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REPORT BY THE ENVIRONMENTAL LAW COMMITTEE

**COMMENTS ON THE UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY'S PROPOSED REVIEW OF THE NATIONAL AMBIENT AIR QUALITY
STANDARDS FOR PARTICULATE MATTER**

DOCKET NOS. EPA-HQ-OAR-2015-0072; FRL-10008-31-OAR

The New York City Bar Association's Environmental Law Committee ("ELC") submits the following comments on the United States Environmental Protection Agency's proposed action "Review of the National Ambient Air Quality Standards for Particulate Matter," 85 Fed. Reg. 24,094 (Apr. 30, 2020).¹

The ELC is a committee of the New York City Bar Association ("City Bar") that addresses current legal and policy issues related to the regulation of New York City's environment and natural resources. Through events, reports, and comments on public rulemaking and policymaking, the committee's focus spans local environmental issues from municipal sustainability initiatives to state and national issues which impact New York City's environment, such as national environmental policy.

I. INTRODUCTION

The United States Environmental Protection Agency's ("EPA") proposed action, "Review of the National Ambient Air Quality Standards for Particulate Matter," 85 Fed. Reg. 24,094 (Apr. 30, 2020) (the "Proposed Action") would retain the current National Ambient Air Quality Standards ("NAAQS") for particulate matter without revision. As discussed in greater detail below, New York City's air quality and public health ultimately depend on federal standards. Consequently, the ELC has a strong interest in ensuring that NAAQS are set at levels that fully protect the public health and welfare with an adequate margin of safety, as required by the Clean Air Act ("CAA").

The NAAQS for particulate matter ("PM") must be protective of the public health and welfare, and in particular vulnerable populations, and must take scientific uncertainties into proper and meaningful consideration. The Proposed Action fails to meet this standard. This failure was

¹ The following Environmental Law Committee members participated in the drafting of these comments: Jeffrey Hughes, Emily Rebecca Hush, Gordon J. Johnson, Consuelo A. Mejer, Nicholas W. Tapert, and Nicholas Widzowski.

in part predetermined by the unlawful restrictions the Administrator placed on the membership of the Clean Air Scientific Advisory Committee (“CASAC”). Furthermore, despite recommendations for a more stringent standard by many members of the CASAC as well as by EPA staff who had reviewed the scientific evidence regarding the health impacts of PM – and despite public comments urging the same – the EPA Administrator ignored significant evidence that the current standards are not sufficiently protective. For example, the Administrator failed to consider recent studies demonstrating that PM pollution may increase the severity and mortality rate of COVID-19 infections in elderly, black, Hispanic, and low-income populations. The current standard must be reconsidered in an unbiased process, which we expect would result, at a minimum, in a strengthening of the annual standard for fine particles (“PM_{2.5}”).

II. NEW YORK CITY CANNOT ENSURE HIGH AIR QUALITY FOR NEW YORKERS WITHOUT STRONG FEDERAL NAAQS.

Since the nineteenth century, New York City has striven to protect the health and welfare of New Yorkers by ensuring a minimum level of air quality. Central Park, for instance, was meant to be a space where New Yorkers of all classes would be able to experience the benefits of clean air. Park architect Frederick Law Olmsted championed this idea when he observed that “our problem[s] would be solved” if cities could more adequately “supply the lungs with air screened and purified by trees.”² Although New York City first enacted smoke abatement laws in the early twentieth century,³ local laws enacted to combat air pollution were “initially ineffective.”⁴ By 1966, the City had suffered two deadly smog events,⁵ and “had the worst air of any American city due to its high concentrations of invisible emissions, particularly sulfur dioxide and carbon monoxide.”⁶ In the 1960s, the City began passing regular updates to municipal air quality regulations and by 1975, New York State data showed a marked decrease in emissions of sulfur dioxide, particulate matter, and nitrous oxide in the region.⁷

Despite these encouraging results, New York City could not – and cannot – deliver clean air to New Yorkers without the support of a strong national regulatory framework. Air quality in New York is greatly impacted by its neighbors’ industrial activities,⁸ as much today as in 1967 when Senator Robert F. Kennedy viewed from a helicopter “a smoke-belching factory in New Jersey with a large sign offering an unsubtle reminder of the lax state of industrial regulation in

² Frederick Law Olmsted, *Public Parks and the Enlargement of Towns*, <https://www.fandm.edu/david-schuyler/ams280/public-parks-and-the-enlargement-of-towns> (all websites last visited June 25, 2020).

³ Roy Popkin, *Two “Killer Smogs” the Headlines Missed*, 12 ENVTL. PROTECTION AGENCY J. 27 (Dec. 1986).

⁴ Katrina M. Wyman & Danielle Spiegel-Feld, *The Urban Environmental Renaissance*, 108 CAL. L. REV. 305, 316 (2020).

