”³³

These trends remain consistent among adults. According to the Illinois Department of Public Health, asthma ED visits among Black Illinois residents generally, which includes adults, are 6 times higher than the white rate.³⁴ Meanwhile, the Black asthma mortality rate in Illinois is 4 times higher than the white rate.³⁵ In 2018, for example, the Non-Hispanic African American asthma mortality rate per million was 35; the Non-Hispanic White rate was 6.5.³⁶

³² Respiratory Health Association, *Racial Disparities in Childhood Asthma: Chicago, 2016-2021* (May 2022), <https://resphealth.org/wp-content/uploads/2022/05/Updated-Asthma-Disparities-Report.pdf>. The report notes that 2020 was an anomalous year in the data due to the COVID-19 pandemic.

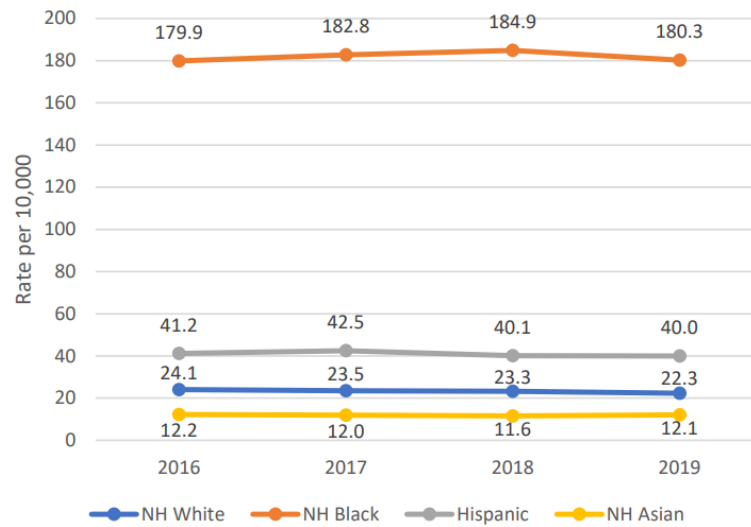
³³ *Id* at 5.

³⁴ Illinois Department of Public Health, *Asthma Trends: Hospital Discharge Data, 2016-2019*, <https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/asthma-trends-hospital-discharge-data-2016-2019.pdf>.

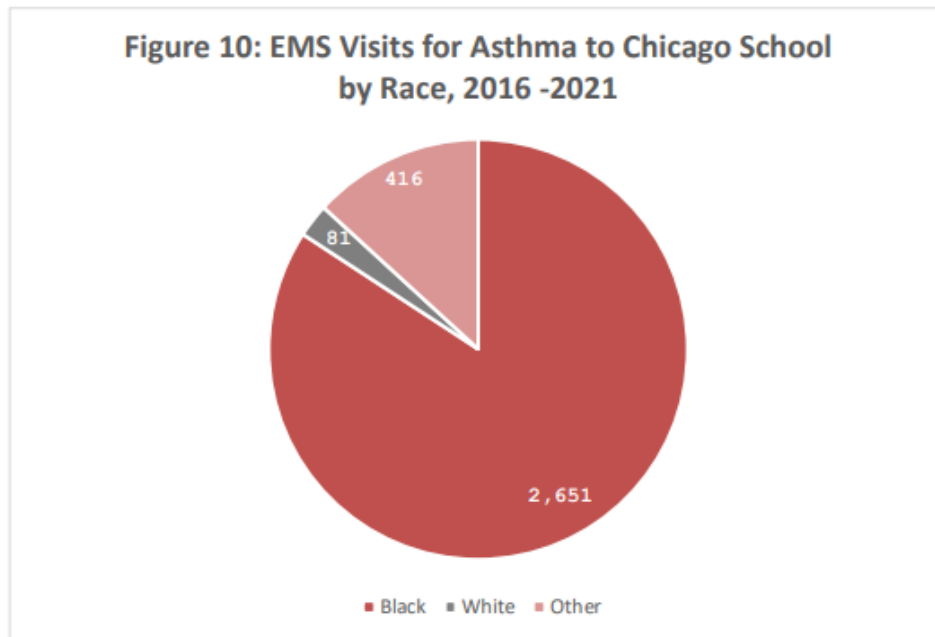
³⁵ Illinois Department of Public Health, *Asthma Trends: Mortality, 2000-2016*, <https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/asthma-trends-hospital-discharge-data-2016-2019.pdf>.

³⁶ Illinois Department of Public Health, *Asthma Trends: Mortality Tables 2000-2018*, <https://dph.illinois.gov/content/dam/soi/en/web/idph/files/publications/asthma-mortality-tablessept20docx-10062020.pdf>.

Figure 13. Asthma ED Visit Rate by Race/Ethnicity, Illinois, 2016-2019



The Respiratory Health Association report analyzing data on visits from emergency medical services to Chicago schools (Figure 10) reflects similar disproportionate impacts on Black children.³⁷



The American Lung Association named Chicago “one of the most polluted cities” and in its 2023 “State of the Air” report gave Cook, DuPage, Kane, Lake, Madison, and McHenry counties the grade of F in terms of the number of high ozone days that they experienced.³⁸ According to the

³⁷ Respiratory Health Association, *supra* note 32.

³⁸ American Lung Association, *2023 State of the Air Report Card: Illinois*, <https://www.lung.org/research/sota/city-rankings/states/illinois>.

American Lung Association, “[b]oth ozone and particle pollution are dangerous to public health and can increase the risk of premature death and other serious health effects such as lung cancer, asthma attacks, cardiovascular damage, and developmental and reproductive harm.”³⁹

Reducing ozone pollution and NOx emissions, a precursor to ozone pollution, is therefore essential to reducing the unequal public health harms unjustly borne by low-income populations and people of color in Illinois. As discussed below, adopting the ACC II, ACT, and HDO Rules, which require sales of increasing percentages of zero-emission vehicles, as well as decreasing quantities of NOx emissions from internal combustion engines, is critical for improving public health in Illinois’ urban and rural environmental justice communities.

II. POLLUTION FROM VEHICLES IS A MAJOR DRIVER OF ILLINOIS’ ELEVATED OZONE LEVELS.

Pollution from light-duty, medium-duty, and heavy-duty vehicles is a significant source of NOx emissions—and therefore ozone formation—in Illinois. These emissions must be reduced to come into attainment with the ozone NAAQS and minimize public health harms. In order to reduce these emissions, Illinois must adopt and enforce California’s ACC II, ACT, and HDO Rules.

