



Institute for
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

June 14, 2024

To: Environmental Protection Agency

Re: Review of the Secondary National Ambient Air Quality Standards for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter, 89 FR 26620 (EPA-HQ-OAR-2014-0128) (proposed April 15, 2024)

The Institute for Policy Integrity at New York University School of Law (Policy Integrity)¹ respectfully submits this comment letter on the Environmental Protection Agency's (EPA) review of the secondary national ambient air quality standards (NAAQS) for oxides of nitrogen (NO_x), oxides of sulfur (SO_x), and particulate matter (PM) (Proposed Rule).² Policy Integrity is a nonpartisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

Although the Proposed Rule begins to assess the various adverse welfare effects of SO_x, NO_x, and PM emissions and depositions that different populations may face, EPA should assess, consider, and present more information regarding both distributional impacts and future risks. In particular, this comment offers the following recommendations:

- EPA should set secondary NAAQS that prevent anticipated adverse and disproportionate public welfare impacts on environmental justice communities, including potential impacts to drinking water quality, subsistence fishing, and recreational opportunities;
- EPA should consider how future climate change risks may interact with and potentially exacerbate the effects caused by SO_x, NO_x, and PM emissions; and
- EPA should explain, in its economic analysis under Executive Orders 12,866 and 14,094, whether the Proposed Rule or alternatives may provide a benefit by protecting against future risks, such as the risk of changing SO₂ emissions patterns, if applicable.

¹ This document does not purport to present the views, if any, of New York University School of Law.

² Review of the Secondary National Ambient Air Quality Standards for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter, 89 Fed. Reg. 26620 (proposed Apr. 15, 2024) [hereinafter Proposed Rule].

Background

The Clean Air Act (CAA) requires EPA to periodically review and revise the NAAQS for six commonly found pollutants designated as criteria air pollutants.³ The NAAQS are designed to protect public health, the environment, and other public welfare factors from the adverse effects of these pollutants. EPA sets two separate standards for criteria air pollutants: primary standards and secondary standards. Primary standards are designed to protect public health, while secondary standards are designed to protect other public welfare factors. In setting secondary NAAQS, EPA must consider a variety of public welfare factors, including but not limited to, *adverse* effects on water, wildlife, soils, crops, vegetation, climate, damage to and deterioration of property, and economic values.⁴

While the CAA does not define “adverse,” the EPA Administrator has discretion to determine which effects are “adverse.”⁵ Furthermore, EPA’s secondary NAAQS must be set at a level “*requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of [the] pollutant in the ambient air.*”⁶ Contemplating future risks is integral to assessing “anticipated” adverse effects.

During the standard-setting process, EPA prepares a policy assessment that demonstrates the scientific evidence EPA considers in forming policy alternatives.⁷ This policy assessment is reviewed by the Clean Air Scientific Advisory Committee (CASAC), which provides independent, expert advice and recommendations on “the adequacy of the existing standards or revisions that may be appropriate to consider.”⁸ If EPA decides to depart from CASAC’s recommendations, it must explain why in the proposed rule.⁹

EPA’s current review of secondary NAAQS pertains to the direct effects of SO_x, NO_x, and PM emissions, as well as the indirect effects of sulfur and nitrogen compound depositions (S and N depositions).¹⁰ EPA’s Proposed Rule sets a new annual average standard for SO_x (averaged over three years), but retains the current secondary standards for NO_x and PM.¹¹

³ Criteria air pollutants include particulate matter, sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, and lead. *Criteria Air Pollutants*, ENV’T PROT. AGENCY (last visited May 20, 2024), <https://www.epa.gov/criteria-air-pollutants>.

⁴ 42 U.S.C. § 7602(h).

⁵ The secondary NAAQS “shall specify a level of air quality the attainment and maintenance of which *in the judgment of the Administrator*, based on such criteria, is requisite to protect the public welfare from any known or anticipated adverse effects...” 42 U.S.C. § 7409(b)(2) (emphases added).

⁶ *Id.*

⁷ *See Process of Reviewing the National Ambient Air Quality Standards*, ENV’T PROT. AGENCY (last visited May 20, 2024), <https://www.epa.gov/criteria-air-pollutants/process-reviewing-national-ambient-air-quality-standards>.

⁸ *Id.*

⁹ The Clean Air Act specifies that the rulemaking “shall be accompanied by a statement of its basis and purpose,” which among other requirements, shall “set forth or summarize and provide a reference to any pertinent findings, recommendations, and comments by the Scientific Review Committee . . . and, if the proposal differs in any important respect from any of these recommendations, an explanation of the reasons for such differences.” 42 U.S.C. § 7607(d)(3)(c).

