United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued December 18, 2018 Decided August 23, 2019

No. 15-1385

MURRAY ENERGY CORPORATION,
PETITIONER

v.

ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENT

AMERICAN LUNG ASSOCIATION, ET AL.,
INTERVENORS

Consolidated with 15-1392, 15-1490, 15-1491, 15-1494

On Petitions for Review of Final Agency Action of
the United States Environmental Protection Agency

Seth L. Johnson argued the cause for Public Health and Environmental Petitioners. With him on the briefs were *Joshua Stebbins*, *Joshua Berman*, *David S. Baron*, and *Paul Cort*.

Dominic E. Draye, Deputy Solicitor General, Office of the Attorney General for the State of Arizona, argued the cause for State Petitioners. With him on the briefs were *Mark Brnovich*, Attorney General, *John R. Lopez*, *IV*, Solicitor General, *Keith Miller*, Associate Solicitor, *Joshua L. Kaul*, Attorney General, Office of the Attorney General for the State of Wisconsin, *Misha Tseytlin*, Solicitor General, *Daniel P. Lennington*, Assistant Attorney General, *Leslie C. Rutledge*, Attorney General, Office of the Attorney General for the State of Arkansas, *Lee Rudofsky*, Solicitor General, *Jamie L. Ewing*, Assistant Attorney General, *Jeff Landry*, Attorney General, Office of the Attorney General for the State of Louisiana, *Steven B. "Beaux" Jones*, Assistant Attorney General, *Wayne Stenehjem*, Attorney General, Office of the Attorney General for the State of North Dakota, *Margaret I. Olson*, Assistant Attorney General, *Peter S. Glaser*, *Carroll W. "Mack" McGuffey*, *Andy Beshear*, Attorney General, Office of the Attorney General for the Commonwealth of Kentucky, *Joseph A. Newberg*, *II*, Assistant Attorney General, *Lara Katz*, Assistant Attorney General, Office of the Attorney General for the State of New Mexico, *Ken Paxton*, Attorney General, Office of the Attorney General for the State of Texas, *Priscilla M. Hubenak*, Chief, *Craig J. Pritzlaff*, Assistant Attorney General, *E. Scott Pruitt*, Attorney General at the time the brief was filed, Office of the Attorney General for the State of Oklahoma, *P. Clayton Eubanks*, Deputy Solicitor General, and *Sean Reyes*, Attorney General, Office of the State of Utah. *Mithun Mansinghani*, Attorney, Office of the Attorney General for the State of Oklahoma, *Lisa M. Mitchell*, Assistant Attorney General, Office of the Attorney General for the State of Texas, *Oramel H. Skinner*, *III*, Solicitor, Office of the Attorney General for the State of Arizona, *Sarah Adkins* and *Samuel R. Flynn*, Assistant Attorneys General, and *Gregory T. Dutton*, Counsel, Office of the Attorney General for the Commonwealth of Kentucky, *Steven C. Kilpatrick*, Assistant

Attorney General, Office of the Attorney General for the State of Wisconsin, *Elizabeth B. Murrill* and *Harry J. Vorhoff*, Assistant Attorneys General, Office of the Attorney General for the State of Louisiana, entered appearances.

James R. Bieke argued the cause for Industry Petitioners. With him on the briefs were *Roger R. Martella*, *Joel F. Visser*, *Scott C. Oostdyk*, *E. Duncan Getchell*, *Jr.*, *Michael H. Brady*, *Thomas A. Lorenzen*, *Robert J. Meyers*, *Linda E. Kelly*, *Quentin Riegel*, *Leland P. Frost*, *Michael B. Schon*, *Elizabeth L. Horner*, *Lucinda Minton Langworthy*, *Aaron M. Flynn*, *Steven P. Lehotsky*, *Sheldon B. Gilbert*, *Stacy Linden*, and *Richard S. Moskowitz*. *Peter C. Tolsdorf* entered an appearance.

Hope M. Babcock and *Sarah J. Fox* were on the brief for *amici curiae* American Thoracic Society, et al. in support of petitioners Sierra Club, et al.

Thomas J. Ward was on the brief for *amicus curiae* The National Association of Home Builders in support of Industry and State Petitioners.

Justin Heminger and *Simi Bhat*, Trial Attorneys, U.S. Department of Justice, argued the causes for respondent. With them on the brief were *John C. Cruden*, Assistant Attorney General at the time the brief was filed, and *David Orlin*, *Steven Silverman*, and *Brian Doster*, Attorneys, U.S. Environmental Protection Agency. *Jon M. Lipshultz*, Attorney, U.S. Department of Justice, entered an appearance.

James R. Bieke argued the cause for Industry Respondent-Intervenors. With him on the brief were *Roger R. Martella*, *Joel F. Visser*, *Lucinda Minton Langworthy*, *Aaron M. Flynn*, *Thomas A. Lorenzen*, *Robert J. Meyers*, *Stacy Linden*, *Richard*

S. Moskowitz, *Steven P. Lehotsky*, *Sheldon B. Gilbert*, *Linda E. Kelly*, *Quentin Riegel*, *Leland P. Frost*, *Michael B. Schon*, *Elizabeth Horner*, and *Leslie A. Hulse*. *Peter C. Tolsdorf* entered an appearance.