A. Overview: NOx Emissions from Illinois Vehicles

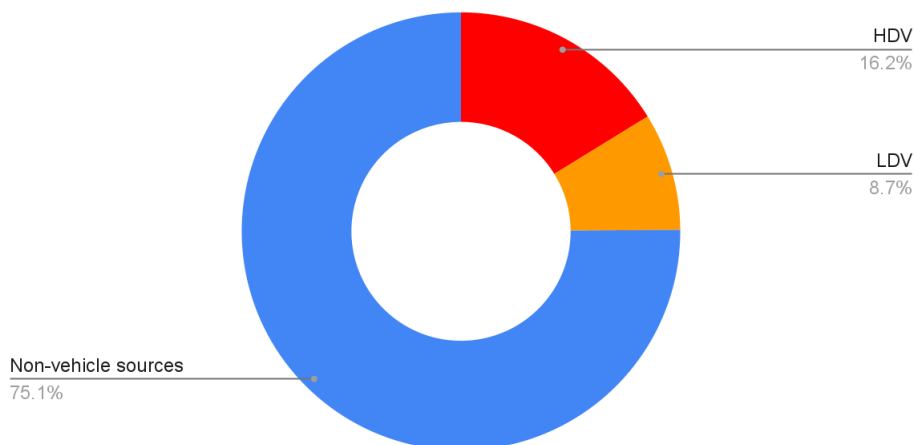
As of January 1, 2023 there are 7,276,445 light-duty vehicles and 2,247,792 medium- and heavy-duty vehicles registered in Illinois.⁴⁰ NOx emissions emanate from a range of sources, including coal-fired power plants and industrial operations, but nearly a quarter of the state’s total NOx emissions stem from vehicles’ exhaust. Medium- and heavy-duty vehicles contribute an estimated 16.2% of Illinois’ total NOx emissions, while light-duty vehicles contribute approximately 8.7% of those total NOx emissions:⁴¹

³⁹ American Lung Association, “Chicago Named One of the Most Polluted Cities in New Lung Association Report” (Apr. 20, 2022), <https://www.lung.org/media/press-releases/chicago-sota-report-2022>.

⁴⁰ Office of the Illinois Secretary of State, *2022 Registration Counts by County*, <https://www.ilsos.gov/departments/vehicles/statistics/lpcountycounts/2022countycounts.pdf>

⁴¹ EPA, *2020 National Emissions Inventory (NEI) Supporting Data and Summaries* (last accessed April 19, 2023), <https://www.epa.gov/air-emissions-inventories/2020-nei-supporting-data-and-summaries>. NOx emissions by state and sector were downloaded and compared to determine the relative contribution of NOx emissions from on-road light-duty and heavy-duty vehicles.

Illinois NOx Emissions Attributable to Light and Heavy Duty Vehicles



Many of these emissions are in areas where Illinois is already in nonattainment of ozone NAAQS—that is, these areas fail to meet minimum health-based federal air quality standards.

B. Vehicles Are Major Drivers of High Ozone Levels In Nonattainment Areas and Environmental Justice Communities

Sierra Club retained Sonoma Technology to model the ozone impacts of light-duty, medium-duty, and heavy-duty vehicles on Illinois’ nonattainment areas and environmental justice communities, and to estimate how high a contribution each of these vehicle types make to state ozone pollution.⁴² Vehicles driving on Illinois’ roads contribute nearly a quarter of Illinois’ total NOx emissions, approximately 24.9%. These NOx emissions, in turn, contribute to ozone pollution, which meaningfully contributes to Illinois’ violations of NAAQS by having air pollutant levels in excess of the minimum allowable safe levels.

Sonoma Technology found that emissions from on-road vehicles in Illinois frequently have impacts greater than 1% of the 2015 ozone NAAQS at Air Quality System (“AQS”) monitoring locations within ozone nonattainment areas.⁴³ In fact, the highest modeled ozone impacts from vehicles in the Chicago nonattainment area in 2016 and 2023 exceed 0.7 ppb nearly every day when the monitors register exceedances of the ozone standard of 70 ppb.⁴⁴

⁴² This modeling utilized the Comprehensive Air Quality Model with Extensions (“CAMx”) with Ozone Source Apportionment Technology (“OSAT”) for the 2016 ozone season (April to October) in Illinois. The source apportionment modeling simulations used EPA’s 2016v2 (2016fj_6j) modeling platform, which relies on emissions data from the National Emissions Inventory, as well as EPA’s 2023 projections platform.

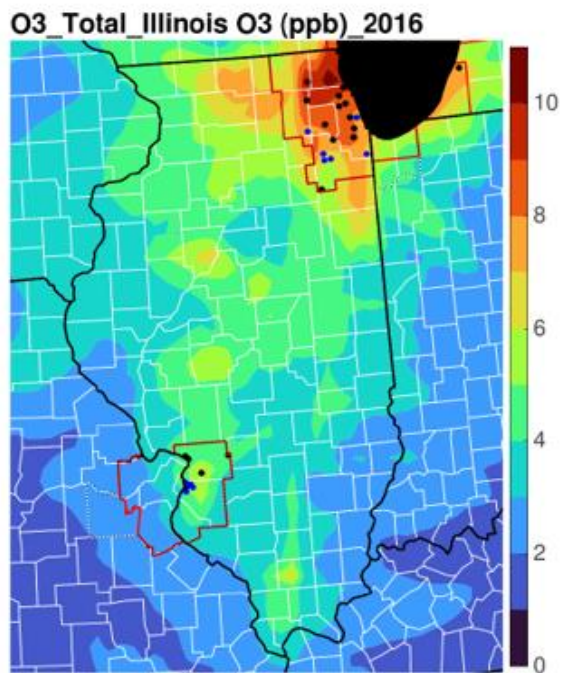
⁴³ Lynn Alley & Kenneth Craig, Sonoma Technology, *Technical Memorandum Re: Analysis of Air Quality Impacts from Onroad Mobile Sources on Ozone Nonattainment areas in Connecticut, Illinois, Maryland, Michigan, New Jersey, and Pennsylvania* (May 19, 2023). <https://shorturl.at/abfoT>.






⁴⁴ For an in-depth explanation of the data analysis methods of this report, *see id.* at 1-2, Appendix A.

EPA has considered contributions from *all anthropogenic emissions in an upwind state* to be significant if they exceed 1% of the ozone NAAQS averaged over a subset of high ozone days during an ozone season.⁴⁵ Consequently, results showing that *a single* class of vehicles on Illinois' roads *alone* contributes more than 1% of the ozone NAAQS on high ozone days are extremely significant.

C. Vehicles Operated In Illinois Have Significant Ozone Impacts On the Chicago Nonattainment Area

On days in 2016 that exceeded the 2015 ozone NAAQS of 70 ppb, the ozone impacts from vehicles in Illinois frequently contributed multiple parts per billion of ozone to the atmosphere. On the day in 2016 with the highest combined contribution to ozone from all on-road vehicles in Illinois, *11.26 ppb, or 16.1% of the 70 ppb ozone NAAQS limit, came from vehicles alone.* The collective impact of this pollution is reflected in the following map of ozone impacts on Illinois generated by Sonoma Technology:



-  County lines
-  State lines
-  2008 and 2015 O3 non-attainment areas
-  AQS Monitors
-  EJ Zip Codes

⁴⁵ See, e.g., EPA, *Revised Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS*, 86 Fed. Reg. 23054, 23057 (Apr. 30, 2021); EPA, *Federal “Good Neighbor Plan” for the 2015 Ozone National Ambient Air Quality Standards*, EPA-HQ-OAR-2021-0668, Mar. 2023).

