

ORAL ARGUMENT NOT YET SCHEDULED
IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 15-1385 (and consolidated case Nos. 15-1392, 15-1490, 15-1491, 15-1494)

MURRAY ENERGY CORPORATION,
Petitioner,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

Petition for Review of Final Administrative Actions of the
United States Environmental Protection Agency

**PROOF OPENING BRIEF OF PUBLIC HEALTH AND
ENVIRONMENTAL PETITIONERS**

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Counsel for Sierra Club

DATED: April 22, 2016

* Application for admission to the D.C. Circuit is pending.

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CORPORATION,)	
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<i>Petitioner,</i>)	
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v.)	No. 15-1385
)	(consolidated with Nos. 15-1392,
)	15-1490, 15-1491, 15-1494)
U.S. ENVIRONMENTAL)	
PROTECTION AGENCY,)	
)	
<i>Respondent.</i>)	
<hr/>		

CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

In accordance with Circuit Rule 28(a)(1), Sierra Club, Physicians for Social Responsibility, National Parks Conservation Association, Appalachian Mountain Club, and West Harlem Environmental Action, Inc. (collectively, “Public Health and Environmental Petitioners”) hereby certify as follows:

(A) Parties, Intervenors and *Amici*

(i) Parties, Intervenors, and *Amici* Who Appeared in the District Court

This case is a petition for review of final agency action, not an appeal from the ruling of a district court.

(ii) Parties to This Case

Petitioner:

15-1385 Murray Energy Corporation

- 15-1392 Arizona, Arkansas, New Mexico Environmental Department,
North Dakota, and Oklahoma
- 15-1490 Sierra Club, Physicians for Social Responsibility, National
Parks Conservation Association, Appalachian Mountain Club,
and West Harlem Environmental Action, Inc.
- 15-1491 Chamber of Commerce of the United States of America,
National Association of Manufacturers, American Petroleum
Institute, Utility Air Regulatory Group, Portland Cement
Association, American Coke and Coal Chemicals Institute,
Independent Petroleum Association of America, National
Oilseed Processors Association, and American Fuel &
Petrochemical Manufacturers
- 15-1494 Texas and Texas Commission on Environmental Quality

Respondent:

The respondent in all cases is the U.S. Environmental Protection Agency.

Also named as a respondent in case Nos. 15-1392, 15-1490, 15-1491, and 15-1494 is Gina McCarthy, in her official capacity as Administrator of the U.S. Environmental Protection Agency (collectively, “EPA”).

Intervenors:

Wisconsin, Utah, Kentucky, and Louisiana have been granted leave to intervene on behalf of Petitioners in No. 15-1392. American Lung Association, Sierra Club, Natural Resources Defense Council, and Physicians for Social Responsibility have been granted leave to intervene on behalf of Respondents in Nos. 15-1385, 15-1392, 15-1491, and 15-1494. Chamber of Commerce of the United States of America, National Association of Manufacturers, American Petroleum Institute, Utility Air Regulatory Group, Portland Cement Association, American Coke and Coal Chemicals Institute, Independent Petroleum Association of America, National Oilseed Processors Association, American Fuel & Petrochemical Manufacturers, American Chemistry Council, American Forest & Paper Association, American Foundry Society, American Iron and Steel Industry, and American Wood Council have been granted leave to intervene on behalf of Respondents in No. 15-1490.

(iii) *Amici* in This Case

Institute for Policy Integrity at New York University School of Law has been granted leave to participate as *amicus curiae* in support of Respondents. American Thoracic Society has been granted leave to participate as *amicus curiae* in support of Public Health and Environmental Petitioners.

(B) Circuit Rule 26.1 Disclosure for Public Health and Environmental Petitioners

See disclosure form filed separately.

(C) Ruling Under Review

Petitioners seek review of the final action taken by EPA at 80 Fed. Reg. 65,292 (Oct. 26, 2015) and titled “National Ambient Air Quality Standards for Ozone.”

(D) Related Cases

Public Health and Environmental Petitioners are not aware of any related cases not already consolidated in this matter.

DATED: April 22, 2016

Respectfully submitted,

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)	
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_____)	

RULE 26.1 DISCLOSURE STATEMENT

Pursuant to Federal Rules of Appellate Procedure 26.1 and 28(a)(1) and D.C. Circuit Rules 26.1 and 28(a)(1)(A), Sierra Club, Physicians for Social Responsibility, National Parks Conservation Association, Appalachian Mountain Club, and West Harlem Environmental Action, Inc., make the following disclosures:

Sierra Club

Non-Governmental Corporate Party to this Action: Sierra Club.

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: Sierra Club, a corporation organized and existing under the laws of the State of California, is a national nonprofit organization dedicated to the protection and enjoyment of the environment.

Physicians for Social Responsibility

Non-Governmental Corporate Party to this Action: Physicians for Social Responsibility ("PSR").

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: PSR is a corporation organized and existing under the laws of Massachusetts. It is a national nonprofit organization of medical and public health professionals and lay advocates dedicated to promoting peace, strengthening public health and child health, and supporting environmental integrity.

National Parks Conservation Association

Non-Governmental Corporate Party to this Action: National Parks Conservation Association.

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: National Parks Conservation Association, a corporation organized and existing under the laws of the District of Columbia, is a

national nonprofit organization dedicated to protecting and enhancing America's National Parks for present and future generations.

Appalachian Mountain Club

Non-Governmental Corporate Party to this Action: Appalachian Mountain Club.

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: Appalachian Mountain Club, a corporation organized and existing under the laws of the Commonwealth of Massachusetts, is a national nonprofit organization dedicated to promoting the protection, enjoyment, and wise use of the mountains, rivers, and trails of the Northeast Outdoors.

West Harlem Environmental Action, Inc.

Non-Governmental Corporate Party to this Action: West Harlem Environmental Action, Inc. ("WE ACT for Environmental Justice").

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: WE ACT for Environmental Justice is a corporation organized and existing under the laws of New York. Founded in 1988, it is a Northern Manhattan community-based organization whose mission is to build healthy communities by assuring that people of color and/or those with low-

income participate meaningfully in the creation of sound and fair environmental health and protection policies and practices.

DATED: April 22, 2016

Respectfully submitted,

/s/Seth L. Johnson

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

Pursuant to Circuit Rule 28(a)(3), the following is a glossary of acronyms and abbreviations used in this brief:

ATS	American Thoracic Society
CASAC	Clean Air Scientific Advisory Committee
CASAC Letter	EPA-HQ-OAR-2008-0699-0190
Dkt	EPA-HQ-OAR-2008-0699
EPA	U.S. Environmental Protection Agency and Gina McCarthy, Administrator
Exposure Assessment	EPA-HQ-OAR-2008-0699-1190
ISA	EPA-HQ-OAR-2008-0699-0405
NAAQS	National ambient air quality standards
PA	EPA-HQ-OAR-2008-0699-0404
ppb	Parts per billion
ppm	Parts per million
PSD	Prevention of significant deterioration
RTC	EPA-HQ-OAR-2008-0699-4309
Sierra Club Comments	EPA-HQ-OAR-2008-0699-2720
SO ₂	Sulfur dioxide

PRELIMINARY STATEMENT

Ozone pollution causes serious health impacts in both healthy adults and sensitive subgroups such as children. It also harms plant life and entire ecosystems. EPA has a statutory duty to protect people and the environment from these impacts. The standards EPA established here allow ozone levels that EPA agrees cause adverse health and environmental effects. EPA also allowed certain large industrial sources to be built without making the legally-required showing that they will comply with the new ozone standards.

JURISDICTIONAL STATEMENT

Agency. Respondents U.S. Environmental Protection Agency and Gina McCarthy, Administrator (collectively, “EPA” or “the agency”) have jurisdiction to revise primary (health-protective) and secondary (welfare-protective) national ambient air quality standards (“standards” or “NAAQS”) for ozone under the Clean Air Act (“the Act”). 42 U.S.C. § 7409.

Court of Appeals. Pursuant to 42 U.S.C. § 7607(b)(1), this Court has jurisdiction to review the final EPA actions, taken at 80 FR 65,292 (Oct. 26, 2015), JA____, challenged in this proceeding.

Timeliness. This petition for review was timely filed within the Act’s 60-day window, 42 U.S.C. § 7607(b)(1), on December 23, 2015.

STATUTES AND REGULATIONS

Pertinent statutes and regulations appear in an addendum to this brief.

STATEMENT OF ISSUES

Whether EPA acted unlawfully and arbitrarily in:

1. Adopting an ozone health standard that allows multiple days each year where ozone air pollution exceeds levels that EPA itself found cause adverse health effects.
2. Departing without rational explanation from its science advisors' finding that a specific level of ozone exposure causes adverse effects with substantial scientific certainty.
3. Without rational explanation, redefining "adverse" health effects to exclude harms that EPA itself previously found "adverse" for sensitive populations.
4. Refusing to adopt a separate seasonal standard to protect trees and plants from ozone damage, and to specify requisite levels of protection therefor, as unanimously recommended by its science advisors.
5. Exempting certain new or modified major industrial plants from demonstrating, as the Act requires, that their emissions will not cause or contribute to violations of the new ozone standards.

STATEMENT OF THE CASE

Ozone, the main component of urban smog, is a corrosive air pollutant that inflames the lungs, constricts breathing, and likely kills people. *See Am. Trucking Ass'ns v. EPA*, 283 F.3d 355, 359 (D.C. Cir. 2002) (“ATA”); 80 FR 65,308/3-09/1, JA____-__; Dkt¹-0405 (“ISA”) 2-20 to -22 tbl.2-1, JA____-__. It causes asthma attacks, emergency room visits, hospitalizations for serious bronchial conditions, and other serious health harms. *E.g.*, Dkt-0404 (“PA”) 3-18, 3-26 to -29, 3-32, JA____, ____-__, ____; ISA 2-16 to -18, 2-22 to -24 tbl.2-1, JA____-__, ____-__. Ozone-induced health problems can force people to change their ordinary activities, requiring children to stay indoors and forcing people to take medication and miss work or school. *E.g.*, PA 4-12, JA____. Because their respiratory tracts are not fully developed, children are physiologically especially vulnerable to ozone pollution, particularly when they have elevated respiratory rates, as when playing outdoors. *E.g.*, *id.* 3-81 to -82, JA____-__. People with lung disease and the elderly also have heightened vulnerability, but ozone can affect healthy adults too. *See* 80 FR 65,310/3, JA____. Asthmatics suffer more severe impacts from ozone exposure than healthy individuals do and are more vulnerable at lower levels of exposure. *Id.* 65,311/1 n.37, 65,322/3, JA____, ____.

¹ All “Dkt” references are to document numbers in EPA docket EPA-HQ-OAR-2008-0699 (*e.g.*, “Dkt-0405” means EPA-HQ-OAR-2008-0699-0405).

At hearings, members of the public told EPA about how asthma attacks, which ozone pollution triggers, affect them. Laura Paul, of Clarendon, Texas, told about the experience she and her son Tyler have had with asthma, and how air pollution can make his condition “life threatening”:

Tyler’s lungs are already sensitive. When he breathes in a powerful irritant, his lung tissues swell further, making it hard for him to breathe. He coughs, he wheezes, and he struggles, and we know how quickly a severe asthma attack can become a life threatening event.

We live out about 60 miles from the city. The last time Tyler had an asthma attack, I decided to drive him myself to the hospital 60 miles away. That stretch was unbearable, looking behind, thinking that your child’s going to die. There’s no terms to put to that. Now, I don’t take the risk. Call the ambulance. The last time he went, the ambulance crew came, and they didn’t realize how severe he was. We made it 30 miles, and they did back-to-back treatments and had him on oxygen, and they said, we’re glad that you brought him in and we picked him up.

Dkt-4245 at 126, JA _____. Judith Ramirez, a student at Desert Mirage High School in Coachella Valley, CA, told about how her youngest brother has asthma, and as a result

it’s very hard for him to be outside, because sometimes the air triggers [breathing problems]....