Seth L. Johnson argued the cause for Health and Environmental Respondent-Intervenors. With him on the brief was *David S. Baron*. *Joshua A. Berman* and *Joshua R. Stebbins* entered appearances.

Jonathan Weiner, Deputy Attorney General, Office of the Attorney General for the State of California, argued the cause for State *Amici* in support of respondent. With him on the brief were *Kamala D. Harris*, Attorney General at the time the brief was filed, *Robert W. Byrne*, Senior Assistant Attorney General, and *Gavin G. McCabe*, Supervising Deputy Attorney General. *Melinda Pilling*, Attorney, entered an appearance.

Richard L. Revesz, *Denise A. Grab*, *Jack Lienke*, *Michael A. Livermore*, and *Jason A. Schwartz* were on the brief for *amicus curiae* The Institute for Policy Integrity at New York University School of Law in support of respondent.

Before: GRIFFITH, PILLARD and WILKINS, *Circuit Judges*.

Opinion for the Court filed PER CURIAM.

PER CURIAM: In this opinion, we consider various challenges to the Environmental Protection Agency's 2015 revisions to the primary and secondary national ambient air quality standards for ozone. For the reasons given below, we deny the petitions, except with respect to the secondary ozone standard, which we remand for reconsideration, and grandfathering provision, which we vacate.

I. Background

A. Statutory and Procedural Background

Congress enacted the modern version of the Clean Air Act (the "Act"), codified at 42 U.S.C. § 7401 *et seq.*, in 1970 to control and reduce contaminants responsible for air pollution with the overarching goal to protect human health and the environment. Pursuant to Title I, EPA must establish, publish, and periodically review primary and secondary national ambient air quality standards ("NAAQS") for air pollutants that "may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7408(a)(1)(A). The primary NAAQS are to be set at levels "the attainment and maintenance of which in the judgment of the Administrator, . . . allowing an adequate margin of safety, are requisite to protect the public health." *Id.* § 7409(b)(1). The secondary NAAQS "shall specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator, . . . is requisite to protect the public welfare from any known or anticipated adverse effects." *Id.* § 7409(b)(2). Thus, primary NAAQS protect the public health, while the secondary NAAQS protect the public welfare. "Public health" includes adverse health effects for both the population at large and sensitive populations such as children, older adults, and people with asthma or other lung diseases. The term "public welfare" encompasses a wide variety of effects on soil, plants, wildlife and biota, property damage, aesthetic concerns, and other non-health-related impacts such as hazards to economic values and personal comfort. *Id.* § 7602(h).

Pursuant to section 109(d) of the Clean Air Act, EPA must complete a "thorough" review of the NAAQS every five years. *Id.* § 7409(d)(1). During this review, EPA must revise the criteria and standards or promulgate new standards as

appropriate. *Id.* To assist in this process, the Clean Air Scientific Advisory Committee ("CASAC") undertakes an examination of the current air quality criteria, primary NAAQS, and secondary NAAQS, and submits recommendations to EPA for "any new [NAAQS] and revisions of existing criteria and standards as may be appropriate." *Id*. § 7409(d)(2)(A)-(B). Congress required EPA to take CASAC's recommendations into account when promulgating revised NAAQS and to fully explain its reasons when it departs from CASAC's advice. However, the ultimate decision to revise the NAAQS—and the determination of the new level—rests with the Administrator. *Id.* § 7407(d)(3).

These petitions concern EPA's promulgation of revised NAAQS related to ozone. Ozone is a colorless gas that occurs both in the Earth's upper atmosphere and at ground level. Although ozone is an "essential presence in the atmosphere's stratospheric layer," ground-level ozone is an air pollutant that is harmful to breathe and damages crops, trees, and other vegetation. *S. Coast Air Quality Mgmt. Dist. v. EPA*, 472 F.3d 882, 887 (D.C. Cir. 2006); *see Allied Local & Reg'l Mfrs. Caucus v. EPA*, 215 F.3d 61, 66 (D.C. Cir. 2000). Ground-level ozone is not a direct product of human activity, but instead forms when atmospheric pollutants (including nitrogen oxides and volatile organic compounds) react in the presence of sunlight. *See Mississippi v. EPA*, 744 F.3d 1334, 1340 (D.C. Cir. 2013). These precursor atmospheric pollutants are created primarily from emissions produced by cars, power plants, and chemical solvents. *NRDC v. EPA*, 777 F.3d 456, 459 (D.C. Cir. 2014).