Table 5. Maximum 2016 Modeled Impacts from Illinois onroad mobile sources on days that exceeded the ozone NAAQS of 70 ppb at any monitor in the nonattainment area during the 2016 ozone season. 8-hr maximum modeled ozone contributions are relative values (ppb) at AQS monitors and absolute values (ppb) at EJ zip codes. Values that equal or exceed 1% of the NAAQS (0.70 ppb) are highlighted in red, while values that equal or exceed 0.5% of the NAAQS (0.35 ppb) are highlighted in yellow. Maximum source contributions are highlighted in bold.

Chicago, IL Nonattainment Area Receptors

Ozone Nonattainment Day	Max Ozone Impact at any AQS Monitor (ppb)			Max Ozone Impact at any EJ zip code (ppb)		
	LDV	MHDV	Total Vehicle	LDV	MHDV	Total Vehicle
16-Apr	0.42	0.35	0.77	0.72	0.57	1.29
17-Apr	1.47	0.66	2.13	1.03	0.79	1.82
18-Apr	0.99	1.75	2.74	0.70	1.53	2.23
23-May	1.04	1.24	2.28	0.68	1.40	2.08
24-May	2.29	3.23	5.52	1.08	1.89	2.97
3-Jun	1.75	2.72	4.47	1.28	2.33	3.61
11-Jun	3.15	2.04	5.19	1.96	1.33	3.29
13-Jun	1.79	2.98	4.77	1.17	1.95	3.12
14-Jun	1.05	1.50	2.55	0.54	0.80	1.34
15-Jun	3.41	4.22	7.63	1.04	2.38	3.42
18-Jun	1.93	1.10	3.03	3.13	2.24	5.37
19-Jun	2.09	1.67	4.96	2.09	1.67	3.76
24-Jun	1.92	2.28	4.20	1.57	1.73	3.30
25-Jun	3.54	3.16	6.70	2.20	2.52	4.72
19-Jul	3.48	4.58	8.06	2.54	4.16	6.70
20-Jul	2.88	3.40	6.28	2.04	3.09	5.13
22-Jul	3.19	3.19	6.38	2.63	3.56	6.19
26-Jul	3.05	4.22	7.27	2.75	4.89	7.64
27-Jul	4.96	6.30	11.26	3.28	4.83	8.11
3-Aug	2.71	4.91	7.62	2.06	4.76	6.82
4-Aug	2.54	4.12	6.66	1.89	3.26	5.15
10-Aug	4.49	6.42	10.91	2.65	5.21	7.86

Table 6. Maximum **2023** Projected Modeled Impacts from **Illinois onroad** mobile sources on days that exceeded the ozone NAAQS of 70 ppb at any monitor in the nonattainment area during the 2016 ozone season. 8-hr maximum modeled ozone contributions are relative values (ppb) at AQS monitors and absolute values (ppb) at EJ zip codes. Values that equal or exceed 1% of the NAAQS (0.70 ppb) are highlighted in red, while values that equal or exceed 0.5% of the NAAQS (0.35 ppb) are highlighted in yellow. Maximum source contributions are highlighted in **bold**.

Chicago, IL Nonattainment Area Receptors

Ozone Nonattainment Day	Max Ozone Impact at any AQS Monitor (ppb)			Max Ozone Impact at any EJ zip code (ppb)		
	LDV	MHDV	Total Vehicle	LDV	MHDV	Total Vehicle
16-Apr	0.22	0.35	0.57	0.44	0.56	1.00
17-Apr	0.98	0.68	1.66	0.63	0.75	1.38
18-Apr	0.64	1.87	2.51	0.44	1.51	1.95
23-May	0.74	1.40	2.14	0.43	1.64	2.07
24-May	1.29	2.96	4.25	0.58	1.79	2.37
3-Jun	1.20	3.31	4.51	0.84	2.69	3.53
11-Jun	1.51	2.07	3.58	0.70	1.50	2.20
13-Jun	1.08	3.78	4.86	0.71	2.10	2.81
14-Jun	0.69	1.56	2.25	0.32	0.91	1.23
15-Jun	2.00	4.27	6.27	0.71	2.43	3.14
18-Jun	1.46	1.56	3.02	1.90	2.44	4.34
19-Jun	0.97	1.27	2.24	0.97	1.27	2.24
24-Jun	1.78	0.18	2.25	1.13	2.46	3.59
25-Jun	1.78	2.56	4.34	1.13	1.87	3.00
19-Jul	2.14	4.91	7.05	1.36	4.75	6.11
20-Jul	1.80	3.72	5.52	1.21	3.31	4.52
22-Jul	2.06	3.48	5.54	1.63	4.00	5.63
26-Jul	2.07	5.85	7.92	1.60	4.92	6.52
27-Jul	3.06	7.07	10.13	2.03	5.22	7.25
3-Aug	1.46	4.50	5.96	1.12	4.36	5.48
4-Aug	1.65	4.61	6.26	1.12	3.34	4.46
10-Aug	2.40	5.94	8.34	1.53	5.12	6.65

Modeling based on AQS monitor data from the St. Louis nonattainment area, which also encompasses part of Illinois,⁴⁶ shows high contributions from both light-duty and medium- and heavy-duty vehicles to total ozone levels. In 2016, the total contribution from Illinois' on-road vehicles reached a sizable 3.67 ppb one day. When projected impacts in 2023 were modeled for the St. Louis nonattainment area, impacts of up to 2.38 ppb are still expected.

⁴⁶ See EPA, *Final Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)*, https://www.epa.gov/sites/default/files/2018-05/documents/st_louis_tsd_final.pdf.

Table 7. Maximum **2016** Modeled Impacts from **Illinois onroad** mobile sources on days that exceeded the ozone NAAQS of 70 ppb at any monitor in the nonattainment area during the 2016 ozone season. 8-hr maximum modeled ozone contributions are relative values (ppb) at AQS monitors and absolute values (ppb) at EJ zip codes. Values that equal or exceed 1% of the NAAQS (0.70 ppb) are highlighted in red, while values that equal or exceed 0.5% of the NAAQS (0.35 ppb) are highlighted in yellow. Maximum source contributions are highlighted in **bold**.