⁵ Popkin, *supra* note 3 at 28–29.

⁶ SCOTT HAMILTON DEWEY, *DON’T BREATHE THE AIR: AIR POLLUTION AND U.S. ENVIRONMENTAL POLITICS, 1945–1970*, at 156 (2000).

⁷ Popkin, *supra* note 3 at 29.

⁸ See 42 U.S.C. § 7410(a)(2)(D) (The CAA “Good Neighbor” Provision); *State of New York et al. v. U.S. EPA et al.*, No. 19-1231 (D.C. Cir. filed Oct. 29, 2019); *State of New Jersey et al. v. Wheeler et al.*, No. 1:19-cv-03247 (D.D.C. filed Oct. 29, 2019).

the Garden State.”⁹ In passing the CAA, Congress recognized that while the prevention of air pollution is primarily a state and local government responsibility, “Federal financial assistance and leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution.” 42 U.S.C. § 7401(a)(4). Federal law is critical in pushing cities and states to adhere to consistent federal standards and provides an avenue of relief for plaintiffs when local governance fails.¹⁰

Today, New York City continues to exert its role as an environmental leader including through the phasing out of heavy heating oils, a 2015 overhaul of the city Air Pollution Control Code, and most recently, the passage of legislation to set greenhouse gas emissions standards for large buildings. These actions have resulted in further reductions in criteria pollutants, such as PM_{2.5} and nitrogen oxides, over the last decade.¹¹ Without federal action, however, the City cannot fully protect the health and welfare of all New Yorkers. For example, a 2016 study conducted by the New York City Department of Health and Mental Hygiene found that around 320 deaths in New York City per year could be attributed to PM_{2.5} emissions from on-road mobile sources.¹² The State Metropolitan Transportation Authority, however, cannot implement the study’s recommendations regarding congestion pricing and low emissions zones without the approval of the Federal Highway Administration.¹³ City research shows, moreover, that further air quality improvements would be possible if federal standards were updated to reflect the most recent scientific studies.¹⁴

The EPA’s Proposed Action will therefore have a significant impact on the air quality in New York City and the ELC has a strong interest in ensuring the EPA’s Proposed Action will adequately empower New York City to provide the air quality needed to protect the health and welfare of the nearly 20 million people living in the New York Metropolitan Area.

⁹ Wyman & Spiegel-Feld, *supra* note 4 at 319–21.

¹⁰ See, e.g., U.S. Dep’t of Justice, *City of New York Agrees to Settle Federal Complaint by Covering the Hillview Reservoir to Prevent Contamination of the City’s Drinking Water Supply* (Mar. 18, 2019), <https://www.justice.gov/usao-edny/pr/city-new-york-agrees-settle-federal-complaint-covering-hillview-reservoir-prevent>.

¹¹ NEW YORK CITY DEPT. OF HEALTH & MENTAL HYGIENE, THE NEW YORK CITY COMMUNITY AIR SURVEY: NEIGHBORHOOD AIR QUALITY 2008-2018, <https://nyc-ehs.net/nyccas2020/web/report>.

¹² Iyad Kheirbek, et al., *The Contribution of Motor Vehicle Emissions to Ambient Fine Particulate Matter Public Health Impacts in New York City: a Health Burden Assessment*, 15 ENVTL. HEALTH 89 (Aug. 2016), <https://ehjournal.biomedcentral.com/track/pdf/10.1186/s12940-016-0172-6>.

¹³ James Nani, *Feds Urged To Approve NY Congestion Plan For Virus Relief*, LAW360 (Apr. 20, 2020), <https://www.law360.com/tax-authority/articles/1265178/feds-urged-to-approve-ny-congestion-plan-for-virus-relief>.

¹⁴ NEW YORK CITY DEP’T OF HEALTH & MENTAL HYGIENE, AIR POLLUTION AND THE HEALTH OF NEW YORKERS: THE IMPACT OF FINE PARTICLES AND OZONE 7 (2011), <https://www1.nyc.gov/assets/doh/downloads/pdf/eode/eode-air-quality-impact.pdf>.

III. COMMENT ON THE PROPOSED ACTION

a. The Administrator's Reliance on the CASAC's Recommendations was Arbitrary and Capricious.

The Administrator's reliance on the CASAC's recommendations was arbitrary and capricious because (1) flawed membership selection criteria biased the CASAC in favor of less stringent standards; (2) the Administrator's decision to disband the CASAC's Particulate Matter Review Panel and replace it with an *ad hoc* "pool" of consultants did not provide the CASAC with the expertise it needed to effectively advise the Administrator; and (3) the Administrator relied on the CASAC's comments on fundamentally flawed draft versions of the EPA's Integrated Science Assessment ("ISA") and Policy Assessment ("PA"), even though the CASAC found the drafts inadequate.

