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Via Electronic and Certified Mail

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Petition for Rulemaking to Establish Increments for the 1-hour Nitrogen Dioxide and Sulfur Dioxide National Ambient Air Quality Standards

Dear Administrator Regan and Principal Deputy Assistant Administrator Goffman:

Pursuant to the right to petition the government as provided in the First Amendment to the United States Constitution¹ and the Administrative Procedure Act², the Center for Biological Diversity, Public Employees for Environmental Responsibility (“PEER”), and the Sierra Club formally petition the United States Environmental Protection Agency (“the EPA”) or (“Agency”) to establish increments for the 1-hour Nitrogen Dioxide (“NO₂”) and Sulfur Dioxide (“SO₂”) National Ambient Air Quality Standards (“NAAQS”). Sections 163 and 166 of the Clean Air Act (“CAA”), or (“the Act”) 42 U.S.C. §§ 7473 & 7476, authorize the EPA to set increments and ceilings, or maximum allowable increases over baseline concentrations of, and maximum allowable concentrations of criteria pollutants. In general, increments are set by the EPA to prevent permitting new or modified sources that would cause significant deterioration of an area’s ambient air.

The EPA is required under the CAA to review the NAAQS every five years to assure that the current standards are adequate to protect human health and welfare. Since the CAA was

¹ See U.S. Const. Amend. I. The right to “petition for a redress of grievances [is] among the most precious of the liberties safeguarded by the Bill of Rights.” *United Mine Workers v. Ill. State Bar Assn.*, 389 U.S. 217, 222 (1967).

² The Petitioners are “interested persons” within the meaning of the Administrative Procedure Act. See 5 U.S.C. § 553(e) (granting any “interested person the right to petition for the issuance, amendment, or repeal of a rule”).

enacted in 1970, the EPA has revised the primary NAAQS for SO₂ and NO₂ a combined seven times. The EPA’s last revision of the SO₂ and NO₂ NAAQS came in 2010, when the Agency set the level of the 1-hour NAAQS at 100 ppb for NO₂ and at 75 ppb for SO₂.

In promulgating a 1-hour standard for SO₂ and NO₂, the EPA should have also promulgated a 1-hour increment for both NAAQS. Indeed, the Agency previously confirmed that “the Act provides a specific schedule for the promulgation of additional regulations, which may include increments, following the promulgation of new or revised NAAQS.”³ And the Agency expressly committed to “begin that rulemaking process in the near future” for SO₂.⁴ However, the EPA has a track record of failing to set PSD increments for these pollutants, as it missed the initial two-year deadline to promulgate Class II PSD increments under the 1977 CAA amendments⁵, and then took fourteen years to promulgate NO₂ increments after being instructed to do so on remand in *EDF v. EPA*⁶ (and only did so after a settlement agreement was reached with EDF). The EPA has once again failed to set a PSD increment for NO₂ and SO₂, despite its obligation to do so under the CAA.

In order to comply with the goals of the CAA, “to protect and enhance the quality of the Nation’s air resources,” the EPA must do its duty to the public, and promulgate 1-hour averaging time increments for both SO₂ and NO₂. The EPA should follow the same methodology previously used to set the existing increments of 2.5% of the NAAQS for Class I areas, 25% of the NAAQS for Class II areas, and 50% of the NAAQS for Class III areas⁷. Following this methodology, the EPA should set NO₂ 1-hour averaging time increment levels of 4.7 µg/m³ for Class I areas, 47 µg/m³ for Class II areas, and 94.1 µg/m³ for Class III areas; and should set SO₂ 1-hour average increment levels of 4.9 µg/m³ for Class I areas, 49 µg/m³ for Class II areas, and 98.2 µg/m³ for Class III areas.

1-hour average increment	Class I	Class II	Class III
NO ₂	4.7 µg/m ³	47 µg/m ³	94.1 µg/m ³
SO ₂	4.9 µg/m ³	49 µg/m ³	98.2 µg/m ³

I. Action Requested

Petitioners request the following action:

That the EPA issue a final rule establishing Class I, II, and III area 1-hour average increments for NO₂ and SO₂.

³ See, e.g., EPA Memorandum, *Guidance Concerning the Implementation of the 1-hour SO₂ NAAQS for the Prevention of Significant Deterioration Program*, at 9 (Aug. 23, 2010), available at https://www3.epa.gov/ttn/naaqs/aqmguides/collection/cp2/20100823_page_1-hr_so2_naaqs_psd_program.pdf.

⁴ *Id.*

⁵ *Env'tl. Def. Fund, Inc. v. Adm'r, U.S. E.P.A.*, 898 F.2d 183, 190 (D.C. Cir. 1990).

⁶ Settlement Agreement: *In re Environmental Defense*, (D.C. Cir. 2003), (No. 03-1220).