In 1979, EPA issued primary and secondary NAAQS for ozone with a limit of 0.12 parts per millions (ppm), and a one-hour averaging time. *See id*. This "one-hour standard" measured average ozone levels over one-hour periods, and

EPA would deem an area in compliance with this standard if it did not exceed the level for more than one day per calendar year. *Id.* EPA next revised the ozone NAAQS in 1997, having determined that no revisions to the standards were necessary in 1993. National Ambient Air Quality Standards for Ozone, 58 Fed. Reg. 13,008 (Mar. 9, 1993). The agency replaced the one-hour, 0.12 ppm standard with a 0.08 ppm standard measured over eight hours. National Ambient Air Quality Standards for Ozone, 62 Fed. Reg. 38,856 (July 18, 1997). EPA also altered the form of compliance to the annual fourth-highest daily maximum 8-hour concentration, averaged over three years. *Id.*

In 2008, EPA lowered the primary and secondary standards to 0.075 ppm but kept the same eight-hour averaging time and form as in 1997. *NRDC*, 777 F.3d at 462-63; National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436 (Mar. 27, 2008). In developing the 2008 standards, EPA relied on scientific evidence showing that ozone causes health effects at and above 0.08 ppm and examined two new clinical studies that found negative health effects from ozone at lower levels. *See Mississippi*, 744 F.3d at 1340. While CASAC reviewed this same evidence and recommended a primary level between 0.06 ppm and 0.07 ppm, EPA departed from this advice and explained that the scientific data regarding negative health effects at 0.06 ppm was too limited and inconclusive to support a standard below 0.075 ppm. *See id.* at 1340-41. We upheld EPA's primary standard on this basis but found that EPA had not adequately explained its revision of the secondary standard. *Id.* at 1359-62. We noted that EPA had not properly determined what level of air quality was requisite to protect the public welfare. *Id.* Accordingly, we remanded for further explanation and reconsideration of the secondary level.

Following the promulgation of the 2008 ozone NAAQS, EPA undertook another comprehensive review of the ozone

standards and scientific data. EPA consolidated its review on remand of the 2008 secondary standard with its ongoing review for the 2015 ozone NAAQS. After conducting public hearings and receiving approximately 430,000 written comments on its proposed revision of the primary and secondary ozone NAAQS, EPA published its final 2015 ozone NAAQS on October 26, 2015. National Ambient Air Quality Standards for Ozone ("2015 Rule"), 80 Fed. Reg. 65,292 (Oct. 26, 2015). For both the primary and secondary standards, EPA lowered the level from 0.075 ppm to 0.07 ppm, while retaining the 2008 indicator (ozone), averaging time (8 hours), and form (three-year average of the fourth-highest daily maximum 8-hour concentration). *See id.* at 65,294, 65,301, 65,347, 65,349-50, 65,352.

Based on scientific data and CASAC's recommendation, the Administrator concluded that the 2008 primary ozone standard (0.075 ppm) was not at a level requisite to protect public health while allowing an adequate margin of safety. *Id.* at 65,326, 65,344, 65,346. The Administrator placed significant weight on new clinical studies linking short-term ozone exposure with respiratory effects, including lung inflammation. *See id.* at 65,302-03, 65,341, 65,352, 65,359. EPA conducted its own exposure study and found that a revised primary NAAQS standard of 0.07 ppm would "eliminate the occurrence of two or more exposures of concern to [ozone] concentrations at and above [0.08 ppm]" and would "virtually eliminate the occurrence of two or more exposures of concern to [ozone] concentrations at and above [0.07 ppm], even in the worst-case urban study area and year evaluated." *Id.* at 65,353. The Administrator additionally found that a level of 0.07 ppm would "protect the large majority of children in the urban study areas (*i.e.*, about 96% to more than 99% of children in individual urban study areas) from experiencing two or more exposures of concern at or above the [0.06 ppm] benchmark."

Id. at 65,353, 65,360-64. EPA also evaluated hundreds of epidemiologic studies that provided statistically relevant information about a broader population of individuals who are exposed to uncontrolled air pollution. *See id.* at 65,304, 65,364.

Further, the Administrator considered CASAC's advice on the new primary ozone standard. *See id.* at 65,346, 65,361. In advance of the 2015 Rule, CASAC stated that "there is clear scientific support for the need to revise the standard" in place since 2008 and recommended setting the standard within a range of 0.06 ppm to 0.07 ppm, while leaving the form, averaging time, and indicator unchanged. *Id.* at 65,322, 65,361.

EPA also assessed the secondary standard and concluded that the 2008 secondary standard (0.075 ppm) was not requisite to protect public welfare. *Id.* at 65,382, 65,389-90. Rather, EPA set the secondary standard at 0.07 ppm and kept the indicator, averaging time, and form the same. *Id.* at 65,369, 65,403, 65,409-10. EPA noted that more than four hundred new studies examining the interplay between ozone and public welfare had been developed since the promulgation of the 2008 ozone NAAQS. *Id.* at 65,369. These studies strengthened and expanded the scientific understanding of ozone's effects on plants. The Administrator analyzed the causal relationship between ozone exposure and vegetation effects, examining tree growth impacts, crop yield loss, and visible leaf injury. *Id.* at 65,370; *see id.* at 65,294, 65,369-70. The Administrator gave "primary consideration" to tree growth impacts, judging that it was more difficult to assess the welfare significance of crop yield loss (given that crops are heavily managed) and visible leaf injury (citing the "lack of established criteria or objectives"). *Id.* at 65,407.

In setting the secondary standard, EPA departed from CASAC's recommendations as to the form and standard of the secondary ozone NAAQS. CASAC recommended using a single-year averaging approach, but EPA opted for a three-year average because "the public welfare significance of effects associated with multiple years of critical exposures are potentially greater than those associated with a single year of such exposure." *Id.* at 65,404. The Administrator also rejected CASAC's recommendation to use the W126 exposure index, a cumulative, seasonal ozone exposure metric, as the form of the secondary standard, rather than the same form as the primary standard (three-year average of the fourth-highest daily level), finding that the latter form was adequate to restrict cumulative ozone exposures that are detrimental to vegetation. *Id.* at 65,408.