¹⁰ Proposed Rule, 89 Fed. Reg. at 26,631.

¹¹ Proposed Rule, 89 Fed. Reg. at 26,620–22.

I. EPA Should Set Secondary NAAQS That Prevent Anticipated Adverse and Disproportionate Public Welfare Impacts on Environmental Justice Communities, Including Potential Impacts to Drinking Water Quality, Subsistence Fishing, and Recreational Opportunities

According to Executive Orders 12,898 and 14,096, agencies must consider environmental justice (EJ) concerns in their decisionmaking.¹² Moreover, EPA’s own guidance documents provide robust analytical models for considering EJ concerns in rulemaking.¹³ But in its review of the secondary NAAQS, EPA includes only an abbreviated EJ assessment that concludes there are no EJ concerns. And outside the discussion of compliance with Executive Orders on EJ, the Proposed Rule does not include any substantial discussion of the distributional dimensions of the potential welfare impacts from these criteria pollutants. Without providing any analysis that assesses the disproportionate burdens of the Proposed Rule’s welfare effects, EPA states that it “believes that the human health and environmental conditions that exist prior to this action do not result in disproportionate and adverse effects on communities with Environmental Justice (EJ) concerns.”¹⁴ EPA’s conclusion seems to be inconsistent with the vast amount of research concerning the generally negative environmental conditions that disproportionately impact low-income communities and people of color.¹⁵

EPA should at least qualitatively consider how EJ communities could be impacted by the Proposed Rule. If EPA’s analysis reveals relevant disproportionate burdens, EPA should consider those burdens and EJ concerns when determining which effects are “adverse” and so warrant regulation under appropriate secondary NAAQS standards.

By assuming that there are no disproportionate and adverse effects without conducting a thorough analysis, the Proposed Rule runs the risk of compounding the adverse effects of

¹² According to E.O. 12898, federal agencies “shall” identify and address “as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” Exec. Ord. No. 12,898 § 1-101, 59 Fed. Reg. 7629 (Feb. 11, 1994). Under E.O. 14,096, federal agencies should “consider adopting or requiring measures to avoid, minimize, or mitigate disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities on communities with environmental justice concerns, to the maximum extent practicable, and to address any contribution of such Federal activities to adverse effects — *including cumulative impacts of environmental and other burdens* — already experienced by such communities.” Exec. Ord. No. 14,096, 88 Fed. Reg. 25,251 (Apr. 21, 2023) (emphasis added).

¹³ ENV’T PROT. AGENCY, *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis*, EPA-HQ-OW-2023-0222-213 (2016); ENV’T PROT. AGENCY, *Draft Revision of Technical Guidance for Assessing Environmental Justice in Regulatory Analysis*, EPA-HQ-OA-2013-0320 (Nov. 15, 2023) [hereinafter *EJ Technical Guidance*]. The draft revision reflects advancements in the state of the science, new peer-reviewed guidance documents, and priorities and directions related to the conduct of environmental justice analysis, including Executive Order 14,096.

¹⁴ Proposed Rule, 89 Fed. Reg. at 26,693.

¹⁵ See generally *Power Plants and Neighboring Communities*, ENV’T PROT. AGENCY (last visited June 2, 2024), <https://www.epa.gov/power-sector/power-plants-and-neighboring-communities> [hereinafter *Power Plants and Neighboring Communities*] (SO₂, NO_x, and PM emissions from the burning of fossil fuels disproportionately burden low-income populations and people of color); Michael Gochfeld & Joanna Burger, *Disproportionate Exposures in Environmental Justice and Other Populations: The Importance of Outliers*, 101 AM. J. OF PUB. HEALTH, S53-63 (2011) (study noting differences in subsistence fishing for minority, low-income, and rural communities); Christopher W. Tessum et al., *PM_{2.5} Polluters Disproportionately and Systemically Affect People of Color in the United States*, 7 SCIENCE ADVANCES 1 (2021).

preexisting environmental conditions. According to the CAA, the secondary NAAQS must “protect the public welfare from any *known or anticipated adverse* effects associated with the presence of [the] pollutant in the ambient air.”¹⁶ Although “adverse” is not explicitly defined in the CAA, “adverse” should be understood to include effects that are disproportionately harmful to certain populations.¹⁷ Therefore, EPA should at least qualitatively assess potential EJ concerns and consider known or anticipated adverse welfare impacts on EJ communities before finalizing the secondary NAAQS.