Under the CAA, NAAQS "shall accurately reflect the latest scientific knowledge useful in indicating the kind and extent of *all identifiable effects* on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities." 42 U.S.C. § 7408(a)(2) (emphasis added). To ensure that the EPA obtains and properly considers such information, the CAA required the EPA to create "an independent scientific review committee" (the CASAC), made up of "seven members including at least one member of the National Academy of Sciences, one physician, and one person representing State air pollution control agencies." 42 U.S.C. § 7409(d)(2)(A). For 30 years, this seven-member panel has been assisted by expert review panels that "supplement and expand the scientific expertise" of the CASAC.¹⁵

The CASAC serves a pivotal role in the NAAQS review process, such that courts closely scrutinize any deviation from its recommendation. The CASAC's findings, recommendations, and comments have a higher status than those of a typical advisory committee. When making proposals such as NAAQS revisions, the CAA requires the EPA to "set forth or summarize and provide a reference to any pertinent findings, recommendations, and comments" of the CASAC and, "if the proposal differs in any important respect from any of these recommendations," the Administrator must provide "an explanation of the reasons for such differences." 42 U.S.C. § 7607(d)(3). The EPA's explanations "must be precise" and where the EPA diverges from the CASAC's scientific advice, "there must be substantial evidence in the record when considered as a whole which supports the Administrator's determinations." *Murray Energy Corp. v Env'tl. Prot. Agency*, 936 F.3d 597, 614 (D.C. Cir 2019) (citations omitted) (internal quotations omitted).

Here, the Administrator subverted the role of the CASAC by imposing flawed membership criteria, elevating industry ties over expertise. In October 2017, the EPA Administrator issued a directive mandating broad changes to the composition of Federal Advisory Committees, including

¹⁵ CASAC, CONSENSUS RESPONSES TO CHARGE QUESTIONS ON THE EPA'S *INTEGRATED SCIENCE ASSESSMENT FOR PARTICULATE MATTER* (*External Review Draft – October 2018*), at 1 (Apr. 11, 2019), available at [https://yosemite.epa.gov/sab/sabproduct.nsf/6CBCBBC3025E13B4852583D90047B352/\\$File/EPA-CASAC-19-002+.pdf](https://yosemite.epa.gov/sab/sabproduct.nsf/6CBCBBC3025E13B4852583D90047B352/$File/EPA-CASAC-19-002+.pdf).

the CASAC, in a significant departure from past practice.¹⁶ The directive issued a new policy that “no member of an EPA federal advisory committee currently receive EPA grants” or hold any position that would “reap substantial direct benefit from an EPA grant.”¹⁷ The directive also provided that “[e]xperts serving on FACs should regularly rotate on and off committees.”¹⁸

The October 2017 Directive had a deleterious effect on the functioning and expertise of the CASAC. EPA grant recipients go through a competitive process that includes rigorous internal and external peer review to ensure that each recipient is able to offer independent scientific advice to EPA. See *Nat. Res. Defense Council, Inc. v. EPA*, 19 CV 5174 (DLC), -- F.Supp.3d --, 2020 WL 615072, at *3 (S.D.N.Y. Feb. 10, 2020); *Physicians for Social Responsibility v. Wheeler*, 956 F.3d 634, 638 (D.C. Cir. 2020) (“Historically, EPA advisory committees have included academic scientists who, supported by EPA grants, conduct cutting-edge scientific and technical research important to the agency’s statutory mission.”). Moreover, CASAC members historically have served multiple terms of service, and thereby acquire and share extensive expertise in the most common issues dealt with by the CASAC. Thus, the directive rendered many of the most knowledgeable scientists unaffiliated with industry ineligible for service on the CASAC and it resulted in the removal of experienced EPA grantees from the CASAC.

These unprecedented changes to the composition of the CASAC call the objectivity and validity of their recommendations into serious doubt. EPA staff questioned by the EPA Inspector General expressed concern that the 2017 directive could “prevent the Agency from objectively considering policy decisions.”¹⁹ As one court put it, the change in membership was “done . . . in a manner that the complaint [filed by the Union of Concerned Scientists] plausibly describes as altering the balance and the role of special interest influence on EPA advisory committees.” *Union of Concerned Scientists v. Wheeler*, 954 F.3d 11, 20 (1st Cir. 2020).