In addition to revising the ozone standards, the 2015 NAAQS also updated the regulations for the Prevention of Significant Deterioration ("PSD") permitting program. *See id.* at 65,431-34. Under the PSD program, no construction on a major emitting facility may be commenced in an area that has attained the air quality standards for any criteria pollutant unless "the owner or operator of such facility demonstrates . . . that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any . . . [NAAQS]." 42 U.S.C. § 7475(a)(3)(B). The permitting authority (either a state or EPA) must grant or deny a completed preconstruction permit application under the PSD program within one year of filing. *Id.* § 7475(c).

EPA claimed that sections 7475(a)(3)(B) and 7475(c) have the "potential for conflict," which it was authorized under *Chevron* to resolve. EPA Br. 132; *see also* 80 Fed. Reg. at 65,433-34. EPA worried that, for a limited subset of *pending* permit applications, complying with section 7475(a)(3)(B)'s

demonstration requirement for the 2015 NAAQS "could hinder compliance with the requirement under section [7475](c) to issue a permit within one year of the completeness determination." 80 Fed. Reg. at 65,434. In other words, EPA was unsure how to handle completed permit applications where sources would have complied with the NAAQS in existence at the time the application was filed (the 2008 ozone standards), but where the NAAQS were revised before the permit was approved. *See id.* at 65,433. EPA resolved this apparent conflict by implementing a grandfathering provision for pending permit applications that satisfy one of two permitting criteria. *See id.* at 65,431-34. These two applicable categories include: (1) permit applications that are deemed complete on or before the signature date of the final rule revising the ozone NAAQS; and (2) permit applications "for which the reviewing authority has first published a public notice of the draft permit or preliminary determination before the effective date of the revised NAAQS." *Id.* at 65,431, 65,433. If a permit application satisfies either requirement, the owner or operator must show compliance with the 2008 rather than the 2015 NAAQS before initiating construction.

Petitioners from the oil and gas industry ("Industry Petitioners") and from several states ("State Petitioners") claim that the primary and secondary NAAQS are too protective. Conversely, petitioners from public health and environmental groups ("Environmental Petitioners") claim that these NAAQS are not protective enough. Environmental Petitioners also contend that EPA's decision to allow limited grandfathering of certain permit applications was inconsistent with the Clean Air Act.

This opinion proceeds in five parts. Part II considers the challenges to the primary standard, and Part III the challenges to the secondary standard. Part IV reviews the cross-cutting

challenges to EPA's promulgation of the NAAQS, and Part V addresses the challenge to the grandfathering provision.

B. Jurisdiction and Standard of Review

This court has jurisdiction to review EPA's 2015 Rule pursuant to 42 U.S.C. § 7607(b)(1). Under section 7607, agency action may be reversed if it is arbitrary, capricious, an abuse of discretion, not in accordance with law, or in excess of statutory authority. *Id.* § 7607(d)(9)(A), (C); *see Am. Petroleum Inst. v. EPA*, 684 F.3d 1342, 1347 (D.C. Cir. 2012). To withstand review, an agency must have examined all relevant facts and data, and articulated a rational explanation for its decision, including a reasonable connection between the facts and ultimate outcome. *See Allied Local*, 215 F.3d at 68. We cannot look at EPA's decision as would a scientist, but instead must exercise our "narrowly defined duty of holding agencies to certain minimal standards of rationality." *Mississippi*, 744 F.3d at 1342 (quoting *Nat'l Envtl. Dev. Ass'n's Clean Air Project v. EPA*, 686 F.3d 803, 810 (D.C. Cir. 2012)); *see id.* at 1348 ("We repeat: it is not our job to referee battles among experts; ours is only to evaluate the rationality of EPA's decision . . . .").

On questions of statutory interpretation, the court must review EPA's actions in accordance with the standard set forth in *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842-44 (1984). *See Michigan v. EPA*, 135 S. Ct. 2699, 2706-07 (2015); *NRDC*, 777 F.3d at 463. *Chevron* deference involves a two-step analysis. First, if a statute is clear, the court must give effect to Congress's unambiguous language and intent. *Chevron*, 467 U.S. at 842-43. Where a statute that an agency administers is ambiguous, the court must turn to the second *Chevron* principle and give deference to the

agency's reasonable interpretation of the statute. *Id.* at 843; *see also S. Coast Air Quality Mgmt. Dist.*, 472 F.3d at 891.

II. Primary Standard Challenges

Industry and State Petitioners contend that EPA's promulgation of the 2015 Rule's primary standard was arbitrary and capricious because, they say, EPA failed to provide a reasoned explanation for departing from the 2008 NAAQS. Environmental Petitioners argue that the primary ozone standard is too lenient because it occasionally permits ozone levels to exceed 0.07 ppm and will allegedly tolerate adverse health effects. For the reasons below, we hold that these arguments lack merit.