⁷ Prevention of Significant Deterioration of Nitrogen Oxides, 70 Fed. Reg. 59582, 59583 (October 12, 2005).

II. History of PSD Increments

The CAA was significantly amended in 1970, signifying a major shift in the federal government's role in fighting air pollution. The amended CAA authorized the development of comprehensive federal and state regulations aimed at limiting emissions from polluting sources. In order to limit emissions of stationary sources, the CAA initiated three major regulatory programs (NAAQS, NSPS, and NESHAPS), with the NAAQS being arguably the most prominent. The 1970 Act based the criteria upon which NAAQS are set around an adequate margin of safety, requisite to protect the public health⁸. Increments were created as part of the 1977 CAA Amendments and were meant to implement upper limits on polluting sources, or establish a "ceiling" not to be exceeded, so as not to deteriorate the baseline concentrations of air quality. Increments focus on the issuance of permits in a geographic area, and aim to assure that new or modified sources would not exceed baseline concentrations of ambient air quality, or drive the area into nonattainment of the NAAQS.

III. Nitrogen Dioxide (NO₂)

History of the NO₂ NAAQS

The formation of nitrogen oxides (NO_x) is mainly caused by the burning of fuel sources. The EPA has long recognized NO_x as one of the six criteria pollutants commonly found throughout the country that pose significant public health and welfare risks. When inhaled by humans, NO_x causes a variety of respiratory problems, ranging from inflammation of the airway and chest pain, to the development of asthma and reduced lung function⁹. NO_x presents significant environmental harms as well because it frequently reacts with other chemicals in the air to form harmful pollutants like tropospheric ozone, particulate matter, and acid rain. The EPA established NO₂ NAAQS to regulate the levels of NO_x being emitted into the atmosphere which significantly contribute to the public health and welfare risks.

When increments were first introduced as part of the 1977 CAA Amendments, the EPA only promulgated increments for particulate matter and sulfur dioxide. The 1977 amendments provided the EPA with the authority to establish increments for the other four criteria pollutants, but NO₂ increments were not created until 11 years later, in 1988¹⁰. Even then, the increments established were promptly challenged by the Environmental Defense Fund as inadequate, and a settlement agreement between the parties some 25 years later in 2003 was reached to finally establish an acceptable NO₂ increment¹¹. The EPA did not issue a final rule establishing the increment until 2005, when the Agency established the first and only NO₂ increment. The increment regulates only annual average concentrations of NO₂ and does not address short-term NO₂ emissions as it was set based on the NO₂ NAAQS set in 1988.

⁸ PL 91-604, p. 1680

⁹ See e.g., U.S. EPA. Basic Information About NO₂ - Effects of NO₂, (June 7, 2021), available at <https://www.epa.gov/no2-pollution/basic-information-about-no2#What%20is%20NO2>.

¹⁰ See, e.g., EPA Fact Sheet, *Prevention of Significant Deterioration: Final Rule to Address Emissions of Nitrogen Oxides*, at 2 (September 29, 2005), available at <https://www.epa.gov/sites/default/files/2015-12/documents/20050929fs.pdf>.

¹¹ Settlement Agreement: *In re Environmental Defense*, (D.C. Cir. 2003), (No. 03-1220).

The CAA grants the Administrator authority to promulgate a 1-hour increment for NO₂.

Under Section 166 of the CAA, the Administrator is authorized to promulgate increments for nitrogen oxides.¹² Subsection (a) specifically lists nitrogen oxides as pollutants that the administrator was to study and promulgate regulations for, in order to prevent the significant deterioration of air quality that is directly related to their emissions.¹³ Subsection (d) references section 163, which establishes the Administrator's power to implement sulfur oxide and particulate matter increments, and states that the regulations for nitrogen oxides under subsection (a) shall be "at least as effective" as the increments established in section 163.¹⁴ Subsection (d) goes on to plainly state that the Administrator may choose to use air quality increments, among other measures, to meet the "at least as effective" requirement.¹⁵

Sections 108 and 109 of the CAA govern the Administrator's establishment and revision of the NAAQS standards. Section 108 requires the Administrator to issue air criteria that accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all effects on public health or welfare, which may be expected from the presence of a pollutant in the air.¹⁶ Section 109 of the Act directs the Administrator to promulgate primary and secondary standards that allow for an adequate margin of safety and are requisite for the public health.¹⁷ Courts have held that the primary standards carry with them the intention to address uncertainties around the scientific evidence and technical information available at the time the standards are set, as well as providing a reasonable degree of protection against potential hazards not yet identified.¹⁸ Therefore, the Administrator cannot just consider the levels of pollution which have been demonstrated to be harmful, but must also consider the lower levels of pollution which may pose an unacceptable risk of harm.