St. Louis, IL Nonattainment Area Receptors

Ozone Nonattainment Day	Max Ozone Impact at any AQS Monitor (ppb)			Max Ozone Impact at any EJ zip code (ppb)		
	LDV	MHDV	Total Vehicle	LDV	MHDV	Total Vehicle
23-May	1.52	1.31	2.83	1.11	1.12	2.23
9-Jun	0.50	0.62	1.12	0.56	0.74	1.30
10-Jun	1.24	1.57	2.81	0.51	0.63	1.14
13-Jun	1.44	1.84	3.28	0.89	1.10	1.99
16-Jun	0.21	0.25	0.46	0.24	0.30	0.54
18-Jun	0.97	0.74	1.71	0.97	0.66	1.63
24-Jun	0.39	0.41	0.80	0.59	0.61	1.20
4-Aug	1.41	2.02	3.43	1.50	2.17	3.67
9-Aug	0.80	1.02	1.82	0.63	0.83	1.46
22-Sep	0.37	0.41	0.78	0.39	0.50	0.89
23-Sep	0.25	0.31	0.56	0.48	0.61	1.09

Table 8. Maximum **2023** Projected Modeled Impacts from **Illinois onroad** mobile sources on days that exceeded the ozone NAAQS of 70 ppb at any monitor in the nonattainment area during the 2016 ozone season. 8-hr maximum modeled ozone contributions are relative values (ppb) at AQS monitors and absolute values (ppb) at EJ zip codes. Values that equal or exceed 1% of the NAAQS (0.70 ppb) are highlighted in red, while values that equal or exceed 0.5% of the NAAQS (0.35 ppb) are highlighted in yellow. Maximum source contributions are highlighted in **bold**.

St. Louis, IL Nonattainment Area Receptors

Ozone Nonattainment Day	Max Ozone Impact at any AQS Monitor (ppb)			Max Ozone Impact at any EJ zip code (ppb)		
	LDV	MHDV	Total Vehicle	LDV	MHDV	Total Vehicle
23-May	0.73	0.97	1.70	0.55	0.89	1.44
9-Jun	0.24	0.46	0.70	0.27	0.53	0.80
10-Jun	0.69	1.33	2.02	0.25	0.49	0.74
13-Jun	0.70	1.38	2.08	0.45	0.86	1.31
16-Jun	0.11	0.20	0.31	0.16	0.35	0.51
18-Jun	0.45	0.52	0.97	0.42	0.46	0.88
24-Jun	0.21	0.35	0.56	0.35	0.59	0.94
4-Aug	0.70	1.53	2.23	0.74	1.64	2.38
9-Aug	0.49	1.02	1.51	0.37	0.78	1.15
22-Sep	0.22	0.37	0.59	0.22	0.45	0.67
23-Sep	0.15	0.28	0.43	0.27	0.59	0.86

As these data reflect, on every single ozone nonattainment day except one, the maximum ozone impact from on-road vehicles in Illinois exceeded 0.5% of the ozone NAAQS, and typically exceeded 1%—which, again, EPA considers a “significant contribution” triggering statewide NOx reductions in other regulatory contexts. Indeed, on-road transportation is the most significant single in-state contributor to ozone levels that we are aware of, reaching 16.1% of the 70 ppb NAAQS standards. Therefore, adopting all of California’s vehicle rules would likely be the single strongest measure for reducing ozone pollution across Illinois.

The data also highlights the fact that schools with high populations of minority students are located in areas with dangerously high levels of ozone pollution. For example, one of the AQS monitors that registered elevated ozone levels was located at Larsen Middle School in Elgin, IL. On various nonattainment days in 2016, the monitor at Larsen showed Illinois’ vehicles contributing 2.13-10.28 ppb of ozone, or 3-15% of the NAAQS. EPA’s EJScreen tool indicates that Larsen’s zip code, 60120, is 89th percentile in terms of ozone pollution within both the state of Illinois and nationally. Eighty-eight percent of Larsen’s students identify as people of color—with 69.9% identifying as Hispanic/Latino, 6.7% identifying as Asian or Asian/Pacific Islander, 4.8% identifying as American Indian or Alaska Native, and 4% identifying as Black.⁴⁷ Illinois’ leaders should take steps to ensure that students of color at Larson and elsewhere throughout the state have the opportunity to breathe the same air quality as their white counterparts.

III. ILLINOIS MUST REDUCE NOX EMISSIONS BY ADOPTING MORE STRINGENT RULES THAT SET LOW- AND ZERO-EMISSION REQUIREMENTS FOR VEHICLES.

In order to achieve the transportation electrification goals set forth in Illinois law, protect public health, and reduce climate-changing emissions, Illinois should swiftly adopt the ACC II, ACT, and HDO Rules, which reduce pollution from light-duty, medium-duty, and heavy-duty vehicles.

A. Light-Duty Vehicles Rule: ACC II

The ACC II Rule requires manufacturers to sell an increasing percentage of new zero-emission cars and light-duty trucks starting in model year 2027, with 100% of these sales comprising zero-emission vehicles in 2035.⁴⁸ By adopting this rule, the Illinois EPA would greatly improve its chance of meeting the ambitious transportation-related goals set forth in the Climate and Equitable Jobs Act (“CEJA”). CEJA provides:

- (1) Illinois should increase the adoption of electric vehicles in the State to 1,000,000 by 2030.
- (2) Illinois should strive to be the best state in the nation in which to drive and manufacture electric vehicles.
- (3) Widespread adoption of electric vehicles is necessary to electrify the transportation sector, diversify the transportation fuel mix, drive economic development, and protect air quality.

⁴⁷ U.S. News & World Report, *Larsen Middle School*, <https://www.usnews.com/education/k12/illinois/larsen-middle-school-255634>.

⁴⁸ California Air Resources Board, *Proposed Advanced Clean Cars II (ACC II) Regulations*, <https://ww2.arb.ca.gov/rulemaking/2022/advanced-clean-cars-ii>.

- (4) Accelerating the adoption of electric vehicles will drive the decarbonization of Illinois' transportation sector.⁴⁹

Illinois has made reducing greenhouse gas emissions from its vehicle fleet a clear priority. For example, enacted by the state legislature in 2021, the Climate and Equitable Jobs Act (“CEJA”) mandates the states phase carbon emissions out of the electric sector and drastically reduce transportation sector GHG emissions. Among other provisions, CEJA created a \$4,000 electric vehicle purchase rebate.⁵⁰ In order to achieve Illinois' important goal of dramatically increasing the quantity of electric vehicles on its roads, the Illinois EPA should adopt the ACC II Rule as soon as possible,⁵¹ and adequately enforce the zero-emission light-duty vehicle sales requirements mandated by that Rule.

B. Medium- and Heavy-Duty Vehicle Rules: ACT and HDO

The ACT and HDO Rules are both critical measures for improving public health, reducing greenhouse gas emissions, and complying with CEJA's target for electric vehicle adoption. As the ACC II Rule does for light-duty vehicles, the ACT Rule requires increasing sales of zero-emission medium- and heavy-duty vehicles from model year 2024 through model year 2035.⁵² The HDO Rule works in tandem with the ACT Rule to increase the costs of—and thereby reduce demand for—medium- and heavy-duty vehicles with internal combustion engines by requiring increasing reductions in NOx emissions from those vehicles.⁵³

While the ACT Rule does not require sales of 100% zero-emission trucks, the HDO Rule would ensure that the diesel trucks that are still sold and purchased in the coming years are cleaner and safer for public health, and that the cost of these trucks reflects the actual societal cost of the dangerous air pollutants they emit. More specifically, the HDO Rule sets standards for the acceptable levels of certain harmful air pollutants—including NOx, non-methane hydrocarbons, carbon dioxide, and particulate matter—emitted by heavy-duty trucks.⁵⁴ These standards grow stricter over time, requiring trucks' NOx emissions to decrease by 75% in 2024 and by 90% beginning in 2027.⁵⁵

⁴⁹ 20 ILCS 627/45(a).