I remember his first attack. I had to wake up at night, because I heard him coughing. And then I started yelling, because he couldn’t breathe. He was turning red and his coughs were just very strong and we had to take him to the ER multiple times. And it’s not something that—it’s not a good memory. I want to remember him as a happy kid who could run around playing tag with his friends, but instead he has to stay inside.

Dkt-4247 at 319, JA____; *see id.* 13, 350, JA____, _____. Cherelle Blazer's son and husband are both vulnerable to asthma attacks—one put her husband in a coma—and she described how high pollution episodes in Mansfield, TX, where they live, affect her entire family:

If [my son] goes out and plays on a day that is a bad ozone day, a bad air day, that night is horrible. We're up all night. He's having asthma attacks every two or three hours. He has to have a nebulizer. My husband can't sleep, I can't sleep. The next day, he's unable to focus at school, if he's able to go to school at all.

Dkt-4245 at 76-77, JA____ - ___. Ozone levels in the Ramirez's and Blazers' communities violate the standards at issue here, but the Pauls' community likely complies with them, for the closest ozone monitor to Clarendon, TX, currently meets the standards. *See* Dkt-1743 at 14 (then-preliminary assessment shows Amarillo area would meet new standard as of 2014), JA_____.

Ozone also damages vegetation and forested ecosystems, causing or contributing to widespread stunting of plant growth, tree deaths, visible leaf injury, reduced carbon storage, and reduced crop yields. PA 5-2 to -3, JA____ - __; ISA 9-1, JA____. The damage includes tree-growth losses reaching 30-50% in some areas, and widespread visible leaf injury, including 25-37% of sites studied in just one state. PA 5-13, JA____; ISA 9-40, JA____. By harming vegetation, ozone can also damage entire ecosystems. 80 FR 65,370/1-2, 65,377/3, JA____, _____.

The Clean Air Act requires EPA to set “primary” and “secondary” standards for pollutants like ozone to protect public health and welfare, respectively. 42 U.S.C. §§ 7408(a), 7409(a)-(b). EPA must review and, as appropriate, revise these standards at least every five years. *Id.* § 7409(d)(1). The Act creates “an independent scientific review committee,” now called the Clean Air Scientific Advisory Committee (“CASAC”), to recommend to EPA appropriate revisions to the standards. *Id.* § 7409(d)(2)(A)-(B). If EPA departs “in any important respect” from CASAC’s recommendations, EPA must explain why. *Id.* § 7607(d)(3), (d)(6)(A). Further, as part of the Act’s system for assuring that clean air is maintained, Congress established permitting requirements in communities that EPA has not designated as “nonattainment”—treated as violating—any standard for a pollutant. *See id.* §§ 7471, 7475. These requirements bar construction of proposed new or modified major factories and power plants (“sources”) unless they show they will not cause or contribute to violations of any standard, anywhere. *Id.* § 7475(a)(3).

I. EPA’S ESTABLISHMENT OF AN UNDERPROTECTIVE HEALTH STANDARD.

EPA must set primary (“health”) standards at a level “requisite to protect the public health,” “allowing an adequate margin of safety.” *Id.* § 7409(b)(1). To meet this health protection mandate, the standard must “be set at a level at which there is

‘an absence of adverse effect’ on...sensitive individuals” such as children, the elderly, and people with respiratory illnesses. *Lead Indus. Ass’n v. EPA*, 647 F.2d 1130, 1153 (D.C. Cir. 1980); accord, e.g., *Coal. of Battery Recyclers Ass’n v. EPA*, 604 F.3d 613, 618 (D.C. Cir. 2010). EPA must protect public health from “not just known adverse effects, but those of scientific uncertainty or that research has not yet uncovered.” *American Lung Ass’n v. EPA*, 134 F.3d 388, 389 (D.C. Cir. 1998) (citation and quotation marks omitted). Primary standards must be based exclusively on protection of health, without regard to implementation costs. *Whitman v. Am. Trucking Ass’ns*, 531 U.S. 457, 465-71 (2001).

The last three times EPA has reviewed the ozone health standard, it has found that the standard was insufficient to protect public health with an adequate margin of safety and thus has revised it. Before 1997, the standard required control of 1-hour average ozone levels; EPA then revised the standard to limit ozone over an 8-hour period, requiring that the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone level be below 0.08 parts per million (“ppm”). 62 FR 38,856, 38,856/1 (1997), JA____; 40 C.F.R. § 50.10(b). On the next review, in 2008, EPA again found the science required it to strengthen the standard, and tightened the level to 0.075 ppm. 73 FR 16,436, 16,436/1, JA____. That 0.075 ppm level was laxer than the 0.060-0.070 ppm range CASAC unanimously recommended, see *Mississippi v. EPA*, 744 F.3d 1334, 1355 (D.C.

Cir. 2013), and in 2009, EPA commenced reconsideration of the standard in light of CASAC's advice and objections raised by the medical and public health communities, among others. Notice, *Mississippi*, 744 F.3d 1334 (D.C. Cir. Sept. 16, 2009) (No. 08-1200), JA ____ - __; *see also* 75 FR 2938 (2010) (proposal on reconsideration). But abruptly, in 2011, EPA announced that it was deferring completion of the reconsideration, instead purportedly wrapping the reconsideration of the 2008 standard into the next regularly required revision. *Mississippi*, 744 F.3d at 1341; Dec. of Regina McCarthy ¶ 8, *American Lung Ass'n v. EPA*, No. 11-1396 (D.C. Cir. Dec. 8, 2011), JA ____ - __. That most recent revision—revising the standard's level to 0.070 ppm because science again showed ozone was more dangerous than EPA previously acknowledged, 80 FR 65,292, JA ____—is at issue in this case.²

The scientific record in 2008, including controlled human “chamber” studies, and thousands of epidemiological, animal, and toxicological studies, convinced CASAC that a standard of 0.060 to at most 0.070 ppm was requisite.

² Despite assuring this Court that “EPA’s deferral” decision didn’t “conclude[] its voluntary rulemaking reconsidering the 2008 Ozone NAAQS” and EPA “would...be completing the reconsideration in conjunction with the next periodic review,” EPA here gave scant attention to its reconsideration proposal, EPA Mot. to Dismiss 2, *American Lung*, No. 11-1396 (D.C. Cir. Dec. 8, 2011), JA ____; *Mississippi*, 744 F.3d at 1341. *See* Dkt-4309 (“RTC”) 351 (using new record to establish new standard), JA ____.

Today, there are even more scientific studies showing harm from ozone within and just above that range. In a chamber study, typically, healthy young adults exercise in an experimental chamber while being exposed to ozone-contaminated air. *See* Dkt-2720 (“Sierra Club Comments”) 62-63, JA____ - __; *see also* ISA at lx, JA____; PA 1-22 to -23, JA____ - __. In 2008, EPA had no such studies examining the impact on lung function of exposures from 0.061-0.079 ppm, and highly-limited studies at 0.060 ppm. *See Mississippi*, 744 F.3d at 1349. In the rulemaking at issue, EPA had two new chamber studies of healthy young adult participants, one examining results at both 0.063 ppm and at 0.072 ppm, and one examining results at 0.060 ppm. PA 3-27, 3-58 tbl.3-1 & nn.37-38, JA____, _____. Particularly notable, at 0.072 ppm, there was a group mean decrease in lung functioning and increase in self-reported respiratory symptoms, and both results were statistically significant; at lower levels, there was a group mean decrease in lung functioning (sometimes statistically significant), as well as statistically significant increased pulmonary inflammation, and a substantial percentage—16% in one study—of the healthy young adult participants experienced at least 10% lung function decrement. *Id.* 3-12, 3-14, 3-58 tbl.3-1 & nn.37-38, JA____, _____, _____. EPA also had more epidemiological studies linking ozone concentrations below 0.070 ppm to hospitalizations for breathing problems and early deaths. *See, e.g.*, Sierra Club Comments 78-86, JA____ - __.

Based on guidance from the American Thoracic Society and CASAC, as well as its own past practice, EPA agreed that the chamber study results at the 0.072 ppm level showed an “adverse effect” in healthy young adults. *E.g.*, 80 FR 65,363/1-2, JA _____. CASAC said adverse effects almost certainly would occur in sensitive populations at 0.070 ppm. Dkt-0190 (“CASAC Letter”) 6, 8, JA _____, _____. However, in conflict with CASAC, EPA did not find adverse effects in sensitive populations at 0.070 ppm, and, without rational explanation, EPA departed from its 2008 finding that a 10% lung function decrement was adverse for sensitive populations. *See* 80 FR 65,357/3-58/2, JA _____ - ____; *see also* 73 FR 16,454/3-55/1 (2008 final rule) (agreeing that 10% decrement “should be considered adverse for asthmatic individuals”), JA _____ - ____.

EPA also ran simulations of ozone exposures in up to 15 metropolitan areas if they improved their air quality to just meet the current standard or various proposed standard levels. Dkt-1190 (“Exposure Assessment”) 1-5 to -6, 5-10 tbl.5-1, JA _____ - ___, _____. In all 15 areas, based on predictions of potential emission reductions, possible weather conditions, and simulations of people’s activities, it modeled how many children and asthmatic children it thought would be exposed one or more times to various levels of ozone pollution under these scenarios. 80 FR 65,312/2, JA _____. EPA found that, if these areas just met a 0.070 ppm standard, thousands of children would likely be exposed at least twice annually to ozone

levels EPA itself acknowledged as dangerous, and hundreds of thousands faced exposure at least once annually to dangerous levels. *Id.* 65,313 tbl.1, JA____.³

Indeed, because compliance with the standard only depends on the fourth-highest annual ozone level averaged over three years, areas can comply with the standard despite having many days with high ozone levels in a year. *See, e.g., id.* 65,351/1, JA____.

Based on all the evidence, CASAC found that there was “substantial scientific certainty of a variety of adverse effects, including decrease in lung function, increase in respiratory symptoms, and increase in airway inflammation” at the 0.070 ppm level. CASAC Letter 8, JA____; *accord id.* at ii, 6, JA____, _____. It further found that exposure at even lower levels resulted in adverse effects. *Id.* 6-7, JA____ - _____. Though CASAC recommended a general range of 0.060 and 0.070 ppm for the standard’s level, it further advised EPA to set the standard below 0.070 ppm. *Id.* at ii, 8, JA____, _____.

³ EPA also predicted numbers of people who would experience various health effects—lung function decrement of varying degrees and outcomes like emergency room visits—or die in some or all of these 15 areas under various ozone standards. *Id.* 65,314/3, JA____; 79 FR 75,234, 75,276/1 (Dec. 17, 2014), JA____. EPA specifically predicted that hundreds of thousands of children and asthmatic children will have multiple incidences of dangerous lung function decrement, 80 FR 65,315 tbl.2, JA____, and that hundreds to thousands more deaths will occur with a 0.070 ppm standard than would with a stricter one, 79 FR 75,277 tbl.3, JA____.

EPA proposed to revise the standard by adjusting the level to between 0.065 and 0.070 ppm and solicited comment on establishing it at 0.060 ppm. 79 FR 75,234, 75,236/3 (Dec. 17, 2014), JA _____. It did not propose to alter the standard’s “form”—the way EPA calculates compliance with the standard (by dropping the three highest daily ozone levels every year, then averaging the fourth-highest value over three years).

Leading medical societies, including the American Medical Association, the American Thoracic Society, American Academy of Pediatrics, and American Heart Association, as well as the EPA-chartered Children’s Health Protection Advisory Committee, all urged EPA to set the standard at the health-protective 0.060 ppm level based on the science showing adverse effects from ozone above that level. *E.g.*, Dkt-3863 at 1, JA ____; Sierra Club Comments ex.4 at 2 (letter from Children’s Health Protection Advisory Committee to CASAC), JA _____. Ozone pollution disproportionately affects minority and lower-income communities, Sierra Club Comments 240-57, JA ____ - __, and civil rights groups and groups dedicated to the principles of environmental justice also asked EPA for a 0.060 ppm standard. *E.g.*, Dkt-2252 at 1 (WE ACT for Environmental Justice), JA ____; Dkt-2580 at 1 (numerous groups, including NAACP), JA ____; Dkt-3297 at 2 (GreenLatinos), JA _____. New York State and California agreed that 0.070 ppm was unjustifiable. Dkt-3438 at 2, JA ____; Dkt-2090 at 3, JA _____. Environmental

and public health groups warned that a 0.070 ppm standard would be arbitrary and unlawful, particularly because the standard's form allows areas to comply with the standard yet have multiple days per year that exceed the level of the standard by, on average, 0.004-0.008 ppm. Sierra Club Comments 11-12, 136, JA____ - __, ____; *see also* Dkt-1173 at 2 (Physicians for Social Responsibility), JA ____.