The Administrator further eroded the expertise and capacity of the CASAC by replacing five of its members halfway through the review and disbanding the Particulate Matter Review Panel tasked with advising the EPA regarding PM NAAQS. On October 10, 2018, the EPA announced the appointment of five new members to the CASAC.²⁰ On October 11, 2018, the Administrator announced that the 20-person Particulate Matter Review Panel, which had formerly advised the CASAC, would no longer be convened. In April 2019, at the time of its review of the EPA’s Draft ISA, the CASAC still had no expert review panel to consult. Recognizing the need for additional expert advice, the CASAC asked the Administrator to “reappoint the previous

¹⁶ MEMORANDUM FROM E. SCOTT PRUITT, EPA ADMINISTRATOR, STRENGTHENING AND IMPROVING MEMBERSHIP ON EPA FEDERAL ADVISORY COMMITTEES (Oct. 31, 2017), https://www.epa.gov/sites/production/files/2017-10/documents/final_draft_fac_memo-10.30.2017.pdf.

¹⁷ *Id.* § A.

¹⁸ *Id.* § D.

¹⁹ EPA OFFICE OF INSPECTOR GENERAL, FURTHER EFFORTS NEEDED TO UPHOLD SCIENTIFIC INTEGRITY POLICY AT EPA, Report No. 20-P-0173 at 14 (May 20, 2020), https://www.epa.gov/sites/production/files/2020-05/documents/epaig_20200520-20-p-0173.pdf.

²⁰ EPA, *Acting Administrator Wheeler Announces Science Advisors for Key Clean Air Act Committee* (Oct. 10, 2018), <https://archive.epa.gov/epa/newsreleases/acting-administrator-wheeler-announces-science-advisors-key-clean-air-act-committee.html>.

CASAC PM panel (or appoint a panel with similar expertise)” and to appoint consultants with additional areas of expertise.²¹ The EPA declined, instead appointing an ad hoc “pool of consultants” that had less breadth and depth of expertise than the former panel, and which did not include the additional areas of expertise requested.²² The Administrator’s decision “adversely affect[ed] the ability of CASAC to provide the EPA with the best and most relevant advice on the adequacy of the current NAAQS.”²³ Indeed, the members of the disbanded Particulate Matter Review Panel submitted independent comments to the Administrator on October 22, 2019, finding that existing annual and 24-hour PM_{2.5} standards “are not protective of public health.”²⁴ This would have been their advice to the CASAC had they not been improperly dismissed by the Administrator.

Furthermore, the CASAC never provided an opinion on a final ISA or a final PA, and consequently was unable to provide reliable scientific recommendations to inform the Administrator’s Proposed Action. In its April 2019 review of the EPA’s Draft ISA, the CASAC warned that the Draft ISA “d[id] not provide a sufficiently comprehensive, systematic assessment of the available science” and that it suffered from “fundamental limitations.”²⁵ In its December 2019 letter reviewing the EPA’s Draft PA, the CASAC again reiterated the failings of the Draft ISA and noted that the Draft PA depended on the flawed Draft ISA.²⁶ The CASAC emphasized that it was “unusual” for the CASAC to review a draft PA before the ISA had been revised or finalized, and twice recommended that “it be provided an opportunity to review a revised draft of the PM PA based on the final PM ISA.”²⁷ No such opportunity was granted.

The Proposed Action relies heavily on the fact that “some”²⁸ CASAC members opined that no change was needed because of “uncertainties in the evidence for adverse health effects below the current standards and in the potential public health impacts of reducing ambient PM_{2.5}

²¹ Letter from Dr. Louis Anthony Cox, Jr. to EPA Administrator Wheeler (Apr. 11, 2019), available at <https://yosemite.epa.gov/sab/sabproduct.nsf/LookupWebReportsLastMonthCASAC/6CBCBBC3025E13B4852583D90047B352/%24File/EPA-CASAC-19-002+.pdf>.

²² Request for Nominations of Consultants To Support the Clean Air Scientific Advisory Committee (CASAC) for the Particulate Matter and Ozone Reviews 84 Fed. Reg. 38,625 (Aug. 7, 2019); CASAC, CONSENSUS RESPONSES TO CHARGE QUESTIONS MEMBERS ON THE EPA’S *POLICY ASSESSMENT FOR THE REVIEW OF THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR PARTICULAR MATTER (EXTERNAL REVIEW DRAFT – SEPTEMBER 2019)*, APPENDIX B (Dec. 16, 2019), at B-29 (comments of Dr. Mark Frampton), available at [https://yosemite.epa.gov/sab/sabproduct.nsf/E2F6C71737201612852584D20069DFB1/\\$File/EPA-CASAC-20-001.pdf](https://yosemite.epa.gov/sab/sabproduct.nsf/E2F6C71737201612852584D20069DFB1/$File/EPA-CASAC-20-001.pdf).

²³ CASAC, CONSENSUS RESPONSES (Dec. 16, 2019), *supra* note 22, at B-29 (comments of Dr. Mark Frampton).

²⁴ Letter from the Independent Particulate Matter Review Panel (formerly the EPA CASAC Particulate Matter Review Panel) to EPA Administrator Wheeler, (Oct. 22, 2019), <https://yosemite.epa.gov/sab/sabproduct.nsf/81DF85B5460CC14F8525849B0043144B/%24File/Independent+Particulate+Matter+Review+Panel+Letter+on+Draft+PA.pdf>.