An Integrated Science Assessment ("ISA") for Oxides of Nitrogen was released in 2016. The report asserts a causal relationship between short-term NO_x exposure and respiratory effects, and also that its conclusions are stronger than those determined in the 2008 ISA for Oxides of Nitrogen.¹⁹ The Agency explicitly states that it believes the evidence to be suggestive of a causal relationship between short-term NO_x exposure and mortality, and long-term exposure with cardiovascular effects, diabetes, poorer birth outcomes, and cancer.²⁰ Based on the EPA's ISA, there is sufficient evidence and Agency acknowledgement that 1-hour exposure to NO_x can have seriously harmful effects on the human body. Even at the level of suggestive inference listed by the EPA, 1-hour exposure to NO₂ falls into the category of "lower levels of pollution which may pose an unacceptable risk of harm."²¹

¹² 42 U.S.C. § 7476.

¹³ 42 U.S.C 7476(a).

¹⁴ 42 U.S.C 7476(d).

¹⁵ *Id.*

¹⁶ 42 U.S.C. 7408(2).

¹⁷ 42 U.S.C. 7409(b)(2).

¹⁸ *Lead Industries Association v. EPA*, 647 F.2d 1130, 1154 (DC Cir 1980), cert. denied, 101 S. Ct. 621 (1980).

¹⁹ U.S. EPA. Integrated Science Assessment (ISA) for Oxides of Nitrogen – Health Criteria (Final Report, Jan 2016). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-15/068, 1-48, 2016.

²⁰ *Id.* at 1-49.

A 1-hour increment for NO₂ is needed to protect public health and the environment.

A 1-hour averaging time increment is necessary to protect the public from being exposed to harmful concentrations of NO_x. As the EPA has previously explained in its NAAQS review process, short term exposure to concentrations of NO₂ above 100 ppb in the ambient air can have deleterious effects on human health.²² The EPA's 2016 Integrated Science Assessments (ISA) found epidemiologic studies showing that exposure to NO₂ at levels of 100 ppb for as little as 20 minutes can result in decreased airway responsiveness.²³ In order for the EPA to effectively protect its 1-hour primary standard of 100 ppb that was put in place in 2010, the Agency must institute a 1-hour average increment as well.

Establishing a 1-hour increment is necessary to ensure new sources do not significantly harm the air in ways that are currently going unmeasured. The EPA admitted that creating new short-term NAAQS has larger implications for the air permitting process, that the Agency has historically developed increments for each applicable averaging period for which a NAAQS has been promulgated, and that 42 U.S.C. § 7476 of the CAA authorizes the Agency to consider the need for a 1-hour increment.²⁴

The EPA's decision to promulgate a 1-hour NO₂ NAAQS in 2010 indicated a shift in the Agency's position, prioritizing short-term NO₂ exposure as a significant harm to the public. While the 1-hour standard is certainly helpful in creating a ceiling for NO₂ emissions within an attainment area, the standard alone does not address the risk that new sources pose, even if they may not bring an entire area out of attainment. Just using the 1-hour standard as a ceiling for NO₂ emissions in an attainment area gives the impression that as long as the entire area stays within the short-term threshold, the risk of harm to the public is being minimized; but this may not be the case. The goal of the PSD increments is to prevent the issuance of permits for new or modified sources which would cause significant deterioration to the baseline concentration of the air. Without short-term increments, new or modified sources could emit NO₂ at levels that would significantly harm the air quality in their surrounding vicinity, but may not, by themselves, cause the entire geographic area to enter nonattainment. People who are exposed to the elevated levels of NO₂ in the short term may still suffer from significant deterioration of their ambient air concentration, even though the ambient air levels are still within the existing NAAQS. In addition, without a 1-hour averaging time increment, a combination of stationary sources and other sources, such as mobile sources, may allow areas, especially rapidly growing areas, to start exceeding the 2010 NO₂ NAAQS.

IV. Sulfur Dioxide (SO₂)

History of the SO₂ NAAQS

SO₂ is emitted from mobile sources burning fuel with high sulfur contents, natural processes, and some industrial processes, but the largest contributor to SO₂ emissions is the burning of fossil fuel for power production or other largescale industry. Since the establishment

²² Review of the Primary National Ambient Air Quality Standards for Oxides of Nitrogen, 82 Fed. Reg. 34792, 34827 (July 26, 2017).