EPA ultimately selected the least protective standard it had proposed: 0.070 ppm, while retaining the standard's 3-year average, fourth-highest form. 80 FR 65,294/1, JA ____ . EPA agreed that many areas that comply with the new standard have multiple days each year with ozone levels at or above levels EPA itself agrees cause adverse health effects in healthy young adults. *See id.* 65,351/3, JA ____; RTC 194-95, JA ____ - __. EPA also did not refute or in the final rule address CASAC's finding that adverse effects would occur at a 0.070 ppm level. Nor did EPA explain how its test for the adversity of effects demonstrated in chamber studies protected sensitive populations.

II. EPA'S ESTABLISHMENT OF AN UNDERPROTECTIVE WELFARE STANDARD.

EPA must also establish secondary ("welfare") standards that "shall specify a level of air quality the attainment and maintenance of which...is requisite to protect the public welfare from any known or anticipated adverse effects" from ozone. 42 U.S.C. § 7409(b)(2); *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 530

(D.C. Cir. 2009). Effects on welfare include impacts on soils, water, crops, vegetation, wildlife, climate, and personal comfort and well-being. 42 U.S.C. § 7602(h).

In 2008, EPA set the ozone welfare standard identical to the health standard, despite advice from CASAC, EPA staff, and the National Park Service that EPA needed to set a separate “cumulative seasonal” welfare standard to protect against ozone-related harms to vegetation and ecosystems. 73 FR 16,497/3-99/1, 16,500/2, JA ____ - __, _____. In *Mississippi*, this Court held that EPA had done so unlawfully and arbitrarily, for EPA had failed to comply with the Act’s command to “specify a level” of air pollution requisite to protect public welfare against ozone-related harms to vegetation and ecosystems. 744 F.3d at 1358-62.

In the rulemaking at issue here, CASAC, EPA staff, and the Park Service again told EPA that the science called for a separate welfare protection standard. *E.g.*, CASAC Letter 11-12, JA ____ - __; PA 6-57 to -58, JA ____ - __; Dkt-3871, JA _____. EPA again refused, claiming that the primary standard was nearly as good as would be a separate welfare standard set at a level it called requisite to protect tree growth. *E.g.*, 80 FR 65,294/2, JA _____. Yet, the record showed numerous areas met the primary standard while simultaneously exceeding the level of air quality that EPA itself called requisite. Dkt-4249, JA _____. Further, the level EPA called requisite allowed significantly more vegetation harm than CASAC found to result

in adverse effects. CASAC Letter 13-15, JA____-__ ; 80 FR 65,406/1-07/1, JA____-__. Finally, EPA refused to identify a level of air quality requisite to protect against visible foliar (leaf) damage. 80 FR 75,407/2-08/1, JA____-__.

III. EPA’S DECISION TO ALLOW NEW MAJOR SOURCES TO VIOLATE THE STANDARDS.

EPA created a “grandfathering” exemption to allow construction of certain new or modified major sources without the Act-required demonstration that they will not cause or contribute to violations of the new standard. *Id.* 65,431/1-34/3, JA____-__ ; 42 U.S.C. § 7475(a)(3). So long as the proposed source’s permit application was found to be complete by October 1, 2015, or its draft permit was publicly noticed before December 28, 2015, it is exempt from satisfying that demonstration requirement with respect to the new ozone standards. 80 FR 65,433/2, JA____. As a result, such would-be emitters of major amounts of ozone-forming pollution can be constructed without regard to whether they will result in dangerous levels of ozone pollution, even in areas with air quality right at or even above the level of the new standards.

SUMMARY OF ARGUMENT

Because EPA set the health standard with a form and level that combine to allow ozone pollution levels that EPA acknowledges cause adverse effects in healthy young adults, the standard unlawfully and arbitrarily fails to protect the

health of both these and more sensitive populations, like asthmatic children, from acknowledged adverse effects. EPA identified 8-hour exposures to 0.072 ppm ozone as causing adverse effects, yet EPA does not dispute that the form (3-year average of annual fourth-highest daily maximum) means that areas meeting the standard can—and many will—have multiple days every year with ozone concentrations at or above that 0.072 ppm level.

Independently, the health standard is also arbitrary because EPA failed to rationally explain why it only acknowledged adverse effects occur with 8-hour exposures to 0.072 ppm ozone. EPA gave no scientific rebuttal to CASAC's plain findings that, for sensitive populations, such effects “almost certainly” and with “substantial scientific certainty” occur with 8-hour exposures to 0.070 ppm ozone. Nor did EPA provide a rational explanation of how its new, more demanding test for finding adverse health effects based on the results of chamber studies protects sensitive populations.

EPA illegally and arbitrarily rejected calls from CASAC and the National Park Service for a separate welfare standard to protect plants and forests against damaging cumulative ozone exposures over each growing season. EPA claimed that the 8-hour health standard would provide protection comparable to a weak cumulative standard, but that approach allows ozone levels that CASAC and EPA itself linked to “unacceptable” growth loss in trees. Moreover, the record shows the

health standard does not provide protection comparable to even EPA's weak cumulative benchmark at a number of national parks—places EPA itself found warrant special protection from ozone damage. EPA also violated the Act by failing to “specify a level” of air quality requisite to protect against widespread ozone damage to leaves, despite specific recommendations from CASAC and the Park Service for such a level.

EPA's grandfathering exemption flouts the plain text of the Act. Contrary to EPA's claim, there is no ambiguity to the Act's mandate that construction of any new or modified major source in certain areas can proceed only with a showing that the source will not cause or contribute to violations of ozone standards.

STANDING

Petitioners are national, regional, and local nonprofit organizations dedicated to protecting human health and/or the environment from air pollution. *See* Declarations. They have members who live, work, and recreate in areas with ozone pollution in excess of levels EPA itself identified as harmful, as well as levels recommended for protection of their health and welfare by CASAC, leading medical societies, and other authorities identified herein. *Id.* They also have members who live, work, and recreate in areas where source construction activities are subject to EPA's grandfathering exemption. The final action challenged herein prolongs exposure of Petitioners' members to ozone levels associated with a

variety of adverse health and welfare effects, including premature deaths, hospitalizations, emergency room visits, breathing impairment, damage to vegetation and forests, and other serious effects as further described herein, thereby threatening their health and welfare and depriving them of protections the Act guarantees. Moreover, EPA's grandfathering exemption deprives them of Act-mandated procedural protections, including informed decisionmaking, proper analysis of, notice, and opportunity to comment on whether pollution impacts from new or modified major sources will cause or contribute to violations of the ozone standard, in areas where Petitioners' members live, work, and recreate. Further support for Petitioners' standing appears in the materials cited in this brief and in the attached declarations. Accordingly, Petitioners have standing to pursue this case. *See, e.g., Friends of the Earth v. Laidlaw Env'tl. Servs.*, 528 U.S. 167, 183 (2000); *Sierra Club v. EPA*, 699 F.3d 530, 533 (D.C. Cir. 2012).

STANDARD OF REVIEW

At issue is whether EPA's action was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 42 U.S.C. § 7607(d)(9); *see also id.* § 7607(d)(1)(A). For matters of statutory interpretation, "[i]f the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." *Chevron U.S.A. Inc. v. NRDC*, 467 U.S. 837, 842-43 (1984). If the statute is ambiguous,

under *Chevron* step two, a reasonable agency interpretation of the statute receives deference. *Id.* 843. Unless otherwise expressly indicated, references herein to “unlawful” agency action address both violation of unambiguous congressional intent under *Chevron* step one and unreasonable agency interpretation under step two.

The agency’s action is arbitrary and capricious if, for example, the agency “entirely failed to consider an important aspect of the problem,” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983), or failed to “identif[y] and explain[] the reasoned basis for its decision,” *Transactive Corp. v. United States*, 91 F.3d 232, 236 (D.C. Cir. 1996). *See also, e.g., Catawba County v. EPA*, 571 F.3d 20, 41 (D.C. Cir. 2009) (arbitrary and capricious standard of review under Clean Air Act is same as under Administrative Procedure Act).

ARGUMENT

I. THE PRIMARY STANDARD IS UNLAWFUL AND ARBITRARY.

A. EPA’s Standard Unlawfully and Arbitrarily Allows Communities to Suffer Many Days of Ozone Levels That EPA Itself Agrees Cause Adverse Effects.

EPA itself found that a single-day exposure to 6.6-hour averages of 0.072 ppm of ozone causes adverse health effects in healthy young adults, based on a controlled human experiment that showed a statistically significant reduction in lung function and increase in respiratory symptoms at that exposure level. *E.g.*, 80

FR 65,330/2-31/2, 65,346/3, 65,363/2, 65,364/1, JA____-__, ____, ____, ____; RTC 11, JA____. EPA further found that vulnerable populations like asthmatics, children, and the elderly would “likely” experience adverse effects “following exposures somewhat below 72 ppb^[4].” 80 FR 65,357/2-3, 65,363/1, JA____, ____.

EPA also found that even a single exposure to ozone above the 0.070 ppm level “can cause adverse effects in some people.” *E.g., id.* 65,325/2, JA____. Indeed, when a single day has ozone levels above 0.070 ppm, EPA calls the air “unhealthy for sensitive groups,” and cities often warn residents that the air is unsafe, urging children, asthmatics, and the elderly to limit outdoor activity. *Id.* 65,366/1 & n.152, 65,368/3, JA____, ____.

By setting the standard’s level at 0.070 ppm and its form as the average, over three years, of the annual fourth-highest maximum daily 8-hour average ozone level, EPA allows ozone levels to exceed—multiple times in any year—levels that EPA itself agrees cause adverse health effects. Because the standard looks only at the fourth-highest ozone level in a given year, and then averages that reading with the fourth-highest ozone levels in each of the two preceding years, areas that comply with EPA’s standard can and do have ozone levels above the 0.070, 0.072, and higher ppm benchmarks even over a dozen times in a year. Such

⁴ To convert parts per billion (“ppb”) to ppm, divide by 1,000. Thus, 72 ppb is 0.072 ppm.

areas have no duty to clean up their air further. The standard is unlawful and arbitrary because it allows areas to continue to have air quality that EPA acknowledges is harmful to health.