²⁵ Letter from Dr. Louis Anthony Cox, Jr. to EPA Administrator Wheeler (Apr. 11, 2019), *supra* note 20, at 1.

²⁶ *Id.*

²⁷ *Id.* at 4; CASAC, CONSENSUS RESPONSES (Dec. 16, 2019), *supra* note 22, at 1.

²⁸ Neither the CASAC’s letter to the Administrator nor the Proposed Action detail how many members voted each way.

concentrations below those standards.” Proposed Action at 24,095. However, the CASAC’s letter to the Administrator clearly states that the basis for these members’ recommendation was the “limitations in the underlying science basis for policy recommendations,” stemming from the deeply flawed Draft ISA.²⁹ At least one individual member wrote separately acknowledging that “[r]eview of an updated risk assessment may lead to different policy recommendations on the current annual and 24-hour PM_{2.5} standards.”³⁰

The Proposed Action should instead have relied on other CASAC members’ conclusions that “the weight of the evidence, particularly reflecting recent epidemiology studies showing positive associations between PM_{2.5} and health effects at estimated annual average PM_{2.5} concentrations below the current standard, does reasonably call into question the adequacy of the 2012 annual PM_{2.5} National Ambient Air Quality Standards (NAAQS) to protect public health with an adequate margin of safety.” These members concluded that strong evidence suggested that the current NAAQS were not protective given “recent epidemiology studies showing positive associations between PM_{2.5} and health effects at estimated annual average PM_{2.5} concentrations below the current standard.”³¹

EPA staff concluded that the view of the CASAC members who recommended revision of the NAAQS was the superior one and joined in that recommendation, stating in their Policy Assessment: “we reach the conclusion that the available scientific evidence, air quality analyses, and the risk assessment. . . can reasonably be viewed as calling into question the adequacy of the public health protection afforded by the combination of the current annual and 24-hour primary PM_{2.5} standards.”³² Indeed, the final Policy Assessment suggests that the annual PM_{2.5} standard be strengthened by 2 to 4 µg/m³.³³

The Administrator’s determination with regards to the PM NAAQS was arbitrary and capricious because the Administrator misused the process by which it must consult the CASAC by restricting the expertise available to the CASAC in its review of the EPA’s assessments, by refusing to provide the CASAC with an opportunity to review the final ISA or PA, and by changing the composition of the CASAC so as to bias it in favor of more industry-friendly standards.

²⁹ Letter from Dr. Louis Anthony Cox, Jr. to EPA Administrator Wheeler (Dec. 16, 2019), at 1, available at [https://yosemite.epa.gov/sab/sabproduct.nsf/E2F6C71737201612852584D20069DFB1/\\$File/EPA-CASAC-20-001.pdf](https://yosemite.epa.gov/sab/sabproduct.nsf/E2F6C71737201612852584D20069DFB1/$File/EPA-CASAC-20-001.pdf); CASAC, CONSENSUS RESPONSES (Dec. 16, 2019), *supra* note 22, Appendix B, at B-29 (comments of Dr. Mark Frampton).

³⁰ CASAC, CONSENSUS RESPONSES (Dec. 16, 2019), *supra* note 27, at B-6 to B-7 (comments of Dr. James Boylan).

³¹ Letter from Dr. Louis Anthony Cox, Jr. to EPA Administrator Wheeler (Dec. 16, 2019), *supra* note 29, at 1; Proposed Action, at 24,095–96.

³² EPA OFFICE OF AIR QUALITY PLANNING AND STANDARDS STAFF, POLICY ASSESSMENT FOR THE REVIEW OF THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR PARTICULATE MATTER, No. EPA-452/R-20-002, at 3-106 (January 2020), https://www.epa.gov/sites/production/files/2020-01/documents/final_policy_assessment_for_the_review_of_the_pm_naaqs_01-2020.pdf.

³³ *See id.* at 3-117 to 3-118.

b. The Proposed Action is Arbitrary and Capricious Because the Administrator Failed to Create NAAQS that Allow an Adequate Margin of Safety for the Protection of Public Health.

The Administrator's Proposed Action is arbitrary and capricious and contrary to law, because it ignores the statutory requirement of accounting for scientific uncertainties by building an adequate margin of safety into the proposed NAAQS.