A. Industry and State Petitioners' Challenge

The Clean Air Act requires EPA to set primary NAAQS that are "requisite" to protect public health with an adequate margin of safety. 42 U.S.C. § 7409(b)(1). The term "requisite" means "sufficient, but not more than necessary." *See Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 473 (2001). While the determination of what is "requisite" may require a contextual assessment of acceptable risk, our precedent is clear that prior NAAQS are not sacrosanct and are not granted presumptive validity. *See Mississippi*, 744 F.3d at 1343. Prior NAAQS need not remain the governing standard until every aspect of those prior NAAQS is undermined. *Id.* To hold otherwise "would bind EPA to potential deficiencies in past reviews because discrepancies between past and current judgments as easily reflect problems in the past as in the present." *Id.* Thus, when EPA reviews and revises the NAAQS, it does so against current policy considerations and existing scientific knowledge. *Id.* Accordingly, "[t]he statutory framework requires us to ask only whether EPA's proposed NAAQS is

'requisite'; we need not ask why the prior NAAQS once was 'requisite' but is no longer up to the task." *Id.*

Given our decision in *Mississippi*, we must reject Industry and State Petitioners' argument that EPA departed from the 2008 NAAQS without adequate explanation. EPA has adequately explained why on the record before it the revised standard is requisite to protect the public health. As the record makes clear, the Administrator considered the entire body of scientific evidence available, including clinical studies, epidemiologic evidence, human exposure and health risk assessments, CASAC's recommendations, and over 430,000 public comments. *See* 80 Fed. Reg. at 65,293, 65,299, 65,301, 65,323, 65,326. And consistent with CASAC's advice, the Administrator placed the most weight on clinical studies. *See id.* at 65,302-03, 65,341, 65,352, 65,359. State Petitioners take particular issue with EPA's reliance on the 2009 Schelegle study, which, they argue, does not support EPA's finding of adverse effects. But the 2009 Schelegle study is merely one of many clinical studies that EPA relied on. State Petitioners ignore the fact that additional clinical studies and epidemiologic evidence show substantial health effects at ozone levels *as low as 0.06 ppm*. *See id.* at 65,331, 65,334-35 & n.96, 65,344, 65,364.

In addition to evaluating clinical studies, the Administrator also examined epidemiologic evidence and EPA's exposure and risk assessments. *See* 80 Fed. Reg. at 65,304, 65,314-17, 65,364. While the Administrator placed less weight on the epidemiologic results than on clinical studies, *see id.* at 65,320, 65,324, 65,335, she nonetheless found that recent epidemiologic studies suggested adverse health effects would occur below the 2008 NAAQS standard. While Industry Petitioners challenge the use of epidemiologic evidence given the uncertainties presented in these studies, even CASAC

concluded that the epidemiologic evidence would have alone been strong enough to justify revision of the 2008 NAAQS.

B. Environmental Petitioners' Challenges

In contrast to Industry and State Petitioners, Environmental Petitioners argue that the primary ozone standard is too lenient. They offer two reasons. First, Environmental Petitioners contend that the form of the revised standard is not health-protective because it permits ozone levels to exceed 0.07 ppm on some days. Second, they argue that ozone exposures of 0.07 ppm will cause adverse health effects, particularly in sensitive populations. For the reasons below, we hold that these arguments lack merit.

i. *EPA reasonably explained its decision to retain the form of the primary standard.*

Environmental Petitioners first take issue with the form of the revised standard—that the average, over three years, of the annual fourth-highest maximum daily 8-hour average ozone level must not exceed 0.07 ppm. By using this form, EPA "allows ozone levels to exceed—multiple times in any year—levels that EPA itself agrees cause adverse health effects." Envtl. Pet'rs Br. 20. Environmental Petitioners contend that because areas with ozone levels above the 0.07 ppm threshold can still comply with EPA's standards, the standard is unlawful and arbitrary. We disagree.

The Administrator's decision to retain the same form used in the 1997 and 2008 primary standards was in part based on how many people are estimated to experience unhealthy ozone exposures. To this end, the Administrator utilized EPA's exposure assessment to gauge how often various population subgroups will be exposed to potentially health-impairing ozone concentrations while experiencing elevated breathing

rates. *See* 80 Fed. Reg. at 65,356. Rather than considering the ozone level of an area in isolation, the Administrator also "consider[ed] activity patterns in the exposed population" because adverse health responses to ozone exposure are critically dependent on breathing rates. *Id.* at 65,363; *see also id.* ("Not considering activity patterns, and corresponding ventilation rates, can result in a standard that provides more protection than is requisite."). This use of the exposure assessment was rational.

Further, the Administrator adequately interpreted the exposure assessment. The Administrator correctly observed that the exposure assessment only chronicled how many people with an elevated breathing rate will be exposed to a specific ozone level, not how many will have an adverse effect. Given this limitation, the Administrator focused on estimates of two or more exposures of concern to assess the potential for adverse effects at and above an ozone concentration of 0.07 ppm. *See id.* at 65,310, 65,325, 65,330, 65,343, 65,345-46, 65,354, 65,358, 65,361, 65,363. Based on the data, the Administrator concluded that a level of 0.07 ppm ozone would eliminate the occasions on which school-age children experience two or more exposures of concern at ozone concentrations at and above 0.08 ppm and, even in the worst-case years and locations, would "virtually eliminate" the occasions on which such children experience two or more exposures of concern at 0.07 ppm. *Id.* at 65,353. In particular, the Administrator noted that a primary level of 0.07 ppm would protect approximately 96% to 99% of children in the urban study areas from experiencing two or more exposures of concern above the 0.06 ppm benchmark. *Id.* at 65,353; *see also id.* at 65,360-64. That Environmental Petitioners cite data suggesting that 18,000 children would experience multiple exposures of concern at or above 0.07 ppm during the worst year and location is not determinative because the primary standard for a non-threshold

pollutant like ozone is not required to produce zero risk, and "[t]he task of determining what standard is 'requisite' to protect the qualitative value of public health or what margin of safety is 'adequate' to protect sensitive subpopulations necessarily requires the exercise of policy judgment." *Mississippi*, 744 F.3d at 1351, 1358. EPA has reasonably exercised its judgment.