Repeated exceedances of these thresholds is not just a theoretical possibility. EPA-published monitoring data submitted by public health petitioners shows that numerous cities have met EPA's standard while recording multiple days with ozone levels well above not only the 0.070 ppm benchmark but also the 0.072 ppm benchmark EPA itself found causes adverse effects even in healthy adults:

Areas meeting EPA's 0.070 ppm standard (3-year average of annual 4th-highest daily average over 2011-2013 in 0.066-0.070 ppm range)	Number of times in single year area(s) had ozone levels at or above 0.072 ppm
Columbia, SC	16
Cadillac, MI	15
Athens, GA; Fort Wayne, IN; Clarksville, TN-KY	12
Huntsville, AL; Pensacola-Ferry Pass-Brent, FL; Omaha-Council Bluffs, NE-IA; Columbia, MO	11
Clinton, IA	10
Huntington-Ashland, WV-KY-OH; Watertown-Fort Drum, NY; Madison, WI	9
Pascagoula, MS; Anderson, IN; Jefferson City, MO	8
Johnstown, PA; Augusta-Richmond, GA-SC; Greenville, NC; Corpus Christi, TX; Effingham, IL; Terre Haute, IN; Syracuse, NY; Greenville-Mauldin-Easley, SC; Brigham City, UT	7
Elkhart-Goshen, IN; Gulfport-Biloxi, MS; Manchester-Nashua, NH; Fayetteville, NC; Durham, NC; Anderson, SC; Price, UT; Dalton, GA; Muncie, IN; Lafayette, IN	6
Lafayette, LA; Poughkeepsie-Newburgh-Middletown, NY; Parkersburg-Marietta-Vienna, WV-OH; Prescott, AZ; Lake Charles, LA; Daphne-Fairhope-Foley, AL; Decatur, AL; Rockland, ME; Show Low, AZ; Rockford, IL; Elizabethtown, KY; Somerset, KY; Albany-Schenectady-Troy, NY; Sioux Falls, SD; Redding, CA; Quincy, IL-MO; Baraboo, WI; Reno-Sparks, NV	5
Fernley, NV; Rocky Mount, NC; Jackson, MS; Morgantown, WV; Logan, UT-ID; Fort Payne, AL; Hobbs, NM; Scranton-Wilkes Barre, PA; Victoria, TX	4
Worcester, MA; Lakeland, FL; Berlin, NH-VT; Florence, SC; Boise City-Nampa, ID	3
Harrison, AR; Chambersburg, PA; Kinston, NC; Grand Junction, CO; Deming, NM; Asheville, NC; Williamsport, PA	2
Mobile, AL; Riverton, WY; Panama City-Lynn Haven, FL	1

See Sierra Club Comments ex.10, JA ____ - __. Indeed, these cities recorded ozone levels in some cases as high as 0.111 ppm, and numerous cities recorded ozone levels at or above benchmarks at least as high as 0.080 ppm while still meeting the standard EPA set here. *See id.* 145-51 tbl.17, ex.10 (examples of metropolitan areas with at least one day at or above 0.080 ppm ozone that would have met standard at issue include Akron, OH (highest daily level 0.091 ppm); Albany, NY (0.083 ppm); Columbia, SC (0.085 ppm); Corpus Christi, TX (0.087 ppm); Huntsville, AL (0.082 ppm); Jackson, MS (0.085 ppm); Manchester, NH (0.090 ppm); and Reno, NV (0.081 ppm)), JA ____ - __, ____ - __.

EPA agrees that areas meeting its standard can, do, and will have ozone levels above 0.070 ppm multiple times in a given year. RTC 194-95 (“EPA does not dispute the results of air quality analyses submitted by [Sierra Club]....”), JA ____ - __; *accord* 80 FR 65,351/3, JA ____; *see also* Sierra Club Comments 136, 138-41 (describing data), JA ____, ____ - __. Indeed, based on actual air quality data, EPA found that in an area that just meets a 0.070 ppm standard with EPA’s fourth-highest form, the highest day in any year averages about 0.077-0.078 ppm—meaning that many areas actually have days with even worse ozone pollution. Dkt-4393 at 3 tbl.1 (median high is 77 ppb; mean high is 77.9 ppb), JA _____. The second-highest day averages about 0.074 ppm. *Id.* (median second-high is 74 ppb; mean second-high is 74.1 ppb), JA _____.

EPA thus agrees science shows adverse effects result for healthy people at ozone pollution levels that EPA agrees will occur repeatedly under the standard. Its decision to set the standard with a combination of form and level that EPA knows allows adverse effects is unlawful and irrational. *See Mississippi*, 744 F.3d at 1358 (indicating that “scientific evidence” can “direct [EPA] to a specific outcome” for a standard (emphasis in original)); *American Lung*, 134 F.3d at 393 (noting that “scientific certainty” can “prescribe[]” certain results). Indeed, national ambient air quality standards must “ensure that there is ‘an absence of adverse effects’” from the pollutant on sensitive populations. *Lead Indus.*, 647 F.2d at 1153 (quoting S. Rep. No. 91-1196, at 10 (1970)); *accord, e.g., American Lung*, 134 F.3d at 389. EPA here unlawfully and arbitrarily denies people the right to enjoy being outdoors without facing threats to their wellbeing from air pollution. *See* 116 Cong. Reg. 32,901/1 (Sept. 21, 1970) (remarks of Sen. Muskie) (“This bill states that all Americans in all parts of the Nation should have clean air to breathe, air that will have no adverse effects on their health.”).

Without disputing this binding case law, EPA claims that in the face of “scientific uncertainties,” it need not set “zero-risk” standards. *See* RTC 196-97, JA____-__. But here, there is no material uncertainty that the standard allows ozone levels that harm people. EPA agrees it does. EPA also agrees that major metropolitan areas will meet the standard while having repeated days with ozone

pollution at levels that EPA agrees can and will result in adverse effects. Thus, EPA's reliance on "the impossibility...for [sic] NAAQS removing all health risk" is specious, *id.* 197, JA____, because the issue is whether EPA can establish standards that permit known adverse health effects to remain.

EPA further seeks to rely on an "exposure assessment" to claim that, once the standard is implemented, even though it allows multiple occurrences of harmful ozone levels every year, EPA believes a limited number of people will be exposed to such levels. 80 FR 65,351/3-52/2, 65,363/2-64/2, 65,365/2-3, JA____ - ____, ____ - ____, ____; RTC 193-95, 198-99, JA____ - ____, ____ - ____. The exposure assessment is an EPA-created estimate for 15 metropolitan areas, under which EPA assumes certain reductions in emissions of ozone-forming compounds, models the resulting ozone levels under varying weather conditions, and simulates individuals' activity patterns and resulting ozone exposure levels. 80 FR 65,311/1-14/1, JA____ - __; Exposure Assessment 3-13 & fig.3-2, JA____.

EPA's reliance is misplaced because, as explained above, and as EPA has itself admitted, "[s]tandards must be based on a judgment of a safe air quality level and not on an estimate of how many persons will intersect given concentration levels." 44 FR 8202, 8210/1 (1979), JA____; *see also Nat'l Ass'n of Mfrs. v. EPA*, 750 F.3d 921, 926 (D.C. Cir. 2014) ("The point of the NAAQS program is to safeguard the quality of the 'ambient air,' which is defined as the 'portion of the

atmosphere, external to buildings, to which the general public has access.”); *cf.* 73 FR 16,482/2 (2008 ozone standard) (“the exposure assessment does not provide a basis for choosing a level within the proposed range.”), JA _____. Moreover, compliance with the standard is not measured in terms of how many people are exposed to air pollution, but in terms of air quality conditions. *See* 80 FR 65,452/3, 65,458/1-60/1 (codified at 40 C.F.R. § 50.19(b), 40 C.F.R. pt.50 app.U), JA _____.

Even if the exposure assessment were relevant and reasonable for EPA to rely on, it predicts that in just the 15 areas it covers, compliance with EPA’s standard would still result in exposure of significant numbers of school-aged children to conditions that EPA agrees cause adverse effects. EPA claims multiple-exposures at and above 0.070 ppm are a primary concern, *id.* 65,363/3, JA _____, yet the exposure assessment estimates that in just the 15 areas evaluated, 18,000 children will experience these multiple exposures at and above 0.070 ppm in a high-pollution year. Exposure Assessment app.5F at 5F-55 tbl.5F-5, JA _____. It predicts up to 12,000 children in these areas will experience at least one day of ozone levels around 0.080 ppm, well above any exposure level considered safe, and 236,000 will experience ozone levels at or above 0.070 ppm. *Id.*, JA _____; 80 FR 65,345/3 (even single exposure to 0.070 or 0.080 ppm ozone can cause adverse effects), JA _____. Finally, for asthmatic children, who most need protection from

ozone pollution, *see* 80 FR 65,311/1 n.37, JA____, the exposure assessment predicts that in these 15 areas alone, up to 2,300 such children will experience multiple exposures to levels of at least 0.070 ppm in a year and 27,000 will experience such exposures at least once per year. Exposure Assessment app.5F at 5F-55 tbl.5F-5, JA_____.

These figures cover only 15 areas, representing about 19 million—roughly 24%—of the approximately 74 million children in the United States. *Compare id.* 5-10 tbl.5-1 (study areas contain about 19 million school-aged children), JA_____, *with* 80 FR 65,311/1 (“about 74 million people...are under 18 years of age”), JA_____. Thus, the nation-wide numbers would be substantially higher.

EPA “notes that not every occurrence of an exposure of concern will result in an adverse effect” and that the standard will significantly reduce exposures. 80 FR 65,363/3-64/1, JA_____ - ___. But as explained above, the Act requires EPA to protect public health, not just reduce exposures, and EPA fails to explain why the remaining exposures of concern for tens to hundreds of thousands of children are not a public health concern. *See American Lung*, 134 F.3d at 389, 392 (“The link between this conclusion [that certain pollution was not a public health problem] and the factual record as interpreted by EPA—that ‘repeated’ exposure is ‘significant’ and that thousands of asthmatics are exposed more than once a year—is missing.”). Indeed, EPA fails to address its own finding that 66% of healthy

young adults manifested adverse effects at the 0.072 ppm level that the standard allows multiple days each year (as EPA agrees real-world monitoring data shows), and its agreement that asthmatics are likely more sensitive to ozone pollution. *See* 80 FR 65,311/1 n.37, 65,330/3-31/2, JA____, ____ - __.

EPA's reliance on the exposure assessment is further irrational given the assessment's gaps acknowledged by EPA. For example, EPA agrees that school-aged children who engage in extensive outdoor activities on a daily basis over summer, often in summer camps, are a population the Act protects. RTC 121, JA____. Over 12.5 million people attend or work at camps, with the majority being under age 12, and, per a survey, over 75% of camps report campers spend at least seven hours a day outdoors. Sierra Club Comments 121, JA____. To examine potential exposures for these children, EPA performed a "sensitivity analysis" that found predicted exposures increased by 33% over the numbers EPA relied on for all children, illustrating that children, like campers, who are outside for long periods daily face greater exposure. *See* Exposure Assessment app.5G at 5G-29, JA____. Rather than explain how the standard provides requisite protection for this sensitive population, EPA dismissed its sensitivity analysis's results and claimed that the analysis "is likely only applicable to a small fraction of children." RTC 111-13, JA____ - __. EPA thus failed to explain how the exposure assessment supports EPA's conclusion that the standard protects the EPA-acknowledged

sensitive population of school-aged campers, for which it “must afford requisite protection, with an adequate margin of safety,” *id.* 118, 121 (“The Clean Air Act does not deny requisite protection to children attending summer camps, to those children playing outdoors for multiple hours, or to those who go camping.”), JA____, _____. *See State Farm*, 463 U.S. at 43 (failure to consider important issue is arbitrary); *Farm Bureau*, 559 F.3d at 524 (where EPA explanation contradicts agency’s own finding in same rulemaking, explanation is arbitrary).

EPA also claims as a “secondary” consideration that its chosen form “can provide stability for ongoing implementation programs.” 80 FR 65,352/1, JA____. EPA concedes that this alleged benefit does not provide a clear basis for its fourth-high average approach. *Id.*, JA____. Moreover, EPA fails to offer any rational explanation for why or how a “stable” standard that averages out or ignores dangerous ozone levels complies with the statutory mandate to provide requisite health protection.

EPA cites (*id.* 65,350/3 n.120, JA____) *ATA* as allowing consideration of program stability in picking the standard’s form, but that case does not allow EPA to simply cite “stability” without any explanation of how such stability serves the statutory goal of health protection. In *ATA*, there was a discernable explanation for why EPA permitted certain days to escape regulation: to ensure areas focused on controlling what EPA considered the more worrisome problem of annual pollution

levels. *See* 283 F.3d at 373-75. No such explanation exists here, for the form merely serves to allow areas to write off the precise ozone conditions EPA concedes are dangerous.

Though EPA claims that a fourth-highest averaging approach here could benefit public health by reducing situations in which areas “shift from meeting the standard to violating the standard” due to, for example, erratic weather conditions, it fails to explain how “it is possible” that this shifting could affect pollution control programs in a way that could harm public health, 80 FR 65,351/1-2, JA _____. To the contrary, EPA’s approach allows such areas to routinely experience highly dangerous pollution levels without receiving any protection. *See supra* pp.19-24. EPA cannot and does not give any explanation how the denial of protection from unhealthy ozone levels is consistent with the Act’s health-protective mandate. *See American Lung*, 134 F.3d at 392 (EPA must explain how standard will protect public health).