Under Section 109(b)(1) of the CAA, the Administrator must promulgate NAAQS which "are requisite to protect the public health," "allowing an adequate margin of safety." 42 U.S.C. § 7409(b)(1). As explained in the Proposed Action, the adequate margin of safety requirement "was intended to address uncertainties associated with inconclusive scientific and technical information available at the time of standard setting." Proposed Action at 24,096. It serves to provide "a reasonable degree of protection against hazards that research *has not yet identified*." *Id.* (emphasis added) (citing *Lead Indus. Ass'n v. EPA*, 647 F.2d 1130, 1154 (D.C. Cir. 1980); *Am. Petroleum Inst. v. Costle*, 665 F.2d 1176, 1186 (D.C. Cir. 1981); *Coal. of Battery Recyclers Ass'n v. EPA*, 604 F.3d 613, 617–18 (D.C. Cir. 2010); *Mississippi v. EPA*, 744 F.3d 1334, 1353 (D.C. Cir. 2013)).

Through this statutory requirement, Congress directed the Administrator to "act in the face of uncertainty" and to "err on the side of caution." *Lead Indus. Ass'n*, 647 F.2d at 1155. Generating an adequate margin of safety requires the Administrator to "build a buffer to protect against *uncertain and unknown* dangers to human health." *Mississippi v. EPA*, 744 F.3d at 1353 (emphasis added). The Administrator must craft standards that protect the public against effects "not yet uncovered by research" and "whose medical significance is a matter of *disagreement*." *Lead Indus. Ass'n, Inc.*, 647 F.2d at 1154 (emphasis added).³⁴ Thus, as the Proposed Action explained, the Administrator seeks:

not only to prevent pollution levels that have been demonstrated to be harmful but also to prevent lower pollutant levels that *may* pose an *unacceptable risk of harm, even if the risk is not precisely identified* as to nature or degree.

Proposed Action at 24,096 (emphasis added).

The adequate margin of safety requirement serves a crucial purpose, because "some uncertainty about the health effects of air pollution is inevitable" and waiting for scientific certainty will lead to "reactive, not preventive" regulatory action. *Lead Indus. Ass'n*, 647 F.2d at 1154. Indeed, history has proven time and again that the margins of safety built into air quality standards are often "very modest or nonexistent, as new information reveals adverse health effects at pollution levels once thought to be harmless." *Id.*; see also Proposed Action at 24,097–99 (describing how the EPA has steadily strengthened the NAAQS for particulate matter since

³⁴ See Section III.A, above, explaining that the Administrator should have followed the advice of those CASAC members urging him to strengthen the existing standards, despite a lack of unanimous advice.

establishing the first standards in 1971 because new scientific findings consistently demonstrated that previous NAAQS did not adequately protect public health or welfare).

An especially important public health consideration in this context is the greater risk of harm faced by vulnerable populations, such as children, the elderly, minorities, low-income populations, and persons with pre-existing conditions. *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 525–26 (D.C. Cir. 2009) (granting petition for review in part because EPA's proposed rule failed to provide a margin of safety and did not give adequate consideration to the impact on sensitive populations).

In defiance of Congress's explicit directive, the Administrator did not include an adequate margin of safety in the proposed NAAQS for PM. In fact, the Proposed Action contains no analysis whatsoever of the existence or non-existence of an adequate margin of safety. While the Administrator does enjoy discretion in determining how to set a margin of safety, he must "fully explain[] and support[]" the basis for his decision. *Mississippi v. EPA*, 744 F.3d at 1353 (citing *Am. Trucking Ass'ns v. EPA*, 283 F.3d 355, 368 (D.C. Cir. 2002)). The Administrator's complete silence on the question is an unacceptable deviation from the requirements of the law.

In addition, the Administrator admitted that "NAAQS are meant to protect the population as a whole, including groups that may be at increased risk," Proposed Action at 24,114, but made no attempt to explain how the Proposed Action provides an adequate margin of safety for these vulnerable populations. *See, particularly*, Section III.C *infra* discussing air pollution impacts on vulnerable populations amidst the COVID-19 pandemic.

Furthermore, the Administrator's own statements belie his conclusory and unsupported assertion that there is "considerable uncertainty in the potential public health impacts of reductions in ambient PM_{2.5}," and therefore that "standards more stringent than the current standards . . . would be more than requisite to protect the public health with an adequate margin of safety." Proposed Action at 24,120. On the contrary, the Administrator repeatedly drew conclusions from the scientific evidence that indicate that the current standards do *not* provide an adequate margin of safety. For example, the Administrator concluded:

- Positive associations between long-term PM_{2.5} exposures and mortality "persist in analyses restricted to long-term exposures below 12 $\mu\text{g}/\text{m}^3$ or 10 $\mu\text{g}/\text{m}^3$." Proposed Action at 24,107 (citing the 2019 EPA ISA § 11.2.3).
- "[P]ositive and statistically significant associations with mortality persist in analyses restricted to short-term PM_{2.5} exposures below 35 $\mu\text{g}/\text{m}^3$, below 30 $\mu\text{g}/\text{m}^3$, and below 25 $\mu\text{g}/\text{m}^3$." *Id.* at 24,108.
- "Recent analyses provide initial evidence indicating that PM_{2.5}-mortality associations persist and may be stronger (*i.e.*, a steeper slope) at lower concentrations." *Id.*
- "[M]ost of the results from analyses examining the shape of the concentration-response relationship for cardiovascular mortality support a linear relationship with long-term

PM_{2.5} exposures and do not identify a threshold below which effects do not occur.” *Id.* at 24,109.