⁵⁰ 20 ILCS 686/20(a); 415 ILCS 120/27(a)(1). The State's EV purchase rebate incentive program proved successful, as consumers used the full amount of the legislature's funding allocation in less than a year.

⁵¹ *Id.* ERM and NRDC recently released an analysis of climate and social benefits of Illinois adopting ACC II. ERM, “Illinois Advanced Clean Cars II Program,” (Sept. 2023), https://www.erm.com/globalassets/documents/reports/illinois_acc_ii_report_2023.pdf.

⁵² ACT Rule § 1963.1(b). The ACT rule's requirements vary for different weight classes of vehicles; several classes of trucks must attain 75% zero-emission sales by model year 2035, while others, like tractors, are required to reach 40% zero-emission sales by model year 2035. *Id.*

⁵³ California Air Resources Board, *Heavy-Duty Omnibus Regulation*, <https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox>; California Air Resources Board, *Heavy-Duty Low NOx*, <https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox>.

⁵⁴ HDO § 1956.8(A)(2)(D).

⁵⁵ California Air Resources Board, *Heavy-Duty Omnibus Regulation*, <https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox>; California Air Resources Board, *Heavy-Duty Low NOx*, <https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox>.

C. Adopting the ACC II, ACT, and HDO Rules Would Be Feasible and Beneficial for Illinois

We urge the Illinois EPA to adopt the ACT and HDO Rules alongside the ACC II Rule, in order to increase the share of clean, electric on-road vehicles from each vehicle class, while reducing emissions that will harm Illinois residents, especially those living in environmental justice communities.

Requiring sales of cleaner light-duty, medium-duty, and heavy-duty vehicles is a key strategy for complying with the federal Clean Air Act's ozone NAAQS and achieving CEJA's goal. As noted above, CEJA sets forth an ambitious statewide goal of placing 1 million electric vehicles on Illinois' roads by 2030, which will necessarily require a large quantity of older vehicles to be replaced with electric models, rather than new gasoline-burning models.⁵⁶ This is going to be a challenging goal to meet, and the Pritzker Administration should use every measure in its toolkit to meet it. Modeling projects that if Illinois adopts ACC II, it would have 1.53 million light-duty electric vehicles on the road in 2030.⁵⁷ ACT adoption would result in 51,900 medium- and heavy-duty electric vehicles on Illinois' roads in 2030.⁵⁸

Further, adopting the vehicle rules is important for meeting any and all greenhouse gas emission reduction targets in the state, including the Chicago Metropolitan Agency for Planning ("CMAP")'s goal of reducing greenhouse gas emissions by 80% below 2005 levels by 2050.⁵⁹ CMAP's greenhouse gas emissions inventory from counties in northeastern Illinois provides a helpful illustration of the outsized impact of vehicles on statewide greenhouse gas emissions.⁶⁰ From 2010 through 2019, CMAP warned that "[t]ransportation emissions — almost entirely from cars, buses, and trucks — increased by 2 percent between 2010 and 2019. It is the only sector that saw an increase in emissions."⁶¹ CEJA sums up the importance of requiring increased adoption of electric vehicles—which is exactly the purpose of the ACC II, and ACT Rules—by explaining that "[w]idespread adoption of electric vehicles is necessary to electrify the transportation sector" and "drive the decarbonization of Illinois' transportation sector."⁶²

There are a number of reasons why adopting these vehicle rules would be prudent and proactive. First, the ACT Rule, as promulgated by the California Air Resources Board, has a two-year lead time between adoption and implementation that is carefully calibrated to the rapidly progressing technology of medium- and heavy-duty electric vehicles. Second, the Illinois EPA will be in the company of numerous sister states that either already have adopted, or are in the process of adopting, the ACT Rule, reflecting their collective judgment that there is no need to delay

⁵⁶ 20 ILCS 627/45(a).

⁵⁷ See *infra* note 65 and accompanying text.

⁵⁸ International Council on Clean Transportation, "Fact Sheet: Benefits of adopting California's Advanced Clean Truck Program, Heavy Duty Vehicle Omnibus Standards and a 100% sales requirement in Illinois," at 2, Table 1 (Sept. 2022). <https://theicct.org/wp-content/uploads/2022/09/HDV-fact-sheet-IL-092122.pdf>. See *infra* note 67 and accompanying text.

⁵⁹ Chicago Metropolitan Agency for Planning, *Greenhouse Gas Emissions in Northeastern Illinois*, <https://www.cmap.illinois.gov/data/greenhouse-gas-inventory>.

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² 20 ILCS 627/45(a).

adoption of the ACT Rule. Third, Illinois can take advantage of the many available federal funds that can accelerate the state’s adoption of charging infrastructure and accelerate the acquisition of electric vehicles themselves. These federal funding sources include billions of dollars in grants for electric vehicle purchases under the Infrastructure Investment & Jobs Act’s Low-No NOx program; the Competitive Bus & Bus Facilities funding; and the Congestion Mitigation and Air Quality grant programs; as well as grants for light-duty vehicle charging infrastructure under the National Electric Vehicle Infrastructure and Charging & Fueling Infrastructure grant programs.⁶³ Fourth, there is nothing unique about Illinois that would suggest that Illinois, unlike all of the states that have already adopted the ACT Rule—California, Colorado, New York, New Jersey, Washington, Oregon, Massachusetts and Vermont—cannot effectively adopt the ACC II, ACT, and HDO Rules in the immediate future.

By adopting these important vehicle rules, Illinois will contribute to country-wide reductions in greenhouse gas emissions by assisting in precipitating a national shift toward electric trucks. A number of states have already adopted some combination of the ACC II, ACT, and HDO Rules, including Connecticut, Maine, Massachusetts, New Jersey, New York, Oregon, Washington, and Vermont.⁶⁴ If Illinois adopts these rules, manufacturers will receive a stronger message that demand for electric cars and trucks is rising. As more and more states adopt these vehicle rules, manufacturers will receive a stronger incentive to shift toward producing only electric trucks.

D. Adopting the ACC II, ACT, and HDO Rules Would Significantly Reduce Illinois’ NOx Emissions and Ozone Levels

Modeling demonstrates that Illinois can dramatically reduce NOx emissions—and ozone pollution that forms from the interaction of NOx emissions with other pollutants in the atmosphere—by adopting the ACC II, ACT, and HDO Rules.