²³ *Id.*

²⁴ *Id.*

of its original primary NAAQS, the EPA has known of a series of harmful effects on both the environment and human health from SO₂. SO₂ is a contributor to acid rain, can directly harm natural flora by causing direct damage and decreasing growth, and is capable of reacting with other atmospheric compounds to form particulate matter contributing to regional haze. As for human health, particulate matter created by SO₂ can penetrate the respiratory system and cause significant health effects. Even short-term exposure to SO₂ can lead to additional dangerous consequences. Indeed, the EPA itself recognizes that “short-exposures to SO₂ can harm the human respiratory system and make breathing difficult. People with asthma, particularly children, are sensitive to these effects of SO₂.”²⁵

It was this pressing risk from short-term exposure which contributed in large part to the 2010 rulemaking establishing the current 1-hour averaging time NAAQS for SO₂. Then, the EPA revoked both its previous 24-hour and annual primary SO₂ standards in favor of a standard of 75ppb based on the 3-year average of the 99th percentile of the yearly distribution of 1-hour daily maximum concentrations. In the rulemaking, the EPA cited its related Integrated Science Assessment (ISA) in finding that its previous annual and 24-hr SO₂ NAAQs were not adequate to protect public health within an adequate margin of safety.²⁶

It was in part these findings which led the Administrator to deem that a 1-hour standard would provide increased health protection, yet over ten years after this decision there is still no application of the same logic to the administration of 1-hr averaging time increments. There are annual mean, 3-hour maximum, and 24-hour maximum increments for SO₂, but the Agency has yet to establish increments for the 1-hour standard. The EPA has set and updated PSD increments since 2010 for other criteria pollutants, namely particulate matter, so is clearly recognizes the need for this regulation.²⁷

The CAA Grants the Administrator Authority to Promulgate a 1-hour Increment for SO₂

Under section 163 of the CAA, Congress established “increments and ceilings” for sulfur oxide and particulate matter.²⁸ At the time, however, Congress only identified increments for annual, 24-hour, and 3-hour maximum standards; since then, the Agency has adopted a 1-hour NAAQS for SO₂. Arguably, section 163 would still authorize the Agency to establish increments for the revised SO₂ NAAQS. Nevertheless, section 166 of the CAA also authorizes the EPA to promulgate increments for any NAAQS that are promulgated after August 7, 1977. Indeed, the EPA previously recognized that “the Act provides a specific schedule for the promulgation of additional regulations, which may include increments, following the promulgation of new or revised NAAQS,” including for the 1-hour SO₂ standard.²⁹

²⁵ EPA Sulfur Dioxide Basics, <https://www.epa.gov/so2-pollution/sulfur-dioxide-basics>

²⁶ 75 Fed. Reg. 35519, 35525-35526 (June 22, 2010)

²⁷ 75 Fed. Reg. 64863 (October 20, 2010)

²⁸ 42 U.S.C. 7473

²⁹ EPA Memorandum, *Guidance Concerning the Implementation of the 1-hour SO₂ NAAQS for the Prevention of Significant Deterioration Program*, at 9 (Aug. 23, 2010), available at https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/20100823_page_1-hr_so2_naaqs_psd_program.pdf.

Adopt Average Class Increments Based on Existing Metrics

The EPA has already developed standard metrics for the determination of acceptable SO₂ increments³⁰. We do not ask that the EPA adopt a new metric, only that the existing metric be applied to 1-hour averaging time SO₂ NAAQS. The EPA has gone so far as to conclude that a 1-hour standard is the best suited to substantially reduce short-term peak exposure to SO₂, and the most effective in protecting public health.³¹ EPA must follow through on its commitment to provide the same protection for public health by establishing 1-hour averaging time increments.

As mentioned in the section on NO_x, we believe the EPA may apply the same methodology adopted in the 2005 rulemaking on PSD for Nitrogen oxides. The increment system entails establishing a three-tiered area classification system and basing the levels of increments for the three areas on a “percentage of the NAAQS” mathematically approach which can be easily applied to any criteria pollutant with existing NAAQS. The application there, read as follows: “The existing Class I NO₂ increment is 2.5 µg/m³ (annual average), a level of 2.5 percent of the NO₂ NAAQS. It is based on the Class I SO₂ increment, which is set at the same percentage (2.5 percent) of the SO₂ annual NAAQS. The Class II NO₂ increment is 25 µg/m³ – 25 percent of the NO₂ NAAQS. The Class III NO₂ increment is 50 µg/m³ – 50 percent of the NO₂ NAAQS.”³²

V. Conclusion

NO₂ and SO₂ are criteria pollutants commonly found throughout the country, which pose significant short-term risks to public health and welfare. Their adverse impacts which are irreversible, such as mortality and asthma attacks, combined with their contributions to other criteria pollutants like ozone and particulate matter, necessitate a swift and direct response from the Agency in combatting short-term emissions. Because both pollutants present significant risks when exposed for even just 1-hour, the EPA must act rapidly to establish 1-hour averaging time increments, and prevent significantly deteriorating ambient air.

Therefore, Petitioners request that the EPA promulgate a final rule, or rules, establishing Class I, Class II, and Class III 1-hour average time increments for both NO₂ and SO₂.

Thank you for your consideration.

Sincerely,

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³⁰ 40 CFR 50.4

³¹ 75 Fed Reg 35519, 35529-3530 (June 22, 2010)

³² 70 FR 59581, 59583 (October 12, 2005)