Even if EPA has concluded that the existing standards are mostly sufficient to avoid adverse public welfare impacts to the general population, EPA should still consider whether the existing standards are sufficient to avoid adverse public welfare impacts on EJ communities.

The potentially significant distributional dimensions of the welfare effects at stake in this rulemaking become apparent upon review of the general welfare effects caused by these criteria pollutants, and particularly by S and N deposition. Notably, SO_x, NO_x, and PM emissions can cause acidification on aquatic and terrestrial ecosystems, which in turn can cause increased mortality among fish¹⁸ and sensitive plant species,¹⁹ respectively, among other effects. Moreover, N deposition in waterbodies can cause “rapid and appreciable algal growth,”²⁰ which can negatively alter aquatic habitats that various fish and animal species rely upon for survival, contribute to fish mortality, compromise groundwater and drinking water,²¹ and lead to harmful algal blooms that pose human health risks. Therefore, distributional dimensions of the relevant welfare effects could include:

- compromised drinking water²² and irrigation supply protection,²³ which may particularly

¹⁶ 42 U.S.C. § 7409(b)(2).

¹⁷ E.O. 14,096 emphasizes that federal agencies should consider adverse effects and risks of federal activities on environmental justice communities. Specifically, E.O. 14,096 states that federal agencies should “consider adopting or requiring measures to avoid, minimize, or mitigate *disproportionate and adverse human health and environmental effects (including risks) and hazards* of Federal activities on communities with environmental justice concerns, to the maximum extent practicable, and to address any contribution of such Federal activities to adverse effects — *including cumulative impacts of environmental and other burdens* — already experienced by such communities.” Exec. Ord. No. 14,096, 88 Fed. Reg. 25,251 (Apr. 21, 2023) (emphasis added).

The plain language meaning of “adverse” should be interpreted to consider not just overall gross magnitude of an effect, but the significance of an effect to the well-being of those specific individuals being affected. For example, the Oxford English Dictionary defines “adverse” as “contrary, opposing, *harmful*, hostile *to a person* or thing; unfavorable, *preventing success, development, or well-being*.” *Adverse*, OXFORD ENGLISH DICTIONARY ONLINE (3d ed. 2024) (emphasis added).

¹⁸ Proposed Rule, 89 Fed. Reg. at 26,642–43.

¹⁹ *Id.* at 26,637–38.

²⁰ *Id.* at 26,669.

²¹ *Id.* at 26,670.

²² *See id.* at 26,660 (noting potential impacts to drinking water). *See also* CASAC Review of the EPA’s Policy Assessment for the Review of the Secondary National Ambient Air Quality Standards for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter, EPA-CASAC-23-005, B-59 (Sept. 27, 2023) [hereinafter CASAC Report] (noting potential impacts to major sources of drinking water); *Harmful Algal Blooms and Drinking Water*, ENV’T PROT. AGENCY (last visited June 2, 2024), https://www.epa.gov/sites/default/files/2016-11/documents/harmful_algal_blooms_and_drinking_water_factsheet.pdf (“Some [harmful algal blooms] can produce toxins that are harmful to humans and animals. These toxins can pose challenges to drinking water supplies.”).

²³ *See* CASAC Report, *supra* note 22, at B-59 (noting potential impacts to major sources of irrigation water); *See also* SUE B. WATSON ET AL, FRESHWATER ALGAE OF NORTH AMERICA 874 (John D. Wehr et al. eds., 2nd ed. 2015)

- affect low-income and minority populations;²⁴
- impacts to subsistence and recreational fishing,²⁵ which may disproportionately affect low-income communities and communities of color;²⁶
- impacts to recreational opportunities that rely on affected aquatic or terrestrial ecosystems,²⁷ when low-income populations may have disproportionately few substitute options for recreations;²⁸ and
- impacts to commercial fisheries,²⁹ which some communities may disproportionately rely on for income.³⁰

While this comment does not exhaustively discuss all potential adverse impacts on EJ communities, this section highlights two types of adverse impacts EPA should consider in the Proposed Rule: (1) impacts on recreational and subsistence fishing in EJ communities and (2) impacts from interactions between NO_x and NH₃ emissions on EJ communities near concentrated animal feeding operations.

A. Impacts on Recreational and Subsistence Fishing in EJ Communities

In the Proposed Rule, EPA has considered how NO_x and SO_x induce acidification of aquatic ecosystems, which adversely impacts fish species and, consequently, recreational and subsistence fishing generally.³¹ But EPA has not considered whether there are any effects on subsistence fishing³² that would disproportionately and adversely impact EJ communities.

(noting harmful algal blooms impact drinking and irrigation water supplies).