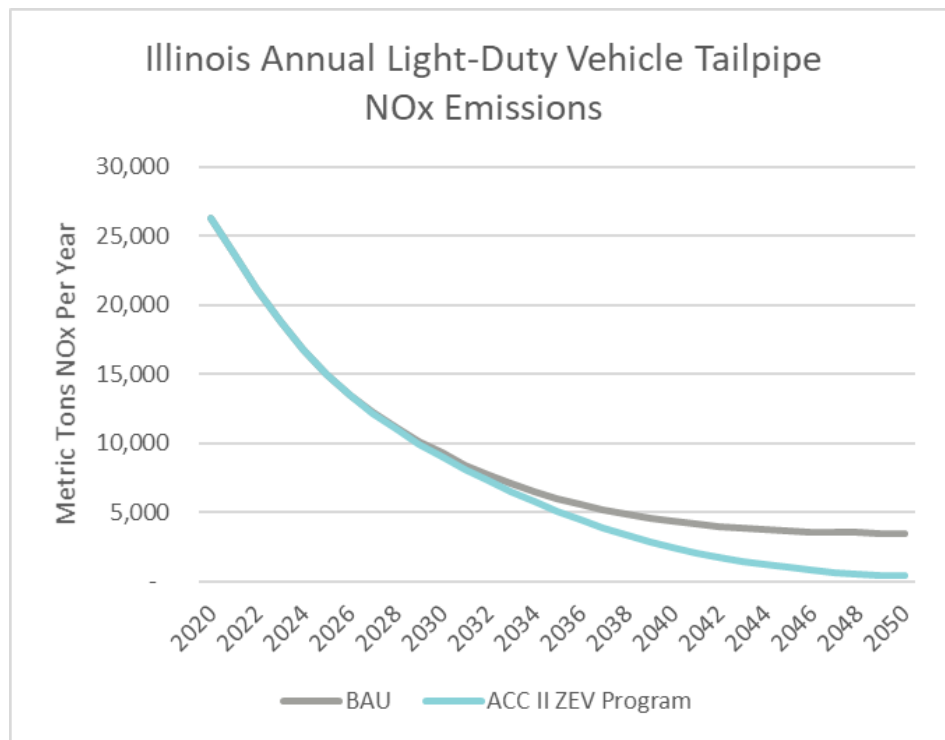
Sierra Club used EV-REDI, a transportation analysis tool developed by Synapse Energy Economics, to model the impacts of Illinois adopting the ZEV program of the ACC II Rule. One can then compare the ACC II adoption scenario to a business-as-usual scenario where ZEV sales shares meet state-specific projections by Rhodium in the central scenario of its 2022 Taking Stock and IRA baseline.⁶⁵

⁶³ See Federal Transit Administration, “FTA Program Fact Sheets under the Bipartisan Infrastructure Law,” <https://www.transit.dot.gov/funding/grants/fta-program-fact-sheets-under-bipartisan-infrastructure-law>.

⁶⁴ See National Caucus of Environmental Legislators, “What California’s New Advanced Clean Car Rule Means for Other States” (Jan. 10, 2023), [https://www.nceleenviro.org/articles/what-californias-new-advanced-clean-car-rule-means-for-other-states/#:~:text=Six%20states%20\(Massachusetts%2C%20New%20Jersey,in%20adopting%20the%20ACT%20rule;SierraClubNewJerseyChapter,“AdvocatesUrgeNewJerseytoCatchuptoTenOtherStates&AdopttheAdvancedCleanCarsIIStandardsThisYear”\(Mar.13,2023\),https://www.sierraclub.org/new-jersey/blog/2023/03/advocates-urge-new-jersey-catch-ten-other-states-adopt-advanced-clean-cars](https://www.nceleenviro.org/articles/what-californias-new-advanced-clean-car-rule-means-for-other-states/#:~:text=Six%20states%20(Massachusetts%2C%20New%20Jersey,in%20adopting%20the%20ACT%20rule;SierraClubNewJerseyChapter,“AdvocatesUrgeNewJerseytoCatchuptoTenOtherStates&AdopttheAdvancedCleanCarsIIStandardsThisYear”(Mar.13,2023),https://www.sierraclub.org/new-jersey/blog/2023/03/advocates-urge-new-jersey-catch-ten-other-states-adopt-advanced-clean-cars).

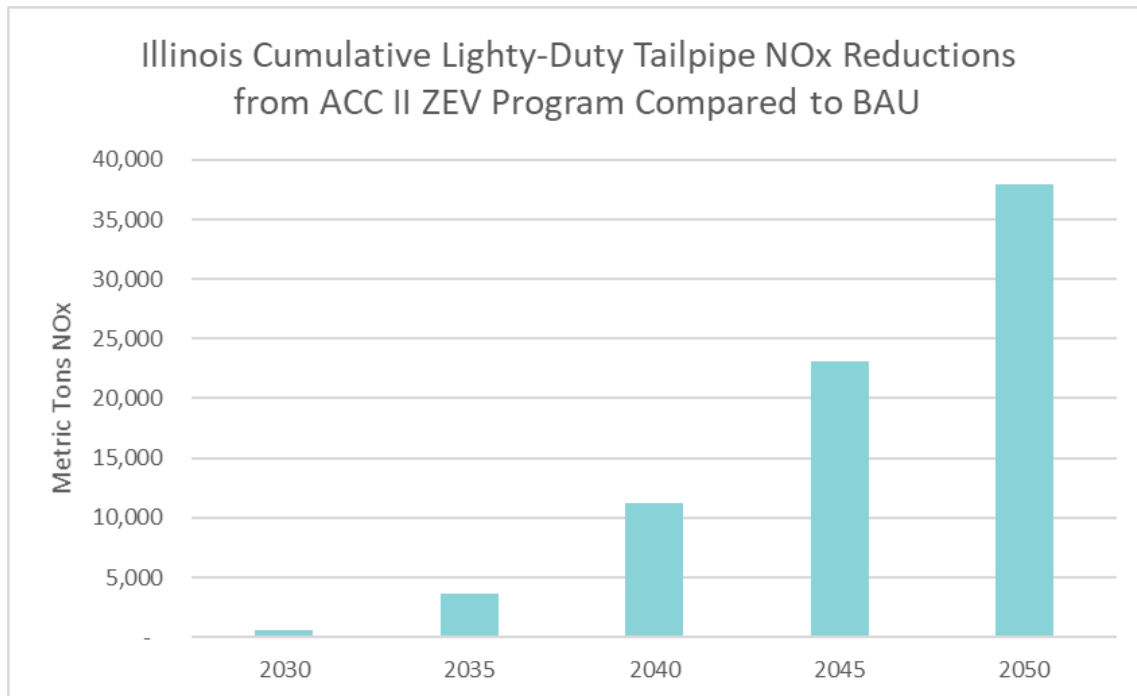
⁶⁵ This reflects an analysis of the ZEV component of the ACC II Rule by Sierra Club using EV-REDI, a transportation analysis tool developed by Synapse Energy Economics. In this case, EV-REDI takes inputs of annual EV sales percentage of new light-duty vehicles, and the allowed split between BEVs and PHEVs, and uses state-specific vehicle turnover and VMT data to quantify the impacts on emissions and other metrics. This analysis assumes that in the ACC II scenario, the state’s EV sales share matches that of the business-as-usual scenario between historical data from 2022 and the rule’s onset in model year 2027; that manufacturers

As illustrated in the graph below, Illinois’s adoption of ACC II is expected to result in a 98% reduction in the state’s light-duty vehicle tailpipe NOx emissions by 2050, relative to 2022 levels. This is higher than the expected 84% reduction in NOx emissions under the business-as-usual scenario. Under business as usual, a transition toward zero-emission vehicles is still predicted, but it would take place at a slower pace.