B. EPA Arbitrarily Dismissed CASAC Findings and Evidence That Adverse Effects Occur in Sensitive Populations at and Below 0.070 ppm.

Independent of EPA’s above-described unlawful and arbitrary failure to protect against exposures to 8-hour ozone levels EPA acknowledged cause adverse effects in healthy young adults, EPA also unlawfully and arbitrarily failed to explain its departure from CASAC’s advice that specific lower 8-hour ozone levels

cause adverse effects and EPA's departure from its own previous finding that certain effects were adverse for sensitive populations.

1. EPA Failed to Rationally Explain Its Departure from CASAC's Scientific Finding That Adverse Effects Occur at 0.070 ppm.

CASAC told EPA that the science shows that people suffer adverse effects from ozone at and below the 0.070 ppm level:

The 70 ppb-8hr benchmark level reflects the fact that in healthy subjects, decreases in lung function and respiratory symptoms occur at concentrations as low as 72 ppb and...these effects almost certainly occur in some people, including asthmatics and others with low lung function who are less tolerant of such effects, at levels of 70 ppb and below.

....

At 70 ppb, there is substantial scientific certainty of a variety of adverse effects, including decrease in lung function, increase in respiratory symptoms, and increase in airway inflammation.

CASAC Letter 6, 8 (emphasis added), JA____, ____; *accord id.* at ii (similar to second quotation), JA____. As CASAC's reference to "fact" and "substantial scientific certainty" makes clear, CASAC's findings of adverse effects at 0.070 ppm are scientific findings of what likely occurs following exposure to ozone at that level. *Id.* 6, 8 (emphasis added), JA____, ____; *see also* 80 FR 65,363/2 (EPA agrees combination of lung decrement and respiratory symptoms is adverse), JA____.

EPA must “fully explain its reasons for any departure from” “CASAC’s expert scientific recommendations.” *Mississippi*, 744 F.3d at 1354-55 (explaining why Congress created CASAC); *see also* 42 U.S.C. § 7607(d)(3), (d)(6) (EPA must explain reasons for departure in “any important respect” from CASAC’s recommendations). *Mississippi* made clear that if CASAC “explained that, based on its expert scientific judgment, it...believed adverse health effects were likely to occur at the 0.070 ppm level, then [§ 7607](d)(6) would have required EPA to explain why it disagreed with this scientific conclusion,” giving “a sound scientific reason for its disagreement.” 744 F.3d at 1355, 1357-58. Yet, here EPA failed to rationally address precisely that scientific conclusion from CASAC.

Rather than specifically address CASAC’s scientific finding that adverse health effects are substantially certain to occur at 0.070 ppm of ozone, EPA incorrectly asserted that its decision was “consistent with CASAC’s advice, based on the scientific evidence.” 80 FR 65,362/1, JA____; *accord* RTC 210, 223, JA____, _____. This assertion is irreconcilable with the plain text of CASAC’s letter. EPA acknowledged that CASAC found that adverse effects would occur with exposures below 0.072 ppm over eight hours, but it claimed that “CASAC did not provide advice as to how far below 72 ppb adverse effects would likely occur,” *E.g.*, 80 FR 65,357/3, JA____; RTC 202, JA____; *accord, e.g.*, 80 FR 65,353/2 (“CASAC did not specify or otherwise indicate how far below” 0.072 ppm adverse

effects “almost certainly occur”), JA____; *see also* 80 FR 65,362/1 (citing prior discussion), JA____. That claim is false. CASAC plainly identified “70 ppb” as a level where “there is substantial scientific certainty of a variety of adverse effects” and identified “70 ppb” as a level at and below which the adverse combination of lung function decrements and respiratory symptoms “almost certainly occur in some people, including asthmatics and others with low lung function who are less tolerant of such effects.” CASAC Letter 6, 8, JA____, _____. Because it conflicts with the record, EPA’s claim is arbitrary. *Nat’l Lime Ass’n v. EPA*, 233 F.3d 625, 634-35 (D.C. Cir. 2000) (EPA action is arbitrary where “it relied on a factually incorrect assertion,” as demonstrated by record); *see also Farm Bureau*, 559 F.3d at 521 (rejecting EPA claim that its decision was consistent with CASAC recommendation).

Such explanation as EPA did provide neither confronted CASAC’s specific finding of harmful effects at 0.070 ppm, nor justified rejecting that finding. EPA apparently relied on an inference that because CASAC recommended an overall range of 0.060-0.070 ppm for the standard’s level, CASAC must have believed that 0.070 ppm was an acceptable level. *See* 79 FR 75,300/2 (proposal) (quoting CASAC’s finding of “substantial scientific certainty,” but noting that CASAC recommended EPA set the standard within the 0.060-0.070 ppm range and called decision about final level “a policy judgment”), JA____. But the decision about the

final level of the standard requires the application of law—the Clean Air Act—to facts—the science about the effects of ozone on human health. *See Mississippi*, 744 F.3d at 1358 (“The task of determining what standard is ‘requisite’ to protect the qualitative value of public health...necessarily requires the exercise of policy judgment.”). CASAC’s expertise is scientific, not legal. *See id.* 1354; *see also* 42 U.S.C. § 7409(d)(2) (CASAC is “independent scientific review committee”).⁵ CASAC here made the “scientific judgment that adverse effects would occur” at the 0.070 ppm level; EPA thus had to “explain why it disagreed with this scientific conclusion,” based on “sound scientific” reasons. *Mississippi*, 744 F.3d at 1357-58. EPA didn’t do so, at most relying on CASAC’s assertions about the legal implication of CASAC’s scientific finding. Thus, EPA cannot dismiss CASAC’s explicit scientific findings of adverse health effects at 0.070 ppm merely because CASAC also included 0.070 ppm in its general range. EPA’s failure to rationally dispute—much less refute—CASAC’s finding of substantial scientific certainty that adverse effects would occur at 0.070 ppm—below the 0.072 ppm level EPA identified—renders EPA’s standard unlawful and arbitrary.

⁵ None of the members of CASAC’s Ozone Review Panel appears to have been a lawyer: all but two had doctoral and/or medical degrees, and the two exceptions worked as a professor of preventative medicine and as a scientist on air pollution issues. *See* CASAC Letter at ix-x, JA ____ - ____.

2. EPA Arbitrarily Redefined “Adverse” Health Effects to Exclude Harms That EPA Previously Deemed “Adverse” for Asthmatics.

EPA also had before it evidence from new controlled human exposure studies demonstrating health effects at levels below 0.070 ppm that EPA previously called “adverse.” Yet EPA concluded that these effects were no longer adverse without rationally explaining how it reached that conclusion.

Studies where human volunteers are exposed to known concentrations of ozone, often in an experimental chamber (“chamber studies”), are generally considered the gold standard in ozone research. *See* PA 1-22, JA____; Sierra Club Comments 62, JA____. Researchers typically measure volunteers’ lung function (measured as “forced expiratory volume in one second” or “FEV₁”) before and after the test. Volunteers enter a large chamber where ozone concentrations are precisely controlled, and then alternate periods of exercise and rest over 6.6 hours.

These studies’ “closely monitored conditions” and controlled setting make them highly probative, but they generally test only young, healthy, nonsmokers—*i.e.*, not children, severely ill people, or other sensitive subpopulations. *See* PA 1-22, JA____; Sierra Club Comments 62-63, JA____ - __. EPA has acknowledged that when chamber studies use only healthy subjects, individuals with lung disease or other risk factors will experience responses at even lower levels and suffer more severe responses at higher levels. *See, e.g.*, 73 FR 16,463/1 (“controlled human exposure studies that employ subjects who do not have lung disease will likely

underestimate the effects in those people that do have asthma or other lung diseases.”), JA____.

In the 2008 ozone rulemaking, EPA found that lung function decrement of 10% or greater was “harmful (or ‘adverse’) to asthmatics.” *Mississippi*, 744 F.3d at 1349 (citing 73 FR 16,454-55). Indeed, EPA in the 2008 final rule “strongly” rejected comments suggesting that “transient decreases in FEV₁ of 10-20% are not by themselves significant or meaningful to asthmatics,” explaining that for such people, this level of lung function decrease “would likely interfere with the normal activities for many individuals, and would likely result in more frequent medication use.” 73 FR 16,463/2-3, JA____. Though key chamber studies found that some of their healthy young adult subjects “experienced lung function decrements of at least ten percent—a level EPA considers to be harmful (or ‘adverse’) to asthmatics”—at 0.06 ppm ozone, the Court upheld EPA’s decision not to set the standard at that level. *Mississippi*, 744 F.3d at 1349-50. The Court so held based solely on EPA’s conclusion that those studies’ sample size was too small to provide certainty as to the results, noting that further similar studies could “yet reveal that the 0.060 ppm level produces significant adverse decrements that simply cannot be attributed to normal variation in lung function.” *Id.*

By the time of the 2015 ozone review, there were twice as many controlled human exposure studies available, including two new studies evaluating exposures

to 0.060-0.063 ppm ozone. Sierra Club Comments 62, 64, JA____, _____. EPA did not (and could not) question whether exposures at 0.060 ppm caused decrements of 10% or more and conceded that the effects were “not isolated effects on idiosyncratically responding individuals.” RTC 23, JA____. Instead, without even acknowledging its departure, EPA changed its test for finding effects “adverse.” See 80 FR 65,357/1-58/2, JA____ - ___. Whereas before, a chamber study finding a 10% or greater lung function decrement in healthy adults was considered proof that such concentrations would result in adverse effects in asthmatics, EPA now claimed that in order to prove an “adverse effect,” chamber studies must show both a decrement in lung function and evidence of respiratory symptoms (*e.g.*, coughing or wheezing) in the healthy adult test subjects, and the new studies had not shown respiratory symptoms at statistically significant levels. See *id.* 65,330/2-31/1, JA____ - __; RTC 16, JA____. EPA’s abandonment of its prior test was arbitrary.

EPA suggests its new test merely followed the American Thoracic Society’s guidance, which identifies the “reversible loss of lung function in combination with the presence of symptoms” as one of several grounds for finding an effect adverse. See 80 FR 65,330/2 (quoting American Thoracic Society (“ATS”), *What Constitutes an Adverse Health Effect of Air Pollution?*, 161 Am. J. Respir. Crit. Care Med. 665 (2000) (“Thoracic Society Guidance”), JA____), JA____. But that guidance also explains that “air pollution-related symptoms associated with

diminished quality of life or with a change in clinical status should be considered adverse at the individual level.” Thoracic Society Guidance 671, JA____. A change in clinical status is “one requiring medical care or a change in medication.” *Id.*, JA_____.

In past rulemakings establishing ambient air quality standards, EPA has found that chamber studies demonstrating a significant lung function decrement in healthy adults satisfy the Thoracic Society criteria because “for people with lung disease, even moderate functional responses (e.g., FEV₁ decrements of $\geq 10\%$ but $< 20\%$) would likely interfere with normal activities for many individuals, and would likely result in more frequent medication use.” 73 FR 16,463/2-3 (2008 Ozone Final Rule), JA____; *see Mississippi*, 744 F.3d at 1349 (noting that “EPA considers [10% decrement] to be harmful (or ‘adverse’) to asthmatics”) (citing 73 FR at 16,454-55) (emphasis added). In the 2010 sulfur dioxide (“SO₂”) ambient air quality standard rulemaking, EPA explained this same analysis:

Even without...the 2000 ATS guidelines..., EPA would consider the asymptomatic decrements in lung function associated with 5-10 minute SO₂ exposures as low as 200 ppb to be adverse.... EPA has stated that similar moderate or greater decrements in lung function (e.g., a $\geq 15\%$ decline in FEV₁...) in people with pre-existing respiratory disease could result in clinical outcomes such as increased medication usage and/or disruption of normal activities...which would also be considered adverse effects of air pollution under ATS guidelines.