Given that the Administrator appropriately examined and considered EPA's exposure assessment, her decision to retain the form of the primary standard was also rational. The Administrator determined that, when combined with an ozone level of 0.07 ppm, the form of the standard (three-year average of the fourth-highest daily level) was requisite. In particular, the Administrator found that most areas that meet the revised standard will have an 8-hour ozone concentration below 0.07 ppm. *See* 80 Fed. Reg. at 65,363. Environmental Petitioners, however, criticize this form for allegedly failing to account for individual ozone days above 0.07 ppm. But Environmental Petitioners elide a crucial detail of EPA's methodology: the exposure assessment study that "informed the Administrator's consideration of the degree of public health protection provided by various standard levels" considered the air quality at "various standards *with* the current 8-hour averaging time and fourth-high, 3-year average form." *Id.* at 65,351-52 (emphasis added). As such, the Administrator reasonably accounted for days when ozone levels may exceed 0.07 ppm. Taken together, we conclude that the Administrator's decision to retain the form of the standard was appropriate and neither arbitrary nor capricious.

ii. *EPA reasonably set the primary standard at 0.07 ppm.*

Environmental Petitioners next argue that the Administrator's decision to lower the primary standard from from 0.075 to 0.07 ppm is an unexplained departure from CASAC's recommendation and from EPA's prior position regarding the adversity of certain lung function decrements. We reject both contentions.

Environmental Petitioners argue that EPA failed to fulfill its duty under the Act to provide "an explanation of the reasons" for departing from CASAC's scientific recommendations. 42 U.S.C. § 7607(d)(3); *see also id.* § 7607(d)(6). They contend CASAC told EPA that "[a]t [0.07 ppm] 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," Envtl. Pet'rs Br. 31 (quoting J.A. 531), and EPA failed to rationally dispute or refute this finding.

EPA adequately considered CASAC's advice when setting the primary NAAQS to 0.07 ppm. While CASAC advised EPA to "set the level of the standard lower than [0.07 ppm]," J.A. 531, that recommendation constituted policy—not scientific—advice. This distinction is crucial because we defer to EPA's judgment on issues of *policy* but require EPA to "fully explain its reasons for any departure from" "CASAC's expert *scientific* recommendations." *Mississippi*, 744 F.3d at 1358, 1354-55 (emphasis added). CASAC's letter to EPA makes clear that "based on the scientific evidence" it "recommend[ed] a range of levels for a revised primary ozone standard from [0.07 ppm] to [0.06 ppm]." J.A. 531. CASAC then "acknowledge[d] that the choice of a level within the range recommended based on scientific evidence is a policy judgment." *Id.*

In an effort to influence EPA's policy judgment, CASAC noted that given the "substantial scientific certainty of a variety of adverse effects" at 0.07 ppm, that level *may* not be adequate to protect public health. *Id*. So, CASAC's "policy advice [was] to set the level of the standard lower than [0.07 ppm] within a range down to [0.06 ppm], taking into account [EPA's] judgment regarding the desired margin of safety to protect public health." *Id.* EPA did not take CASAC's policy advice because the Administrator found that 0.07 ppm would still "provide substantial protection against the broader range of [ozone] exposure concentrations that have been shown in controlled human exposure studies to result in respiratory effects, including exposure concentrations below [0.07 ppm]." 80 Fed. Reg. at 65,363. EPA nonetheless chose a level for the primary standard that was within CASAC's scientifically recommended range. In so doing, EPA did not abrogate its duty under the Clean Air Act to consider CASAC's scientific recommendations but instead made a valid policy decision.

Environmental Petitioners also argue that EPA should have set the primary standard lower than 0.07 ppm, given the controlled human exposure studies that had been published since the agency's 2008 NAAQS review. Specifically, Environmental Petitioners highlight two new studies evaluating exposures to 0.06-0.063 ppm ozone that concluded that exposures at 0.06 ppm caused lung function decrements of 10% or more. Taken with EPA's statement in the 2008 ozone NAAQS rule that a lung function decrement of 10% or more "should be considered adverse for sensitive populations," 73 Fed. Reg. at 16,454-55, Environmental Petitioners contend that EPA acted arbitrarily by giving insufficient weight to those new studies. We are unpersuaded by this argument, which fails to appreciate the dynamic nature of adversity determinations at each NAAQS review.