With these annual savings, Illinois could cumulatively avoid emissions of over 3,600 metric tons of NOx by the ACC II program’s end in 2035. By 2050, this quantity of avoided emissions increases tenfold, with cumulative NOx reductions at nearly 38,000 metric tons.

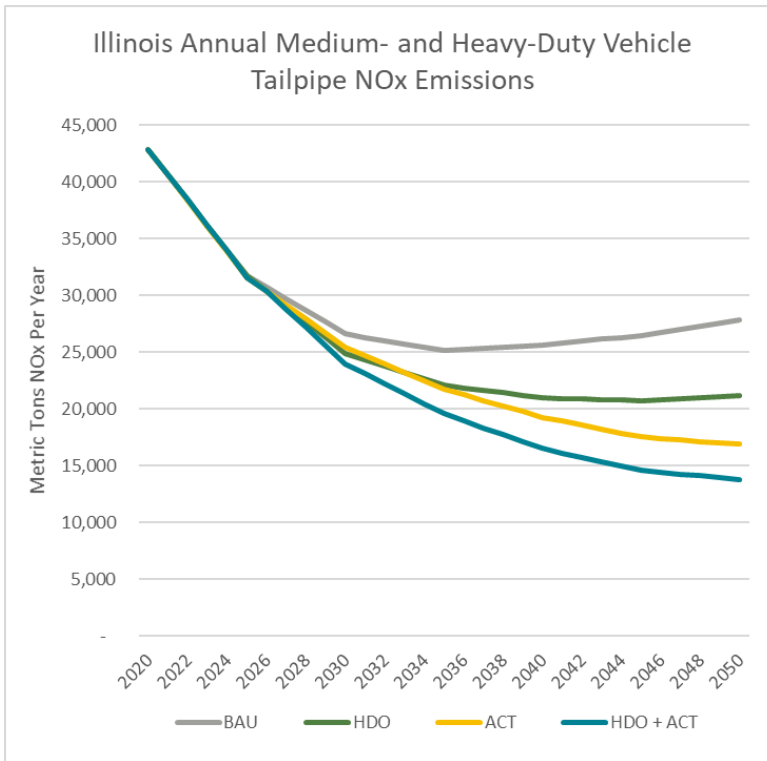
use no compliance flexibilities; and that Class 2b trucks are credited under the ACT regulation rather than ACC II. The BAU scenario models the state reaching the state-specific EV sales shares projected by Rhodium Group in the central scenario of its 2022 Taking Stock + IRA baseline in 2025, 2030, and 2035, with interpolation in between, and with EV sales share held constant at 2035 levels through 2050.



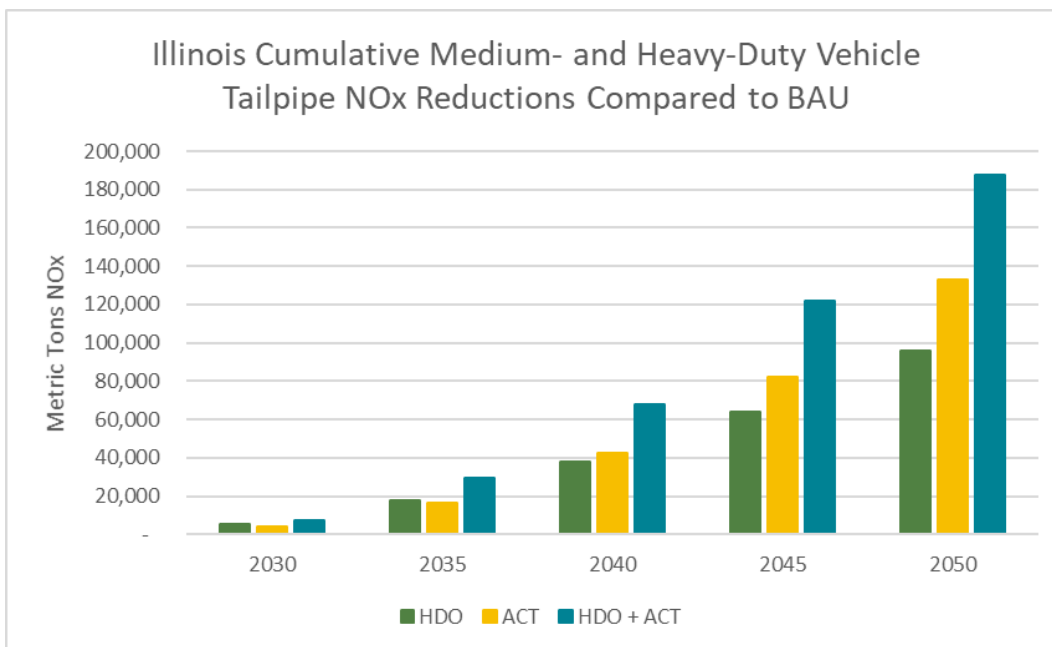
Further modeling of the anticipated impacts of adopting the ACT and HDO rules shows that these rules are calculated to markedly decrease NOx emissions statewide from 2030 through 2050.⁶⁶ The International Council on Clean Transportation commissioned Sonoma Technology to model the impacts of Illinois adopting the ACT and HDO rules, as compared to a business-as-usual scenario reflecting federal programs that were in place as of year-end 2021.⁶⁷ The graph below shows that adopting only HDO could reduce the tailpipe NOx emissions by 45% below 2022 levels by 2050, while adopting only ACT could result in reductions of 56%. Adopting both programs could reduce Illinois’s medium- and heavy-duty NOx emissions by 64% below 2022 levels in 2050. These scenarios are compared to a business as usual scenario, where NOx emissions are only reduced by 28% in the same time period.

⁶⁶ See NRDC, *Illinois Clean Trucks Program: An Analysis of the Impacts of Zero-Emission Medium- and Heavy-Duty Trucks on the Environment, Public Health, Industry, and the Economy* (2022), https://www.nrdc.org/sites/default/files/media-uploads/il_clean_trucks_report_06.pdf; ICCT, “Benefits of adopting California’s Advanced Clean Truck Program, HeavyDuty Vehicle Omnibus Standards and a 100% sales requirement in Illinois,” (Sept. 2022).