EPA-HQ-OAR-2007-0352-1450 at 16, JA____; *see also, e.g., id.* 17 (similar), JA____; 74 FR 64,810, 64,816/3, 64,817/2-3 (2009) (similar), JA____, ____.

Thus, the scientific argument was: (1) chamber studies demonstrate that measured ozone concentrations lead to lung function effects over a specific threshold in healthy adults; (2) sensitive individuals, like asthmatics, are at least as sensitive to these same ozone concentrations, so these same concentrations cause at least those same lung function decrements in these sensitive individuals; (3) asthmatics or people with lung disease suffering lung function decrements over these thresholds will have to change their normal activities and will likely increase their use of medication; and (4) these ozone-triggered effects fit the Thoracic Society definition of “adverse effects.” EPA now abandons this logic, and asserts that proof of significant lung function decrements in healthy adults is not enough.

EPA’s new test irrationally requires a demonstration of lung function decrement plus evidence of respiratory symptoms in healthy human test subjects, but this population is not the sole target for the Act’s protections. The standard must be not only adequate to protect the average member of the population, but also to guard against adverse effects in vulnerable subpopulations, such as children, the elderly, and people with lung disease. *See American Lung*, 134 F.3d at 389; *see also Coal. of Battery Recyclers*, 604 F.3d at 618; *Farm Bureau*, 559 F.3d at 524; *Lead Indus.*, 647 F.2d at 1153. For ethical reasons, however,

researchers do not use especially-vulnerable individuals as test subjects in chamber studies. But under EPA's new criteria for demonstrating adverse effects, the only way that chamber studies—the gold standard of human health effects studies—can now demonstrate an adverse effect in sensitive individuals is to demonstrate respiratory symptoms in the people least likely to experience them—healthy adults. There is no rational basis under the Act for adopting this new test for demonstrating adverse effects and claiming that it will ensure the standard protects sensitive subpopulations. *See Lead Indus.*, 647 F.2d at 1155.

EPA wrongly asserts that its judgment here about the adversity of 10% decrements is not “inconsistent” with its judgment in the 2008 rule, RTC 21, JA _____. Not so. Here, it says such decrements are not adverse; in 2008, it said such decrements were adverse for asthmatics. 73 FR 16,454/3-55/1, JA _____; *Mississippi*, 744 F.3d at 1349 (citing same).

EPA's decision to change the criteria for demonstrating “adverse effects” was not driven by sound scientific judgment. It served only to dismiss the strong evidence showing that the standard EPA adopted will not protect asthmatics and other sensitive individuals. EPA's action was therefore arbitrary and capricious.

II. THE SECONDARY STANDARD FAILS TO PROVIDE REQUISITE PROTECTION FOR PUBLIC WELFARE.

Ozone pollution damages trees and plants, stunting their growth, blackening their leaves, curtailing their carbon storage, and harming forest ecosystems. ISA 1-8, 1-15, JA____, ____; Dkt-1191 at 7-6, JA____. Because these harms are tied to cumulative ozone exposure over an entire growing season rather than over an 8-hour period, EPA's science advisors unanimously called for a separate secondary (welfare) standard limiting such cumulative exposures to specified levels. CASAC Letter at iii-iv, JA____-____. So too did the National Park Service. Dkt-3871, JA____. EPA's rejection of that advice was unlawful and arbitrary.

A. EPA's Decision on the Level of Air Quality Requisite to Protect Against Ozone Harms to Plant Growth Was Illegal and Arbitrary.

CASAC found ozone caused adverse welfare effects, including growth loss to trees and plants, visible damage to leaves ("foliar injury"), harms to ecosystems, and losses in crop yields. CASAC Letter at iii, JA____. To provide requisite protection against these harms, it recommended adoption of a cumulative "W126" ozone standard in the range of 7 to 15 ppm-hours (a measure of cumulative ozone exposure) to be met during the growing season every year. *Id.*, JA____. More specifically, CASAC found that a cumulative seasonal standard of 7 ppm-hours would protect against ozone-induced growth loss in trees, a standard below 10 ppm-hours was required to reduce visible ozone damage to leaves, and a standard

below 15 ppm-hours was requisite to protect against crop-yield loss. *Id.*, JA _____. CASAC also found a single-season period for the cumulative standard (rather than averaging over multiple years) was warranted to protect against “the anticipated cumulative effects on perennial species,” and because “[t]he scientific analyses considered in this review, and the evidence upon which they are based, are from single-year results.” *Id.* 13, JA _____.

EPA rejected CASAC’s scientific advice, and instead adopted a welfare standard identical to the health standard. 80 FR 65,409/3, JA _____. EPA asserted that a cumulative level of 17 ppm-hours, averaged over three years, should be the target for protecting trees against ozone-induced growth loss. *Id.* 65,406/1-07/1, JA _____ - _____. EPA then claimed that the health standard of 0.070 ppm (measured as the 3-year average of the annual fourth-highest maximum daily 8-hour average) would suffice as a welfare standard because it would allegedly provide similar protection against tree growth loss as would a 3-year average cumulative standard of 17 ppm-hours. *Id.* 65,408/1-09/2, JA _____ - _____. EPA did not attempt to determine air quality levels requisite to protect against ozone damage to leaves or crops. *Id.* 65,407/1-08/1, JA _____ - _____.

EPA failed to provide the sound scientific reasons required by this Court for rejecting CASAC’s advice. *Mississippi*, 744 F.3d at 1355. As noted above, CASAC recommended an annual seasonal cumulative ozone limit of 7 ppm-hours

(not a 3-year average of 17 ppm-hours) to protect against growth loss in trees.

CASAC based that advice on data showing that at 7 ppm-hours ozone in a single year, there was less than 2% growth loss (“relative biomass loss” or “RBL”) in the median species of 12 tree species studied. 79 FR 75,340/1-2, JA _____. CASAC found 2% growth loss was “an appropriate scientifically based value to consider as a benchmark of adverse impact” for trees. CASAC Letter 14, JA ____; *see also* Dkt-0189 at 6 (CASAC statement that “2% relative biomass loss per year is an appropriate criterion for adverse effect”), JA _____.

Rather than rationally refuting CASAC’s advice, EPA misrepresented it. The agency claimed that CASAC identified 6% as its benchmark for an adverse level of growth loss, instead of the 2% level CASAC plainly specified. *See* 80 FR 65,406/2-3, JA _____. EPA did so by distorting a CASAC statement referring to a 6% growth loss as “unacceptably high.” In reality, CASAC merely cited the “unacceptably high” growth loss of 6% at 17 ppm-hours as an “example” of why a standard higher than 15 ppm-hours was not scientifically defensible. CASAC Letter at iii (emphasis added), JA _____. EPA further speculated that CASAC favored excluding one of the 12 tree species (cottonwood) from the growth loss analysis, a step that shifted to 19 ppm-hours the level at which the median species would show a 6% growth loss. *See, e.g.*, 79 FR 75,340 tbl.8, 75,343/2 & n.221, JA _____, _____. But CASAC said no such thing, and actually expressly relied on the

12-tree growth loss table that on its face included cottonwood.⁶ *See, e.g.*, CASAC Letter 14 (citing Dkt-0236 6-19 tbl.6-1, JA____), JA____. Moreover, CASAC rejected levels higher than 15 ppm-hours because “[m]ost of the analyses found effects below 15 ppm-hrs (many at 10 or even 7 ppm-hrs).” *Id.* 12, JA____.

Contrary to EPA’s assertions, 80 FR 65,394/3-95/1, JA____ - __, CASAC provided specific justifications for its choice of 2% growth loss as an adverse effects benchmark. It explained that a 2% level was “an appropriate scientifically based value” because of the cumulative effect of such growth losses over multiple years, and was consistent with a 1-2% threshold for growth loss developed by a separate consensus workshop of leading experts on ecological effects of ozone. CASAC Letter 14, JA____; *see also* PA 6-16 (describing the expert workshop), JA____.

Nor did CASAC’s recommendation of a 7-15 ppm-hours range justify EPA’s rejection of CASAC’s more specific 7 ppm-hours benchmark to protect against tree growth loss. As noted above, CASAC found that different levels within the range were needed to protect against different welfare impacts. EPA

⁶ EPA cited a CASAC statement that the cottonwood data received “too much emphasis,” but that statement referred to portions of the draft Policy Assessment highlighting the ozone-sensitivity of cottonwood, including a separate figure addressing cottonwood data—a degree of attention not given other tree species. CASAC Letter 10 (citing Dkt-0236 at 5-14 fig.5-1, 5-17 fig.5-3, JA____, ____), JA____.

failed to provide a sound, science-based reason for rejecting CASAC's more specific advice on the level of protection requisite for tree growth.

EPA also arbitrarily rejected CASAC's unequivocal call for a single-season, rather than 3-year average, cumulative benchmark. The agency asserted that effects were greater with multi-year exposures, but did not (and could not) explain how an approach that averages out high-pollution years limits such exposures more effectively than a standard that must be met each and every year. *See* 80 FR 65,404/2-3, JA _____. The agency further claimed a 3-year average would promote greater "stability" in implementing the standard by giving less weight to extreme pollution events, but failed to scientifically refute CASAC's findings that: 1) the cumulative standard already provided stability from the influence of such events because it measures total exposure over a 3-month period; and 2) "[t]he case has not been made that welfare benefits from the stability of a 3-year average are greater than those from using the biologically relevant 1-year value," CASAC Letter 13, JA _____. *See Mississippi*, 744 F.3d at 1355 (requiring "sound scientific reason" for EPA disagreement with CASAC's scientific advice). Indeed, EPA provided no showing that the alleged additional stability from a 3-year average would provide any tangible welfare benefits at all, much less benefits of such magnitude as to allow single-season cumulative ozone levels associated with "unacceptably high" growth loss.

Further, EPA's choice of a 3-year average 17 ppm-hours benchmark was simply not supported by the record. EPA said 17 ppm-hours was justified because: 1) CASAC had identified a 6% growth loss as "unacceptably high"; 2) growth loss for the median species (out of 11)⁷ was 6% at 19 ppm-hours; and 3) to avoid unacceptable growth loss, the benchmark should therefore be set "somewhat below" 19 ppm-hours. 80 FR 65,406/2-07/1, JA ____ - __. Even if 6% growth loss were a defensible benchmark for protecting public welfare, EPA's rationale fails because the growth-loss data on which both CASAC and EPA relied was for single-year exposures, not three-year averages: thus, when CASAC was referring to a 6% growth loss as "unacceptably high," it was referring to such loss occurring in a single year. CASAC Letter at iii ("The scientific analyses considered in this review, and the evidence upon which they are based, are from single-year results."), JA _____. Likewise, the data EPA relied on as showing a 6% growth loss at 19 ppm-hours was for a single year's exposure—not a three-year average. 80 FR 65,391 tbl.4 ("Tree Seedling Biomass Loss...Estimated for [Ozone] Exposure Over a Season" (emphasis added)), JA _____.

A 3-year average benchmark of 17 ppm-hours allows single-year levels well in excess of 19 ppm-hours. Indeed, parks and wilderness areas—places that EPA

⁷ As noted above, EPA wrongly reduced the number of species considered from 12 to 11 based on a misrepresentation of CASAC's views.

itself stressed should be the particular focus of vegetation protection, *id.* 65,405/2-3, JA____—have repeatedly recorded single-year levels substantially higher than 19 ppm-hours while meeting a 3-year average of 17 ppm-hours. Dkt-4249 (showing single-year levels of 24.0 ppm-hours (Superstition), 22.9 (Saguaro), 22.0 (Mesa Verde), 20.5 (Wind Cave), 19.8 (Zion), 19.1 (Lassen Volcanic), 21.0 (Weminuche), and 26.2 (Rocky Mountain) during periods meeting 3-year average 17 ppm-hours level), JA____. Thus EPA’s chosen benchmark arbitrarily allows annual levels associated with “unacceptably high” growth loss in the very kinds of places EPA says protection against ozone-induced growth loss is most critical.