²⁴ See *Environmental Justice Analysis for Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, ENV'T PROT. AGENCY (Apr. 2024), https://www.epa.gov/system/files/documents/2024-04/steamelectricelg_2024final_eja_508compliant.pdf (noting populations served by potentially affected drinking water systems, especially populations near or downstream of power plants, are disproportionately low-income, African-American, and American Indian or Alaska Native).

²⁵ Proposed Rule, 89 Fed. Reg. at 26,642–43. See CASAC Report, *supra* note 22, at B-59 (noting potential impacts to fishing).

²⁶ Regulatory Impact Analysis for the Final National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review, EPA-HQ-OAR-2018-0794 (Apr. 2024) (“Subsistence fishing is associated with vulnerable populations, including minorities and those of low socioeconomic status.”).

²⁷ See Proposed Rule, 89 Fed. Reg. at 26,642-43 (noting potential impacts to recreation); see also CASAC Report, *supra* note 22, at 10, B-59 (noting potential impacts to recreation).

²⁸ EJ Technical Guidance, *supra* note 13, at 59 (“[S]ome regulatory options may differentially affect access to particular aquatic amenities for recreation for different population groups.”). See also Jenny Rowland-Shea et al., *The Nature Gap: Confronting Racial and Economic Disparities in the Destruction and Protection of Nature in America*, CTR. FOR AM. PROGRESS (July 21, 2020), <https://www.americanprogress.org/article/the-nature-gap/> (noting people of color and low-income communities are most likely to be deprived of the benefits of nature, including nearby outdoor recreational opportunities).

²⁹ See Proposed Rule, 89 Fed. Reg. at 26,643, 26,661 (noting potential impacts to commercial fisheries).

³⁰ See Ki’Amber Thompson, *Who is Working the Chesapeake Bay Today?: From African American to Migrant Labor*, OCEAN CONSERVANCY (Feb. 28, 2019), <https://oceanconservancy.org/blog/2019/02/28/working-chesapeake-bay-today/> (noting the number of African Americans working maritime and seafood jobs in Chesapeake Bay has decreased partly due to the decline in catches because of adverse marine habitat changes).

³¹ Proposed Rule, 89 Fed. Reg. at 26,642–43.

³² With regards to consumption patterns, E.O. 12,898 specifically states that “to assist in identifying the need for ensuring protection of populations with differential patterns of subsistence consumption of fish and wildlife, Federal agencies, whenever practicable and appropriate, shall collect, maintain, and analyze information on the consumption

It is possible that EPA could find that the general effects of existing levels of S and N deposition on recreational and subsistence fishing, as experienced by the whole population, are not sufficiently adverse to require more stringent standards. But given that low-income communities and communities of color disproportionately rely on subsistence fishing³³ and are generally burdened by disproportionate NO_x, SO_x, and PM pollution,³⁴ it is possible that EPA could find that the disproportionate impacts on EJ communities are, in fact, “adverse.”

EPA should therefore consider adverse effects on EJ communities and explain how it has considered those adverse effects in setting the secondary NAAQS. EPA could begin by assessing whether the areas it believes may experience adverse effects have potential EJ concerns as well. For example, both the Proposed Rule and CASAC’s report identified Chesapeake Bay and Tampa Bay as areas that have historically faced excessive N deposition levels,³⁵ and may potentially be used for subsistence fishing. A study suggests that people who subsistence fish in the Anacostia River connected to Chesapeake Bay are disproportionately African American, Hispanic, and Asian.³⁶ In addition, some researchers have taken interest in assessing the extent to which communities rely on Tampa Bay, an area impacted by S and N depositions, for subsistence fishing.³⁷

B. Impacts on EJ Communities Near Concentrated Animal Feeding Operations from Interactions Between NO_x and NH₃ Emissions

As EPA outlines in the Proposed Rule, nitrogen oxides that are not subject to regulation under the CAA, specifically NH₃ (ammonia), make up an increasing proportion of N deposition levels, such that for much of the country and for the general population, NO_x emissions may be increasingly less important as a source of welfare impacts. High concentrations of NH₃ can pose a range of risks to aquatic ecosystems and waterbodies, including harmful algal blooms,

patterns of populations who principally rely on fish and/or wildlife for subsistence.” E.O. 12,898 § 4-401–402, 59 Fed. Reg. 7629 (Feb. 11, 1994).