⁶⁷ International Council on Clean Transportation, “Fact Sheet: Benefits of adopting California’s Advanced Clean Truck Program, Heavy Duty Vehicle Omnibus Standards and a 100% sales requirement in Illinois,” (Sept. 2022). <https://theicct.org/wp-content/uploads/2022/09/HDV-fact-sheet-IL-092122.pdf>. These figures include tank-to-wheel NOx emissions from all medium- and heavy-duty vehicles, mirroring California’s method for estimating vehicle adoption under the ACT program, without adjusting to account for vehicles purchased out-of-state, ZEVs that may migrate out-of-state over time, or ZEVs that would have been produced to meet other requirements such as a federal GHG standards. *Id.* at 2. These policy scenarios are compared to a business-as-usual scenario reflecting Federal programs as of the end of 2021, and non-implementation of the GHG Phase 2 trailer requirements, which were under litigation.



By adopting HDO, Illinois could see cumulative NOx emissions reductions from its medium- and heavy-duty fleet reach nearly 95,700 metric tons by 2050. With ACT, the state could see over 132,800 metric tons of NOx emissions. If Illinois adopts both rules, the state could benefit from cumulative NOx emissions reductions of *over 187,700 metric tons* by 2050.



E. Illinois Should Codify Its Adoption of the ACC II, ACT, and HDO Rules In Its Ozone Nonattainment State Implementation Plans

Because adopting California’s vehicle rules would reduce NOx emissions and ozone levels in Illinois, this policy should be designated as a control measure to ensure reasonable further progress to compliance with ozone standards, and potentially a “reasonably available control measure” (“RACM”), in a future Illinois SIP.

In areas that are designated as moderate nonattainment under the Clean Air Act, states are required to provide for “reasonable further progress,” which means measures that would reduce states’ emissions of volatile organic compounds—another ozone precursor—by at least 15%.⁶⁸ EPA has clarified that measures to reduce NOx emissions can also count toward this 15% requirement.⁶⁹ California has also listed its vehicle rules as proposed measures for reducing NOx emissions in its 2022 ozone nonattainment SIP.⁷⁰

Illinois may also conclude that adopting the ACC II, ACT, and HDO Rules meets the definition of RACM for the purpose of future SIPs. The Clean Air Act requires nonattainment SIPs to “provide for the implementation of all reasonably available control measures [RACM] as expeditiously as practicable.”⁷¹ There are various criteria for categorizing a measure as a RACM:

RACM is defined by the EPA as any potential control measure for application to point, area, on-road and non-road emission source categories that meets the following criteria:

- The control measure is technologically feasible
- The control measure is economically feasible
- The control measure does not cause “substantial widespread and long-term adverse impacts”
- The control measure is not “absurd, unenforceable, or impracticable”
- The control measure can advance the attainment date by at least one year.⁷²

In order to pave a pathway toward redesignation to attainment for the ozone NAAQS, Illinois should adopt the ACC II, ACT, and HDO Rules. Illinois cannot be redesignated to attainment unless it can demonstrate that its “improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable

⁶⁸ 42 U.S.C. § 7511a(b)(1)(A).

⁶⁹ EPA, Guidance on Issues Related to 15 Percent Rate-of-Progress Plans (Aug. 23, 1993), https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19930823_shapiro_15pct_rop_guidance.pdf.

⁷⁰ See California Air Resources Board, *2022 State Strategy for the State Implementation Plan* (Sept. 22, 2022), https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_State_SIP_Strategy.pdf.

⁷¹ 42 U.S.C. § 7502(c)(1).

⁷² See, e.g., Approval and Promulgation of Implementation Plans; New York Reasonably Available Control Technology and Reasonably Available Control Measures, 74 Fed. Reg. 42,813, 42,817-42,818, <https://www.govinfo.gov/content/pkg/FR-2009-08-25/pdf/E9-20394.pdf>.

reductions.”⁷³ Adopting and implementing these vehicle rules would lead to significant, sustained reductions in NOx emissions that would support future efforts to redesignate the Chicago and St. Louis areas to attainment.

F. Adopting the ACC II, ACT, and HDO Rules Would Substantially Improve Public Health Outcomes Across the State

Timely adoption of the ACC II, ACT, and HDO Rules will have long-lasting positive impacts on Illinois residents’ health. Decreasing emissions of NOx and particulate matter from medium- and heavy-duty vehicles’ diesel exhaust is expected to reduce the prevalence of asthma, lung disease, and cancer.⁷⁴ This public health improvement would be especially pronounced in communities of color and low-income communities, which tend to be disproportionately impacted by many forms of environmental pollution, as illustrated by the much higher rates of asthma experienced in communities of color in Illinois.⁷⁵

IV. CONCLUSION: ILLINOIS SHOULD ADOPT THE ACC II, ACT, AND HDO RULES WITHOUT DELAY IN 2023.

Our organizations urge the Illinois Environmental Protection Agency to take steps to begin adoption of the ACC II, ACT, and HDO Rules without delay in 2023. Adopting this suite of clean vehicles rules is a critical step in fulfilling the state’s commitment to protecting environmental justice communities and addressing the existential threat of climate change. Together these rules will deliver enormous public health benefits and secure lasting reductions in greenhouse gas emissions.

Our organizations look forward to working with IEPA, the Governor’s Office, and other stakeholders to move Illinois toward a clean and equitable transportation future.

Sincerely,

[signature blocks appear on the following page]

⁷³ 42 U.S.C. § 7407(d)(3)(E)(iii).

⁷⁴ See Ghassan B Hamra, et al., “Lung Cancer and Exposure to Nitrogen Dioxide and Traffic: A Systematic Review and Meta-Analysis,” *Environmental Health Perspectives* (Apr. 14, 2015), <https://pubmed.ncbi.nlm.nih.gov/25870974/>; Malgorzata Kowalska, et al., “Effect of NOx and NO2 Concentration Increase in Ambient Air to Daily Bronchitis and Asthma Exacerbation, Silesian Voivodeship in Poland,” *International Journal of Environmental Research and Public Health* (Jan. 24, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7037218/>; see also California Air Resources Board, *Overview: Diesel Exhaust & Health*, <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

⁷⁵ See Section I.B.

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Glossary Appendix

ACC II Rule.....	Advanced Clean Cars II Rule
ACT Rule.....	Advanced Clean Trucks Rule
AQS.....	Air Quality System monitors
CAMx.....	Comprehensive Air Quality Model with Extensions
CEJA.....	Climate and Equitable Jobs Act
CMAP.....	Chicago Metropolitan Agency for Planning
EPA.....	U.S. Environmental Protection Agency
HDO Rule.....	Heavy-Duty Engine and Vehicle Omnibus Rule
IEPA.....	Illinois Environmental Protection Agency
NAAQS.....	National Ambient Air Quality Standards
NOx.....	nitrogen oxides (air pollutant)
OSAT.....	Ozone Source Apportionment Technology
ppb.....	parts per billion
RACM.....	reasonably available control measure
SIP.....	State Implementation Plan