In determining the appropriate level for the 2015 primary standard, the Administrator was not bound by adversity judgments in the 2008 NAAQS review. Indeed, "as the contours and texture of scientific knowledge change, the epistemological posture of EPA's NAAQS review necessarily changes as well." *Mississippi*, 744 F.3d at 1344. Thus, we consider only whether EPA's 2015 Rule offers a rational explanation of why EPA chose a new adversity definition and whether the Administrator reasonably evaluated the evidence of adversity. We hold that EPA's actions were reasonable and reasonably explained. Rather than applying a rigid test for determining what level of decrement is adverse, the Administrator took a more comprehensive approach provided by American Thoracic Society (ATS) guidelines. ATS guidelines provide that "reversible loss of lung function in combination with the presence of [respiratory] symptoms should be considered adverse." 80 Fed. Reg. at 65,357 (internal quotation marks omitted). EPA reasonably explained that it chose to adopt the ATS definition of adversity because "the available evidence does not provide information on the extent to which a short-term, transient decrease in lung function in a population," without more, could "change the risk profile of the population," and that CASAC was "conditional" about whether "the lung function decrements observed in some people at [0.06 ppm] . . . are adverse." *Id.* at 65,358. The clinical studies that Environmental Petitioners contend EPA dismissed concluded that lung function decrements (such as 10%) occurred in some individuals at lower ozone concentrations, including 0.06 and 0.063 ppm, but not in "combination [with] statistically significant increases in respiratory symptoms." *See id.* at 65,357. Under ATS guidance, the Administrator declined to designate such loss of lung function as adverse. This decision was rational, and Environmental Petitioners cannot show that the evidence required EPA to decide differently.

III. Secondary Standard Challenges

Next, we turn to the challenges to EPA's secondary standard. The Environmental Petitioners contend that: (1) in considering tree growth loss, EPA acted arbitrarily in setting the target level of air quality and therefore fell short of the statutory requirement to set a standard "requisite" to protect against such harm; (2) EPA arbitrarily used a three-year average rather than a single-year, cumulative measurement of ozone exposure as a benchmark to gauge the protectiveness of its standard, and arbitrarily declined to adopt the single-year cumulative exposure index as the form and averaging time for the secondary standard; and (3) EPA unreasonably failed to identify a level of air quality requisite to protect the public welfare against adverse effects from visible leaf injury. Industry Petitioners argue only that EPA failed to justify its decision to lower the secondary standard from its 2008 level. We hold that EPA has not explained its decision to set a target level of protection against tree growth loss based on a three-year average of cumulative, single-year ozone exposures, nor has it justified its decision not to specify any level of air quality requisite to protect against visible leaf injury. We reserve judgment on whether EPA reasonably declined to adopt the cumulative exposure index as the form and averaging time, and deny the remainder of the challenges.

We begin by reviewing EPA's secondary standard-setting process. EPA concentrated its review on the association between ozone exposure and "vegetation effects," focusing on tree growth loss (also referred to as "relative biomass loss"), crop yield loss, and visible leaf (or "foliar") injury. 80 Fed. Reg. at 65,370-71. CASAC agreed that those three effects were "appropriate surrogates [for] a wide range of damage that is adverse to public welfare" because ozone damage to trees, leaves, and crops can directly affect numerous resources and

ecosystem services that are important to the public and indirectly affect a wide array of ecosystem components and functions. J.A. 532-33.

In performing its analysis, EPA used an "exposure metric" called the "W126 index" to gauge how differing levels of ozone exposure correspond to effects on tree growth, crop yields, and visible leaf injury. 80 Fed. Reg. at 65,373. The W126 index, which EPA deemed to be the "most biologically relevant metric[] for consideration of [ozone] exposures eliciting vegetation-related effects," measures the cumulative amount of ozone to which a plant is exposed over a single three-month growing season. *Id.* at 65,373-74. W126 levels are expressed as parts-per-million hours (ppm-hrs). *Id.*

CASAC recommended that EPA use the single-year W126 exposure index as the form and averaging time for the secondary standard, J.A. 518, meaning that compliance with the standard would be measured based on a single growing season's worth of cumulative ozone exposure. CASAC advised EPA to set the level for the secondary standard within a range of 7 ppm-hrs and 15 ppm-hrs. Based on the data CASAC used, that corresponded to median annual tree growth loss between 2% and 5.2%. J.A. 518, 534-36, 631. CASAC cautioned that "at 17 ppm-hrs, the median tree species has 6% relative biomass loss," which would be "unacceptably high." J.A. 518. Regarding the other two surrogates, CASAC counseled that, to protect against loss of crop yield, "a level of 15 ppm-hrs for the highest 3-month sum in a single year is requisite," and to reduce foliar injury, a "level below 10 ppm-hrs is required." *Id.* All of those levels were based on single-year measuring periods, so CASAC advised that if EPA were to base its secondary standard on a three-year average of the relevant measurements, it should lower the level of the standard

"to protect against single unusually damaging years that will be obscured in the average." J.A. 536.