EPA wrongly implied that CASAC endorsed a 3-year average as long as the average was lower than the relevant single-year benchmark. *See* 80 FR 65,406/3-07/1, JA____ - __. Rather, CASAC said that if a 3-year average is used, “then the level of the standard should be revised downward such that the annual level in any given year of the three year period would not exceed the scientifically recommended range of annual levels of 7 ppm-hrs to 15 ppm-hrs.” CASAC Letter 15 (emphasis added), JA____. EPA’s approach arbitrarily flouts that advice and allows annual ozone damage to tree growth that both EPA and CASAC found unacceptable.

B. EPA Illegally and Arbitrarily Refused to Adopt a Separate Standard to Protect Against Ozone Harms to Plants and Ecosystems.

Five times over the past decade CASAC has recommended adoption of a separate “W126” welfare standard to limit cumulative ozone harm to plants over each growing season. *Id.* at iii, 12, JA____, ____; Dkt-0240 at 1-2, JA____-____; Dkt-0410 at 5-7, JA____-____; Dkt-0411 at 3, JA____; Dkt-0412 at 2-3, JA____-____. The National Park Service has concurred. Dkt-0104, JA____; Dkt-0123, JA____; Dkt-3871, JA____. EPA itself “agree[d] that...the W126 Index—and not an 8-hour daily maximum concentration...—is the appropriate metric for assessing exposures of concern for vegetation, characterizing risk to public welfare, and evaluating what air quality conditions might provide the desired degree of public welfare protection.” 80 FR 65,399/3, JA____.

Yet EPA here refused to adopt a cumulative seasonal welfare standard. EPA justified its refusal by citing data showing that, for certain recent years, almost all counties that met a 0.070 ppm 8-hour standard also met a target cumulative level of 17 ppm-hours, averaged over three years (far weaker than the 7-15 ppm-hours single-year range CASAC called for). *Id.* 65,408/3-09/2, JA____-____.

EPA’s action was unlawful and arbitrary. First, CASAC expressly rejected the sort of comparison EPA relied on here because, among other things: 1) the 8-hour form of the standard was “inadequate” “to protect vegetation and ecosystem services from adverse effects”; 2) control strategies to meet an 8-hour standard

would not necessarily be effective in assuring compliance with a cumulative standard; and 3) “the current form of the standard is much less biologically relevant for protecting vegetation than is a seasonal, peak weighted index such as the W126, which was designed to measure the cumulative effects of ozone exposure.” CASAC Letter 11-12, JA ____ - __. Far from refuting these findings, EPA agreed that the lack of a relationship between 8-hour and cumulative levels “indicates that in some locations, [ozone] air quality patterns can lead to elevated cumulative, seasonal [ozone] exposures without the occurrence of elevated daily maximum 8-hour average [ozone] concentrations.” 79 FR 75,344/2 (emphasis added), JA ____.

Second, EPA’s comparison does not show equivalent protection even if 17 ppm-hours 3-year average were the right benchmark for a cumulative standard. For example, monitors in some of the nation’s most iconic national parks, including Grand Canyon, Canyonlands, Mesa Verde, and Zion, as well as Maroon Bells-Snowmass and Weminuche wilderness areas have all recorded cumulative 3-year average levels higher than 17 ppm-hours during periods when a 0.070 ppm 8-hour level was met. Dkt-4249, JA _____. As noted above, these are places that Congress has set aside to preserve in pristine natural condition, and that EPA itself found should receive particular protection. *Supra* pp.46-47; 80 FR 65,376/3-77/1, JA ____ - __; PA 6-50, JA _____.

Third, EPA's comparison assumed a weak form and level for the cumulative standard (17 ppm-hours averaged over 3 years) that was far less protective than even the upper end of the CASAC range (15 ppm-hours single-season maximum). For more protective cumulative levels, the data showed numerous areas that met the 0.070 ppm 8-hour health standard but violated a 3-year average cumulative level. For example, in the 13-year period studied by EPA, there were more than 1,300 occurrences where monitors reached or exceeded CASAC's 7 ppm-hours benchmark for protecting tree growth (even after averaging over three years), while meeting the health standard. Dkt-4325 at 14 tbl.9, JA _____. And if EPA had looked at single-year cumulative levels as CASAC recommended (rather than averaging them out over 3 years), it would have found that numerous national parks and wilderness areas far exceeded even a 17 ppm-hours threshold while meeting the health standard. Dkt-4249, JA ____; PA 5-28 to -29 tbl.5-2, JA ____ - _____. These include national parks and Class I wilderness areas⁸ like Grand Canyon (maximum annual level of 21.7 ppm-hours), Petrified Forest (18.6 ppm-hours), Saguaro (20.2 ppm-hours), Mesa Verde (22 ppm-hours), Canyonlands (23.6 ppm-hours), Zion (19.8 ppm-hours), Carlsbad Caverns (26.7 ppm-hours), Wind Cave

⁸ "Class I" areas include 156 national parks and wilderness areas for which Congress has directed special protection from air pollution. *See* 42 U.S.C. § 7472(a); 64 FR 35,714, 35,715/2 n.4, 35,716 (1999), JA ____ - ____.

(20.6 ppm-hours), Chiricahua (19.8 ppm-hours), Superstition (19.6 ppm-hours), Maroon Bells-Snowmass (23 ppm-hours), Weminuche (20.8 ppm-hours), and Bridger (18.8 ppm-hours). 79 FR 75,331-32 tbl.7, JA ____ - __; Dkt-4249, JA ____.

Fourth, EPA never explained why it rejected a separate cumulative standard. EPA made no claim that the 8-hour form of the standard was more protective of welfare values, or that there was a consistent, fundamental relationship between the two metrics—nor could it. *See* 80 FR 65,400/2 (EPA “ha[s] not...claimed there to be ‘congruence’ between the two metrics...or that the two metrics coincide exactly”), JA _____. For all appearances, EPA made the welfare standard identical to the health standard simply to avoid the inconvenience of having to implement two standards, hardly a lawful basis for decision.⁹ *See* 42 U.S.C. § 7409(b)(2); *Whitman*, 531 U.S. at 471 n.3. This Court has rejected prior EPA attempts to rely on similar specious claims of alleged equivalence between 8-hour and cumulative standards, and should do so here as well. *Mississippi*, 744 F.3d at 1361; *Farm Bureau*, 559 F.3d at 530.

⁹ Indeed, EPA proposed to set the welfare standard identical to the health standard before EPA had even decided on the level for the health standard. *See* 79 FR 75,351/1, JA _____.

C. EPA Illegally and Arbitrarily Failed to Identify the Level of Air Quality Requisite to Protect Against Adverse Effects From Visible Leaf Damage.

EPA and CASAC have long identified visible leaf damage as an adverse welfare effect of ozone. 73 FR 16,496/2, JA____; CASAC Letter at iii, 10, 15, JA____, _____, _____; PA 5-87, JA____. Such damage is widespread and can blacken or mar the leaf surface (see figure below), thereby impairing the beauty of affected trees and plants and rendering them more susceptible to disease and insect infestation. EPA-HQ-OAR-2005-0172-11917 at 2, JA____; Dkt-1191 at 7-4, JA____. It also can lead to reduced plant absorption of carbon, alteration of plant diversity, and interference with cultural values of Native Americans for whom impacted areas are sacred. Dkt-1191 at 2-6, JA____; 80 FR 65,383/1-2, JA_____.

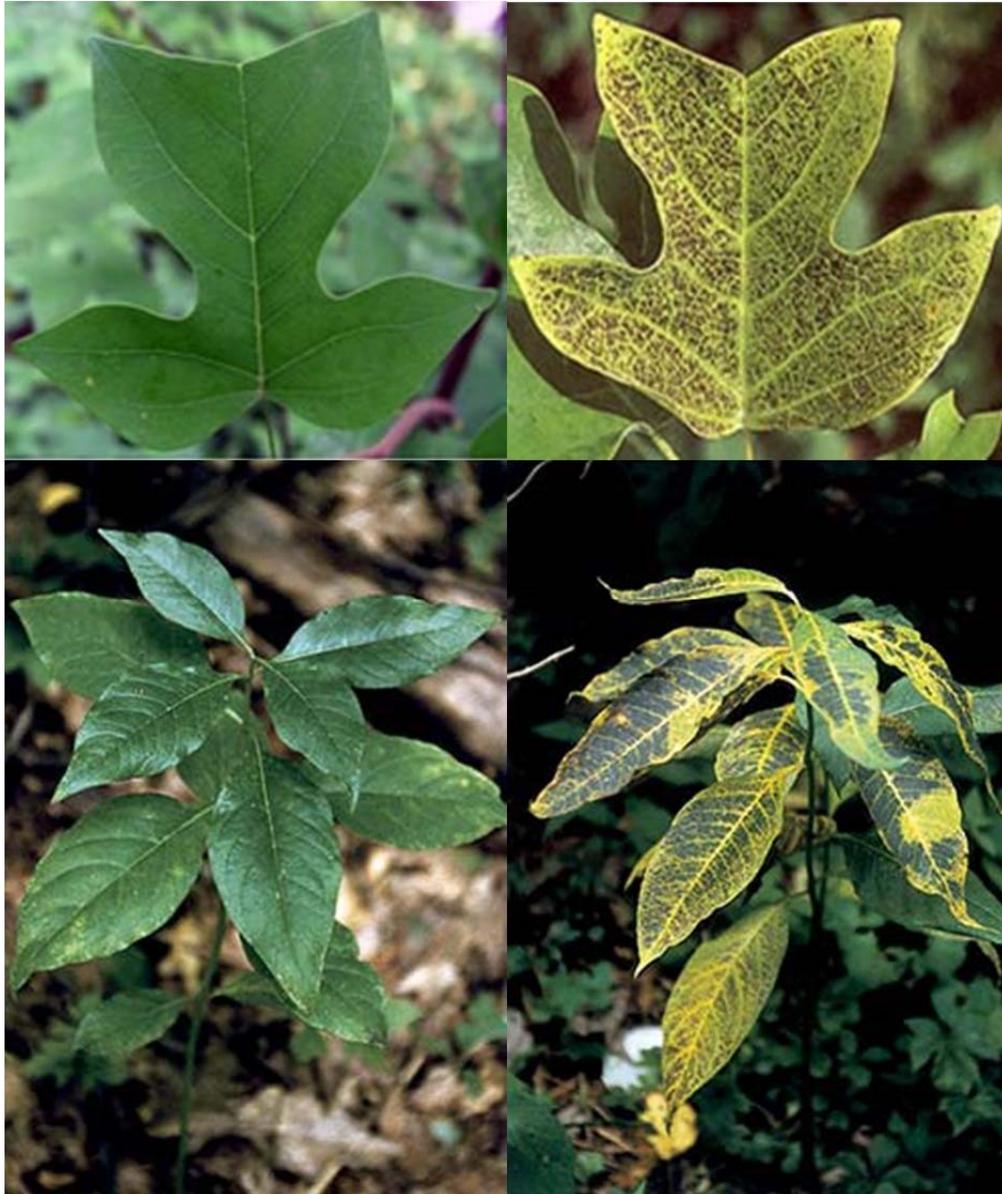


Figure: Examples of Leaf Damage from Ozone Exposure, Dkt-0234 at 7-6, JA_____.

EPA's refusal to identify a level of air quality adequate to protect against such harms was unlawful and arbitrary. The Act requires EPA to "specify a level of air quality the attainment and maintenance of which...is requisite to protect the public welfare from any known or anticipated adverse effects." 42 U.S.C.

§ 7409(b)(2). Thus, EPA must identify a specific level of air quality requisite to protect the welfare value at issue and set a secondary standard to provide that level of protection. *Farm Bureau*, 559 F.3d at 529-30; *accord Mississippi*, 744 F.3d at 1360-61. “EPA’s failure to identify such a level when deciding where to set the level of air quality required by the revised secondary...NAAQS is contrary to the statute and therefore unlawful. Furthermore, the failure to set any target level...deprived the EPA’s decisionmaking of a reasoned basis.” *Farm Bureau*, 559 F.3d at 530; *accord Mississippi*, 744 F.3d at 1360. So too here. EPA failed to identify a target level of air quality requisite to protect against visible damage to leaves. The agency’s 3-year 17 ppm-hours benchmark was directed at growth loss and (allegedly) at related ecosystem effects, not leaf damage. 80 FR 65,406/1, 65,408/1, JA____, ____.