³³ See generally John Virdin, *Fishing for Subsistence Constitutes a Livelihood Safety Net for Populations Dependent on Aquatic Foods Around the World*, NATURE PORTFOLIO (2023); see also Meghna N. Marjadi, *Negative Socio-Environmental Feedback Loop May Foster Inequality for Urban Marine Subsistence Fishers*, ENV’T SCI. & POL’Y (2021). EPA has conducted similar assessments on the risks to subsistence fishers in the context of the Mercury and Air Toxics Standards, which revealed the potential for increased health risks for low-income Black subsistence farmers in the southeast. See also ENV’T PROT. AGENCY, Technical Support Document on National-Scale Mercury Risk Estimates for Cardiovascular and Neurodevelopmental Outcomes for the National Emission Standards For Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units—Revocation of the 2020 Reconsideration, and Affirmation of the Appropriate and Necessary Supplemental Findings, EPA-HQ-OAR-2018-0794 (Sept. 2, 2021).

³⁴ See generally *Power Plants and Neighboring Communities supra* note 15 (SO₂, NO_x, and PM emissions from the burning of fossil fuels disproportionately burden low-income populations and people of color); Tessum, *supra* note 15.

³⁵ CASAC Report, *supra* note 22, at 11.

³⁶ See generally *Addressing the Risk: Understanding and Changing Anglers’ Attitudes About the Dangers of Consuming Anacostia River Fish*, OPINIONWORKS (2012), https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/addressing_the_risk.pdf; *The Anacostia River: A Problem for Us All*, CHESAPEAKE BAY FOUNDATION, <https://www.cbf.org/news-media/multimedia/video/subsistence-fishing.html>.

³⁷ See *Current Project: Subsistence Fishing and Urban Political Ecologies of Risk and Resilience*, ECKERD COLLEGE (last visited May 28, 2024), https://boucqueylib.eckerd.edu/research_

acidification, and fish mortality.³⁸ One common source of NH₃ emissions is concentrated animal feeding operations (CAFOs), which can produce NH₃ runoff from feedlots, open-air lagoons that store hog waste, and spray-fields that disperse waste onto nearby fields.³⁹ Even if EPA concludes that, upon consideration of average welfare effects for the general population, stronger secondary NAAQS are not necessary given the average contributions of NO_x to N-deposition, EPA should consider whether the marginal contributions of NO_x adversely exacerbate N-deposition in areas already experiencing disproportionate NH₃ exposure, such as communities around CAFOs.

Given that CAFOs are disproportionately sited near communities of color and low-income communities, impacts caused or exacerbated by CAFOs can compound existing racial and socioeconomic inequalities.⁴⁰ For instance, in addition to NH₃ and nitrogenous compounds, CAFOs emit phosphorous, fecal matter bacteria, and other pollutants which create harmful algal blooms that place communities at risk for serious health complications⁴¹ and poor mental health and quality of life.⁴² Communities near CAFOs also experience depreciating property values (negatively impacting their financial stability) and are subjected to foul odors and insects that are attracted to the farms.⁴³ Even further, runoff from CAFOs can contaminate groundwater, which can compromise drinking water for nearby communities.⁴⁴

If NH₃ emissions are rising in part due to livestock waste and fertilizer application emissions,⁴⁵ the overall N deposition levels in certain EJ communities, like those downstream of concentrated animal feeding operations (CAFOs), could hypothetically increase to such a degree that any additional effects from NO_x deposition may have a particular adverse impact. This adverse impact might result from the cumulative effects of additional N deposition/emissions and the existing adverse effects of NH₃ from CAFOs. As such, EPA should also consider how interactions between NO_x and NH₃ might adversely affect EJ communities.

Regardless of decreasing trends in overall N deposition levels, EPA should still consider how the NO_x emissions subject to the CAA can compound harmful environmental conditions in

³⁸ *Ammonia*, ENV'T PROT. AGENCY (last visited June 2, 2024), <https://www.epa.gov/caddis/ammonia#:~:text=Ammonia%20is%20a%20key%20component,most%20toxic%20to%20aquatic%20biota>.

³⁹ *See id.*; *see also* *CAFOs, Biogas Plants, Environmental Justice, and Health Impacts in North Carolina*, N.C. DEPT. OF ENV'T QUALITY (OCT. 12, 2021), <https://www.deq.nc.gov/ej/ej-and-biogas-sacoby-wilson/download?attachment>; *see also* *Pollution from Industrial Animal Operations*, SOUTHERN ENV'T L. CTR. (last visited May 29, 2024), <https://www.southernenvironment.org/topic/pollution-from-industrial-animal-operations/>.

⁴⁰ *See Distribution of Environmental Justice Metrics for Exposure to CAFOs in North Carolina, USA*, 195 ENV'T RSCH. 110862, 2 (2021).