- The “epidemiologic evidence strongly supports a relationship [between long-term PM_{2.5} exposure and] decrements in lung function growth in children” and that additional evidence “supports a relationship with asthma development in children, increased bronchitic symptoms in children with asthma, acceleration of lung function decline in adults, and respiratory mortality.” *Id.* at 24,111 (citing the 2019 EPA ISA).
- “Several U.S. studies report positive and statistically significant health effect associations in analyses restricted to annual average PM_{2.5} concentrations <12 µg/m³. . . [and] in analyses restricted to days with 24-hour average PM_{2.5} concentrations <35 µg/m³.” *Id.* at 24,116 (citing the EPA PA).
- “[S]everal key epidemiologic studies report positive and statistically significant PM_{2.5} health effect associations based largely, or entirely, on air quality likely to be allowed by the current primary PM_{2.5} standards.” *Id.* at 24,117 (citing the EPA PA § 3.2.3.3).
- “Compared to the current annual standard, meeting a revised annual standard with a lower level is estimated to reduce PM_{2.5}-associated health risks by about 7 to 9% for a level of 11.0 µg/m³, 14 to 18% for a level of 10.0 µg/m³, and 21 to 27% for a level of 9.0 µg/m³.” *Id.* at 24,118 (citing the EPA PA risk assessment).

The Administrator’s refusal to explain his determination that the Proposed Action provides an adequate margin of safety demonstrates the Proposed Action’s failure to comply with the statutory requirements of the CAA and renders it unlawful, arbitrary and capricious. Furthermore, the Administrator’s own conclusions demonstrate that contemporary scientific evidence supports the notion that the existing NAAQS for particulate matter do not provide an adequate margin of safety to protect the public health.

Therefore, the Administrator must review the proposed NAAQS for particulate matter by viewing any scientific uncertainties in light of the statutory requirement of providing an adequate margin of safety to protect the public health, including the risk of endangerment to sensitive populations such as asthmatics, children, low-income communities, and the elderly, and revise the Proposed Action accordingly.

c. The Proposed Action Is Arbitrary and Capricious Because It Fails to Consider Research Regarding the Link Between COVID-19 and Exposure to Fine Particles, and Related Impacts on Vulnerable Populations.

The ELC submits this comment as the United States and the rest of the world confront the COVID-19 pandemic. As of the date of this submission, New York State and New York City have experienced the highest number of infections and fatalities in the country. Although the state of the science is constantly evolving, important research already has emerged showing a connection between increased fatalities from COVID-19 and elevated levels of airborne PM as well as other forms of pollution. This new data raises further doubt that the current NAAQS for PM are adequate

to protect public health. At the very least, it would be premature to finalize the NAAQS for PM without careful consideration of the most recent science in this area.

Most prominently, a study from Harvard recently found that even a small increase in long-term exposure to PM_{2.5} leads to a considerable increase in the COVID-19 death rate.³⁵ The study drew on COVID-19 fatality data from more than 3,000 counties in the United States (representing 98% of the population) and found that an increase of only 1 µg/m³ in PM_{2.5} is associated with an 8% increase in the COVID-19 death rate. This study's findings are consistent with literature showing an association between high levels of PM_{2.5} and poor infectious diseases outcomes, including higher hospitalization rates for influenza, and higher rates for the development of pneumonia and respiratory infections.³⁶ For example, research conducted in China during the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS), a type of coronavirus closely related to COVID-19, found locations that ranked moderate or high on long-term air pollution indices had SARS case fatality rates that were 126% and 71% higher, respectively, compared to locations with low levels of air pollution.³⁷

Researchers believe the increased fatalities observed in regions with higher levels of air pollution may be attributable to the similar ways in which the human body responds to COVID-19 and to air pollution. According to a study published in the journal *Environmental Pollution*, air pollution impairs the functioning of the cilia, which protect the upper airways, and prolonged exposure leads to systemic inflammation eventually leading to immune system hyper-activation.³⁸ Researchers found that this immune reaction “may partly explain a higher prevalence and lethality” of a viral agent such as SARS-CoV-2 among populations living in areas with higher levels of air pollution.³⁹

In addition, researchers in Italy are studying whether higher levels of airborne particulate matter may actually increase the morbidity rate of COVID-19 infections. One study has reported an association between higher levels of PM in certain parts of Italy and increased rates of infection, which the authors believe may in part explain the higher rates of infection in the country's northern provinces.⁴⁰ Another study by the same group of researchers found preliminary evidence that RNA from SARS-CoV-2 (the virus that causes COVID-19) can be present on outdoor PM and

³⁵ Xiao Wu et al., *Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study* (April 2020), available at https://projects.iq.harvard.edu/files/covid-pm/files/pm_and_covid_mortality_med.pdf.