EPA justified its approach on the ground that the revised primary standard would provide some additional protection for leaves, that specifying a level of protection for leaves would involve “significant challenges,” and that there was allegedly a lack of established criteria for the appropriate level of protection against leaf damage (an incorrect claim, as explained below). *Id.* 65,407/3, JA____. This Court rejected the very same kinds of excuses in *Farm Bureau*, holding they did not overcome EPA’s statutory duty to identify a target level of protection. 559 F.3d at 529-30 (alleged incidental welfare benefits from primary

standard and uncertainties in selecting level of welfare protection did not overcome statutory mandate to identify a level of requisite welfare protection). And as in *Farm Bureau*, EPA's failure to identify a target protection level "deprived the EPA's decisionmaking of a reasoned basis." *Id.* 530.

This case is unlike *Center for Biological Diversity v. EPA*, 749 F.3d 1079, 1090-91 (D.C. Cir. 2014), where the Court upheld EPA findings that uncertainties were so "unusually profound" that EPA "could not form" a reasoned judgment on a requisite level for welfare protection. EPA made no such finding here, nor could it. Based on the evidence, CASAC specifically found that "[an ozone] level below 10 ppm-hrs is required to reduce foliar injury."¹⁰ CASAC Letter at iii, JA _____. It further found that a level of 7 ppm-hours "offers additional protection against...foliar injury." *Id.* 15, JA _____. The Park Service published guidelines in 2011 indicating that an ozone level of 7 ppm-hours or greater would have a moderate impact on ozone-sensitive vegetation, while a level greater than 13 ppm-hours would have a major impact. Dkt-4332 at 14, JA _____. The Park Service based these levels in part on recommendations from the expert workgroup (cited

¹⁰ Contrary to EPA's claims (80 FR 65,396/1, JA _____), CASAC did not mistakenly read the data as showing no increase in leaf injury above 10 ppm-hours. CASAC specifically acknowledged that 10 ppm-hours was "not a threshold for no injury." Dkt-0189 at 7, JA _____. Rather, it is a level below which significant reductions occur in the number of sites suffering visible leaf damage. *See* Dkt-1191 at 7-18 fig.7-10, JA _____.

above) that found a standard of “5-9 ppm-hrs would protect plants in natural ecosystems against foliar injury.” *Id.*, JA _____. In the rulemaking here, the Park Service (citing its 2011 guidelines) expressly recommended a standard “at the lower end” of the CASAC-recommended range of 7-15 ppm-hours “in order to address foliar injury.” Dkt-3871 at 2 (emphasis added), JA _____.

The above-cited recommendations and supporting material provided EPA with more than enough information to reasonably specify an ozone level to protect against leaf damage. EPA may rely on CASAC’s advice, and indeed must do so absent an adequate explanation. *ATA*, 283 F.3d at 378-79. Likewise, the Park Service’s views provide a particularly strong basis for decision here given that EPA itself has repeatedly stressed that the welfare standard must emphasize protection of national parks and similar protected areas. Further, the Park Service’s 2011 guidelines and its subsequent comments refute EPA’s claim of a lack of established criteria for protection against leaf damage.

Accordingly, EPA has failed to meet the “especially heavy” burden of showing that it was impossible to “specify a level” of ozone air quality to provide requisite protection against leaf damage, as the Act requires. *Sierra Club v. EPA*, 719 F.2d 436, 462-63 (D.C. Cir. 1983) (citation omitted).

III. EPA UNLAWFULLY WAIVED PERMITTING REQUIREMENTS DESIGNED TO PREVENT VIOLATIONS OF THE NEW STANDARDS.

The Act provides that “[n]o major emitting facility...may be constructed in any area [not designated “nonattainment”] unless...the owner or operator of such facility demonstrates...that the emissions from the construction or operation of such facility will not cause, or contribute to, air pollution in excess of any...national ambient air quality standard in any air quality control region.” 42 U.S.C. § 7475(a)(3); *see id.* § 7471. Despite the plain language of § 7475(a)(3), EPA’s final rule amends the federal construction (“PSD” or “prevention of significant deterioration”) permitting regulations to allow certain major emitting facilities to be constructed without demonstrating that emissions from the project will not cause or contribute to violations of the new standard. *See* 40 C.F.R. §§ 51.166(i)(11), 52.21(i)(12); *see also* 80 FR 65,433/1-34/3 (describing final action and rationale), JA ____ - __. Specifically, EPA has waived the requirement to comply with § 7475(a)(3) with respect to the new ozone standard for projects that had complete applications as of October 1, 2015, or that had a draft permit publicly noticed before December 28, 2015. This “grandfathering exemption” violates the plain and unambiguous language of § 7475(a)(3).

EPA identifies no ambiguity in § 7475(a)(3)’s requirement. It does not dispute that the new ozone standards fall within “any...national ambient air quality

standard” covered by the provision. Nor does EPA dispute that the statute requires this demonstration of compliance for any such standard in effect at the time the permit is issued. *See* 79 FR 75,377/2 (explaining EPA policy is “to require that PSD permit applications must include a demonstration that new major sources and...modifications will not cause or contribute to a violation of any NAAQS that is in effect as of the date the PSD permit is issued”), JA _____. Finally, EPA does not claim that there is any relevant statutory exemption from this requirement. To the contrary, the only major emitting facilities the Act exempts are those for which construction commenced by August 7, 1977, thus demonstrating that EPA lacks authority to invent a new exemption, 42 U.S.C. § 7475(a); *see also id.* § 7478(b). *See Andrus v. Glover Constr. Co.*, 446 U.S. 608, 616-17 (1980) (“Where Congress explicitly enumerates certain exceptions to a general prohibition, additional exceptions are not to be implied, in the absence of evidence of a contrary legislative intent.”).

EPA’s statutory argument is not based on any ambiguity in § 7475(a), but instead on a concocted conflict between the obligations of § 7475(a) and the requirement of § 7475(c) to grant or deny permits within one year after a complete permit application is filed. *See* 80 FR 65,433/3 (asserting EPA has authority to “balance[] competing objectives of the statutory PSD program found in [§ 7475]”), JA _____. EPA’s statutory argument is meritless.

First, there is no actual conflict between these provisions. Even assuming the promulgation of a new standard might limit the ability to approve certain permits within the deadlines of § 7475(c)—a conclusion that has no record basis—such limitations do not preclude EPA from complying with all its statutory obligations. If EPA cannot approve a project within the applicable deadline because the source has not satisfied its statutory obligation to demonstrate that the proposed facility will not cause or contribute to a violation of the new standard, the Act provides two alternatives: 1) either deny the permit application because it does not meet the requirements of the statute, or 2) acknowledge that with the promulgation of a new standard, the application is no longer complete. *See Hibbs v. Winn*, 542 U.S. 88, 101 (2004) (“A statute should be construed so that effect is given to all its provisions, so that no part will be inoperative or superfluous, void or insignificant.”) (internal quotation and citation omitted).

Second, even if it turns out in certain cases to be undesirable from EPA’s perspective to comply with both sections, that difficulty does not allow EPA to pick which provision to ignore. An agency may not “avoid the Congressional intent clearly expressed in the text simply by asserting that its preferred approach would be better policy.” *Engine Mfrs. Ass’n v. EPA*, 88 F.3d 1075, 1089 (D.C. Cir. 1996). As the Supreme Court recently explained, the agency’s “authority and responsibility to resolve some questions left open by Congress that arise during the

law's administration" does not extend to "include a power to revise clear statutory terms that turn out not to work in practice." *Utility Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2446 (2014). "An agency confronting resource constraints may change its own conduct, but it cannot change the law." *Id.*

EPA's reliance on legislative history does not overcome the unambiguous statute. It quotes one sentence of a 1976 Senate Report to argue that Congress opposed "bureaucratic delay." *See* 80 FR 65,434/1, JA____. Requiring compliance with new standards mandated by Congress to protect public health and welfare hardly qualifies as "bureaucratic delay," and, regardless, this single snippet from a report accompanying a bill that did not even include the requirement ultimately codified in § 7475(a)(3)¹¹ cannot justify a policy that is otherwise inconsistent with the policy choices made by Congress in adopting the construction permitting program.

In enacting the prevention of significant deterioration permitting program, Congress made two fundamental policy choices: 1) it is preferable to prevent air pollution from becoming a problem in the first place by limiting pollution from newly constructed sources; and 2) it is better to install pollution controls when new

¹¹ *See* S. 3219, 94th Cong. § 6 (1976) (proposing new Clean Air Act § 110(g)(4) outlining requirements for permits that do not include demonstrating compliance with standards).

sources are being constructed rather than as retrofits on existing sources. *See, e.g.*, S. Rep. No. 95-127, at 11 (1977) (“This legislation defines ‘significant deterioration’ in all clean air areas as a specified amount of additional pollution.... This definition is intended to prevent any major decline in air quality currently existing in clean air areas and will provide a margin of safety for the future.”); H.R. Rep. No. 94-1175, at 107, 114 (1976) (explaining that “[p]ermitting unrestricted deterioration of air quality up to the ambient standards involves trying to cure a condition after it has developed rather than using practical and currently available means to prevent or minimize the condition in the first place” and that “[c]ommon sense dictates that it is substantially less expensive to prevent air pollution problems—and health problems—before they develop than it is to abate dangerous pollution levels”).

EPA’s elevation of timely approval over careful review would defeat both these congressional choices. Grandfathering allows projects to be built without a showing that they will not cause or contribute to violations of the standards. If these sources are built and violations then occur, states will be responsible for developing plans to control emissions to bring air pollution levels back down to meet the standards. 42 U.S.C. §§ 7410, 7502. Such plans require the adoption of retrofit control technology requirements for existing major sources. *Id.* § 7502(c)(1). The result is that these same sources given a pass under the

construction permitting program could ultimately be required to address these emissions in a much less cost-effective manner through retrofit controls.

Grandfathering sources from § 7475's requirements, and ignoring the foreseeable pollution problems that the statutory program is specifically designed to avoid, undermines the "prevention" function of the prevention of significant deterioration permitting program and the choices made by Congress.

The statutory language of § 7475(a) is plain: a new source must demonstrate that it will not cause or contribute to a violation of any national ambient air quality standards, including the new standard. Unless a source can meet these requirements, it may not be built. The statute provides EPA no authority to waive these requirements.

CONCLUSION

For the foregoing reasons, the Court should remand the primary and secondary standards and vacate the grandfathering provision. In light of EPA's repeated delays in updating the ozone standards and the significant public health and welfare impacts at stake, the Court should also set a deadline for EPA to complete remand proceedings. *See Env'tl. Def. Fund v. EPA*, 852 F.2d 1316, 1331 (D.C. Cir. 1988) (setting deadline for action on remand because of "EPA's history of delay and missed deadlines"). As EPA took the action here in response to a 17-

month court-ordered deadline,¹² the same timeframe should be ample for EPA to complete remand proceedings.

DATED: April 22, 2016

Respectfully submitted,

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¹² Order, *Sierra Club v. EPA*, No. 13-cv-2809 (N.D. Cal. Apr. 30, 2014).

* Application for admission to the D.C. Circuit is pending.

CERTIFICATE REGARDING WORD LIMITATION

Counsel hereby certifies, in accordance with Federal Rule of Appellate Procedure 32(a)(7)(C), that the foregoing **Proof Opening Brief of Public Health and Environmental Petitioners** contains 13,915 words, as counted by counsel's word processing system, and thus complies with the applicable word limit established by the Court.

DATED: April 22, 2016

/s/Seth L. Johnson

Seth L. Johnson

CERTIFICATE OF SERVICE

I hereby certify that on this 22nd day of April, 2016, I have served the foregoing **Proof Opening Brief of Public Health and Environmental Petitioners** on all registered counsel through the Court's electronic filing system (ECF).

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