⁴¹ Barbara Kirkpatrick et al., *Environmental Exposures to Florida Red Tides: Effects on Emergency Room Respiratory Diagnoses Admissions*, 5 HARMFUL ALGAE 526, 529–531 (2006); Stacy Woods, *An Opportunity to Reduce Water Pollution from Slaughterhouses*, UNION OF CONCERNED SCIENTISTS (Jan. 22, 2024), <https://blog.ucsusa.org/stacy-woods/an-opportunity-to-reduce-water-pollution-from-slaughterhouses/>.

⁴² Virginia T. Guidry, *Connecting Environmental Justice and Community Health: Effects of Hog Production in North Carolina*, 79 N.C. MED. J. 324, 325 (2018); Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, CTR. FOR DISEASE CONTROL & PREVENTION, 3, 8 (2010), <https://stacks.cdc.gov/view/cdc/59792>.

⁴³ Hribar, *supra* note 41, at 3.

⁴⁴ *Id.*

⁴⁵ “[T]he annual rate of NH₃ emissions has increased by over 20 percent since 2002 The two largest contributors are emissions from livestock waste and fertilizer application, which have increased by 11% and 44%, respectively, from 2002 to 2022.” Proposed Rule, 89 Fed. Reg. at 26,633.

ecosystems that either currently experience or are anticipating elevated NH₃ emissions, and so may create “adverse” welfare effects for certain communities.

C. EPA Should Conduct a Comprehensive EJ Analysis

To conduct a comprehensive EJ analysis, EPA could use the various equity screening tools at its disposal to identify potential EJ communities that may be affected by the Proposed Rule, as well as to assess anticipated cumulative impacts in geographic areas of concern. For instance, EPA’s Environmental Justice Screening and Mapping Tool (EJScreen)⁴⁶ and the Council for Environmental Quality’s (CEQ) Climate and Economic Justice Screening Tool (CEJST)⁴⁷ could be used together to pinpoint disadvantaged communities within regions that would be adversely affected by SO_x, NO_x, and PM emissions and depositions.

EJScreen uses a combination of environmental and socioeconomic factors that can help identify communities (at the census block level) with environmental burdens. Given that EJScreen is limited to 12 environmental indicators,⁴⁸ it may not capture all EJ communities.⁴⁹ Namely, drinking-water quality and landscape degradation, which might help identify EJ communities near CAFOs, are not indicators included in EJScreen.⁵⁰ Nevertheless, EPA could use CEJST to fill some information gaps.

CEJST, which CEQ developed to identify disadvantaged communities for the Justice40 Initiative, combines environmental and socioeconomic proxies for marginalization and environmental burden.⁵¹ Compared to EJScreen, CEJST includes a wider variety of indicators concerning eight burden categories: (1) water and wastewater, (2) climate change, (3) health, (4) legacy pollution, (5) energy, (6) housing, (7) transportation, and (8) workforce development.⁵² Given the various environmental and socioeconomic burden indicators these tools include, using

⁴⁶ *EJScreen: Environmental Justice Screening and Mapping Tool*, ENV’T PROT. AGENCY, <https://www.epa.gov/ejscreen>.

⁴⁷ *Climate and Economic Justice Screening Tool*, COUNCIL ON ENV’T QUALITY, <https://screeningtool.geoplatform.gov/en/-/3/33.47/-97.5>.

⁴⁸ The 12 environmental indicators are (1) annual average PM_{2.5}, (2) average summer ozone, (3) diesel particulate matter, (4) lifetime air toxics cancer risk, (5) air toxics respiratory hazard index (i.e., the ratio of exposure concentration to a health-based reference concentration), (6) annual average daily traffic, (7) lead paint as indicated by the percentage of houses built before 1960, (8) proximity to superfund sites, (9) proximity to sites with chemical-accident-management plans, (10) proximity to hazardous-waste facilities, (11) proximity to underground storage tanks and leaking underground storage tanks, and (12) concentrations of toxics from wastewater discharge. See *EJScreen: Environmental Justice Screening and Mapping Tool*, ENV’T PROT. AGENCY (last visited June 2, 2024), <https://www.epa.gov/ejscreen>.

⁴⁹ *Limitations and Caveats in Using EJScreen*, ENV’T PROT. AGENCY, <https://perma.cc/D3LC-K372> (last visited June 2, 2024).

⁵⁰ *Id.*; Haley Mullen, *Indigenous Environmental Justice and Screening Tools: Lessons Learned from EJSCREEN and Paths Forward for the Climate and Economic Justice Screening Tool* (Apr. 2022) (M.Sc. thesis, University of Michigan School for Environment and Sustainability), <https://perma.cc/3ZFW-8QEV>.