³⁶ *Id.* at 14–15.

³⁷ *Id.* at 14.

³⁸ Edoardo Conticini et al., *Can atmospheric pollution be considered a co-factor in extremely high level of SARS-CoV-2 lethality in Northern Italy?* 261 ENVTL. POLLUTION 1, 2 (June 2020), <https://www.sciencedirect.com/science/article/pii/S0269749120320601?via%3Dihub=#bib14>.

³⁹ *Id.*

⁴⁰ Leonardo Setti et al., *The Potential role of Particulate Matter in the Spreading of COVID-19 in Northern Italy: First Evidence-based Research Hypotheses* (April 2020), available at <https://www.medrxiv.org/content/10.1101/2020.04.11.20061713v1.full.pdf>.

could enhance the persistence of the virus in the atmosphere, demonstrating the need for further research into this phenomenon, including the virulence of SARS-CoV-2 when absorbed by PM.⁴¹

These findings dovetail with reports showing that environmental justice communities in New York City suffering from high exposures to PM_{2.5} are also experiencing the highest death rates from COVID-19. As EPA researchers have noted, “non-Whites and those living in poverty face a disproportionate burden from PM-emitting facilities.”⁴² These findings are particularly concerning because “[e]quivalent increases in PM_{2.5} have been linked to statistically significantly higher associations in Blacks than in Whites for health outcomes ranging from asthma attacks to overall mortality.”⁴³ Moreover, research has shown that “higher mobile source PM_{2.5}-attributable rates of morbidity and mortality are found in high poverty neighborhoods as compared to low poverty neighborhoods.”⁴⁴ These higher rates are “due to overlapping patterns of traffic density (particularly truck traffic) and higher underlying baseline incidence of morbidity.”⁴⁵

Given this research, it is no surprise that “the overwhelming difference between the neighborhoods [in New York City] that suffered most and least [from COVID-19] has been race and income, not age.”⁴⁶ Data released on May 18, 2020 by the New York City Health Department regarding death rates from COVID-19 by New York City zip code showed that “[n]eighborhoods with high concentrations of black and Latino people, as well as low-income residents, suffered the highest death rates, while some wealthier areas. . . saw almost no deaths.”⁴⁷

While the research in these areas will continue to evolve as we learn more about the virus, what researchers have learned so far underscores the importance of more stringent air quality standards for PM to protect human health long after the COVID-19 pandemic, particularly for vulnerable populations living in environmental justice communities. *See Coal. of Battery Recyclers Ass’n v. EPA*, 604 F.3d 613, 618 (D.C. Cir. 2010) (finding that “[i]f a pollutant adversely affects the health of . . . sensitive individuals, EPA *must* strengthen the entire national standard”) (quoting *Am. Lung Ass’n v. EPA*, 134 F.3d 388, 389 (D.C. Cir. 1998) (emphasis added)). The Agency should at the very least delay finalizing the NAAQS for PM until it has carefully evaluated the growing body of research linking worse health outcomes from COVID-19 in places with high levels of airborne particulate matter.

⁴¹ Leonardo Setti et al., *SARS-Cov-2 RNA Found on Particulate Matter of Bergamo in Northern Italy: First Preliminary Evidence* (April 2020), available at <https://www.medrxiv.org/content/10.1101/2020.04.15.20065995v2.full.pdf>.

⁴² Ihab Mikati et al., *Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status*, 108 AM. J. PUB. HEALTH 480, 481 (Apr. 2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5844406/>.

⁴³ *Id.* at 484.

⁴⁴ Iyad Kheirbek et al., *The contribution of motor vehicle emissions to ambient fine particulate matter public health impacts in New York City: a health burden assessment*, 15 ENVTL. HEALTH 89 (Aug. 2016), <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-016-0172-6#citeas>.

⁴⁵ *Id.*

⁴⁶ Michael Schwirtz & Lindsey Rogers Cook, *These N.Y.C. Neighborhoods Have the Highest Rates of Virus Deaths*, N.Y. TIMES (May 18, 2020), <https://www.nytimes.com/2020/05/18/nyregion/coronavirus-deaths-nyc.html?action=click&module=Top%20Stories&pgtype=Homepage>.

⁴⁷ *Id.*

IV. CONCLUSION

The ELC urges the Administrator to withdraw the proposed NAAQS on PM and promulgate a more stringent standard that will protect the public health and welfare, allowing a margin of safety, with a particular regard to vulnerable populations and susceptibility to infectious diseases such as COVID-19.

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