⁵¹ See *Climate and Economic Justice Screening Tool*, COUNCIL FOR ENV’T QUALITY, <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>; see also Inst. for Policy Integrity, *Comments to Federal Energy Regulatory Commission regarding Roundtable on Environmental Justice and Equity in Infrastructure Permitting* (May 15, 2023) (AD23-5-000), https://policyintegrity.org/documents/FERC_EJRT_Comments_-_Policy_Integrity_-_FINAL_-_5-15-23.pdf.

⁵² *Climate and Economic Justice Screening Tool*, COUNCIL ON ENV’T QUALITY, <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>.

EJScreen and CEJST in tandem may help identify existing cumulative impacts in disadvantaged communities that would be affected by the Proposed Rule or its alternatives.

Moreover, EPA could look to its *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (EJ Technical Guidance)⁵³ for guidance on how to incorporate EJ into its analysis for the Proposed Rule. As this guidance points out, sometimes the data needed for an EJ analysis are not sufficiently disaggregated by race, ethnicity, income, and other demographic characteristics that would help EPA understand the distributional effects of a certain regulation.⁵⁴ To the extent EPA needs better data to assess distributional effects, EPA should consider whether its existing ambient air monitoring network is insufficient to monitor and gather air quality data needed to help assess welfare effects specific to communities with EJ concerns.⁵⁵ If so, EPA's future expansions of the monitoring network should focus on collecting data relevant to assessing effects specific to communities with EJ concerns.

II. EPA Should Consider How Future Climate Change Effects May Likely Interact with Impacts Caused by SO_x, NO_x, and PM Emissions

Under the CAA, secondary NAAQS must “specify a level of air quality...[that is] *requisite to protect* the public welfare from any *known or anticipated* adverse effects associated with the presence of [the] pollutant in the ambient air.”⁵⁶ EPA noted that because its recent, separate review of the PM secondary standards already considered effects on visibility, climate, and materials damage, EPA does not further consider the climate effects of PM here.⁵⁷ Even if EPA already considered the climate effects of PM in a separate action, that does not satisfy EPA's responsibility to consider the interactions of future climate risks with the broader, non-climate ecological effects of PM, SO_x, and NO_x.

Given that secondary NAAQS are meant to address “anticipated” effects, EPA should assess how climate change could interact with SO_x, NO_x, and PM emissions and depositions. As the CASAC report explains, the Policy Assessment relies on research that may not appropriately account for the uncertainty of our changing climate.⁵⁸ Specifically, CASAC states that the “emerging body of research implies that the uncertainty associated with relying on past research to predict future welfare effects is increasing, and that it is essential to incorporate the shifting

⁵³ See EJ Technical Guidance, *supra* note 13.

⁵⁴ See *id.* at 85.

⁵⁵ CASAC notes that EPA relies upon research from national monitoring networks to set air quality standards. Yet, EPA's recent decisions and proposals to close various monitoring sites threaten to “leave major gaps in our understanding of air pollution under current and future air and climate policies.” CASAC further states, “[r]obust long-term air quality networks are critical to our understanding and protection of people, underserved communities and ecosystems during a period of changing climate. It is essential that they are supported and maintained to continue to support the protection of public health, natural resources, and sustainable economic growth.” Given the critical importance of monitoring research, CASAC therefore emphasizes that EPA should prioritize funding the monitoring networks under its jurisdiction instead of issuing cutbacks. See CASAC Report, *supra* note 22, at 26.

⁵⁶ 42 U.S.C. § 7409(b)(2).

⁵⁷ The review of the PM secondary NAAQS was completed in 2020 and then was recently reconsidered, with a final rule published in March 2024. See Proposed Rule, 89 Fed. Reg. at 26,627. See also 89 Fed. Reg. 16,202 (Mar. 6, 2024).

⁵⁸ CASAC Report, *supra* note 22, at 16.

climate reality into decision-making.”⁵⁹ CASAC further argues that “[EPA’s Policy Assessment] can more clearly convey that the established science of past decades may not translate unaltered into the future.”⁶⁰ Indeed, several studies highlight the dynamic relationship between N, S, and PM effects and climate change.⁶¹ For example, some studies highlight that improvements to historical acidification that resulted from reductions in S and N deposition could be offset in the future by acidification caused by climate change.⁶² To this end, EPA should include a more thorough analysis that addresses uncertainty about climate effects on ecological conditions.

III. EPA Should Explain the Benefits That Its Proposal or Alternatives May Deliver by Protecting Against Future Risks, Such as the Risk of Changing SO₂ Emissions Patterns, if Applicable

EPA concludes that the Proposed Rule will have no costs or benefits because existing practices to comply with the primary SO₂ NAAQS are expected to meet the proposed secondary standard without additional emission reductions.⁶³ Nevertheless, the Proposed Rule or its alternatives may still yield important benefits by guarding against certain low-risk, high-cost future scenarios, such as future increases in annual average SO₂ concentrations. EPA should assess in its analysis under Executive Orders 12,866 and 14,094 whether the Proposed Rule or alternatives may provide a benefit by protecting against such future risks.

⁵⁹ *Id.* at 17.

⁶⁰ *Id.*

⁶¹ See generally S.J. Nelson, *Northeastern Mountain Ponds as Sentinels of Change Current and Emerging Research and Monitoring in the Context of Shifting Chemistry and Climate Interactions*, 264 *ATMOSPHERIC ENV'T* 118694; Christopher M. Clark, et al., *Future Climate Change Effects on U.S. Forest Composition May Offset Benefits of Reduced Atmospheric Deposition of N and S*, 29 *GLOBAL CHANGE BIOLOGY* 4793, 4807 (2023); Shuai Shao et al., *The Response of Streams in the Adirondack Region of New York to Projected Changes in Sulfur and Nitrogen Deposition Under Changing Climate*, 800 *SCI. OF THE TOTAL ENV'T* 1–2 (2021); Stephen D. LeDuc, et al., *Nitrogen and Sulfur Deposition Reductions Projected to Partially Restore Forest Soil Conditions in the U.S. Northeast, While Understory Composition Continues to Shift with Future Climate Change*, 233 *WATER, AIR, & SOIL POLLUTION* 376 (2022); Andrew L. Robison & Todd M. Scanlon, *Climate Change to Offset Improvements in Watershed Acid-Base Status Provided by Clean Air Act and Amendments: A Model Application in Shenandoah National Park, Virginia*, 123 *J. OF GEOPHYSICAL RSCH.: BIOGEOSCIENCES* 2863 (2018).

⁶² “[W]e find that negative effects from future projected increases in mean annual temperature may ultimately overwhelm positive effects from reductions in N and S deposition for the majority of tree species.” Christopher M. Clark, et al., *Future Climate Change Effects on U.S. Forest Composition May Offset Benefits of Reduced Atmospheric Deposition of N and S*, 29 *GLOBAL CHANGE BIOLOGY* 4793, 4807 (2023); see also Stephen D. LeDuc, et al., *Nitrogen and Sulfur Deposition Reductions Projected to Partially Restore Forest Soil Conditions in the U.S. Northeast, While Understory Composition Continues to Shift with Future Climate Change*, 233 *WATER, AIR, & SOIL POLLUTION* 376 (2022) (“Our findings suggest CAA reductions in deposition will lead to a partial recovery of soil chemical properties, and help maintain present-day understory assemblages absent increased climate change. Although reducing deposition may slow the effects of climate change, increasing shifts in temperature and precipitation will likely continue to drive vegetation composition away from historic and present-day conditions.”); Shuai Shao et al., *The Response of Streams in the Adirondack Region of New York to Projected Changes in Sulfur and Nitrogen Deposition Under Changing Climate*, 800 *SCI. OF THE TOTAL ENV'T* 1–2 (2021); Andrew L. Robison & Todd M. Scanlon, *Climate Change to Offset Improvements in Watershed Acid-Base Status Provided by Clean Air Act and Amendments: A Model Application in Shenandoah National Park, Virginia*, 123 *J. OF GEOPHYSICAL RSCH.: BIOGEOSCIENCES* 2863, 2873 (2018).

⁶³ Proposed Rule, 89 Fed. Reg. at 26,692.

According to CASAC, annual average SO₂ concentrations near industrial sources returned to high levels in 2019, 2020, and 2021. CASAC, therefore, recommended setting a new secondary annual standard “in the range of 10-15 ppb to preclude the possibility of returning to deleterious depositions values” associated with this emergence of high annual average SO₂ concentrations.⁶⁴ EPA should assess what sparked increases in SO₂ levels during those given years, whether the primary NAAQS standards alone would fully prevent such high annual concentrations, and whether the Proposed Rule will therefore protect against future risks if these trends reoccur. If the rule is, indeed, protective against future risks, EPA should cite those benefits as support for the Proposed Rule.

Respectfully,

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⁶⁴ CASAC Report, *supra* note 22, at 24.