EPA agreed with CASAC's recommendation that 6% tree growth loss would be "unacceptably high." 80 Fed. Reg. at 65,406. However, as EPA explained, *id.* at 65,384, 65,392 n.197, CASAC's advice on that was based in part on a study of cottonwood trees, which are uniquely ozone-sensitive, and CASAC itself advised EPA that the "cottonwood data . . . receive[d] too much emphasis" in EPA's analysis, J.A. 533. After excluding the cottonwood data, EPA concluded that ozone exposure of 19 ppm-hrs was associated with 6% tree growth loss, and that 17 ppm-hrs of ozone exposure brought it down to 5.3% loss. 80 Fed. Reg. at 65,396, 65,407. EPA accordingly chose to focus on a standard "somewhat below" the 19 ppm-hrs level associated with 6% median tree growth loss. *Id.* at 65,406-07.

EPA then departed from CASAC's advice in several ways. First, it chose not to use the W126 cumulative seasonal exposure index as the form and averaging time of the standard, opting instead to retain the averaging time (8 hours) and form it had used in the 2008 rule (the three-year average of the fourth-highest daily level). EPA purported to use as a "benchmark," or target level of protectiveness, the high end of the range of W126 levels CASAC had recommended. Recall that CASAC had recommended that the maximum seasonal ozone exposure not exceed (the cottonwood-adjusted) 17 ppm-hrs in any single growing season. In deciding what exposure level correlated to CASAC's 17 ppm-hrs, however, EPA used a three-year average of anticipated seasonal exposure levels. Thus, EPA chose to set the standard at a level that it projected (based on a statistical analysis of past ozone exposure data) would "in nearly all instances" going forward restrict the *average* of three growing seasons' ozone exposures to the

equivalent of 17 ppm-hrs. *Id.* at 65,407. But by using that method to set the level, EPA arrived at a standard that statistically tolerates cumulative ozone exposures in a single growing season that are higher than CASAC's maximum recommended level. EPA also did not specify any level of ozone to protect against visible leaf injury or crop loss. The agency reasoned that data for those public-welfare harms were too uncertain to permit it to discern a level that would provide the requisite protections, and that the standard it set to protect against adverse effects from tree growth loss would at least provide "some increased protection" against visible leaf injury and crop damage. *Id.* at 65,407-08.

In sum, EPA ultimately chose to set the level of the secondary standard at 0.07 ppm while retaining the form and averaging time it had previously used. *Id.* at 65,410.

A. Environmental Petitioners' Challenges

The essence of the Environmental Petitioners' petition is that EPA did not adequately explain its deviations from CASAC's advice. "In order to enable judicial review and to satisfy its statutory obligation to explain its reasons for departing from CASAC, EPA must be precise in describing the basis for its disagreement with CASAC." *Mississippi*, 744 F.3d at 1355. Where EPA diverges from CASAC's scientific advice, there must be "substantial evidence in the record when considered as a whole which supports the Administrator's determinations." *Id.* (quoting *Lead Indus. Ass'n v. EPA*, 647 F.2d 1130, 1146 (D.C. Cir. 1980)).

i. *EPA reasonably used 17 ppm-hrs as the benchmark level to protect against adverse effects associated with tree growth loss.*

The Environmental Petitioners argue that, by establishing 17 ppm-hrs as the target level of protection against adverse welfare effects associated with tree growth loss, EPA impermissibly departed upward from CASAC's advice in two ways—first, by excluding the data from the cottonwood tree study from its tree growth loss analysis and, second, by focusing on limiting tree growth loss to under 6%, rather than the 2% target they say CASAC's analysis required. Setting aside for the moment EPA's decision to average the benchmark over three years, we conclude that EPA adequately explained its decision to exclude the cottonwood data and acted consistently with CASAC's advice in choosing to limit tree growth loss to under 6%.

Cottonwood Data. EPA reviewed seedling studies of twelve different tree species to determine the median percentile of tree growth loss at varying ozone levels. *See* 80 Fed. Reg. at 65,372. One of those studies—of cottonwood seedlings—significantly lowered the ozone level at which the twelve tree species experience 6% median growth loss. *See id.* at 65,384, 65,391-92. CASAC had itself relied on that study, *see* J.A. 537, but advised EPA that the cottonwood data had received "too much emphasis" because the study "did not control for ozone and climatic conditions," and the results "show[ed] extreme sensitivity to ozone compared to other studies," J.A. 533. EPA accordingly excluded the cottonwood data from its tree growth analysis, which increased the ozone level associated with 6% median growth tree loss from 17 ppm-hrs up to 19 ppm-hrs. 80 Fed. Reg. at 65,384, 65,391-92.

The Environmental Petitioners object that EPA arbitrarily disregarded CASAC's advice because, they say, CASAC never expressly advised EPA to disregard the cottonwood data altogether, and CASAC relied on it in setting its recommended exposure range. But we can only discern an unreasonable deviation where CASAC itself has been "precise about the basis for its recommendations." *Mississippi*, 744 F.3d at 1358. It was far from precise on the disputed point. It warned EPA to treat the cottonwood data with caution, but recommended a range of ozone levels in reliance on the median tree growth loss estimates (outlined in Table 6-1 of EPA's staff's second draft Policy Assessment), which weigh the cottonwood data equally with other seedling studies. *See* J.A. 537 (citing EPA, *Policy Assessment for the Review of the Ozone NAAQS, Second External Review Draft* 6-19, tbl. 6-1 (2014), J.A. 631). The Environmental Petitioners suggest that CASAC was only warning EPA to take care in describing the cottonwood data in the narrative portion of its Policy Assessment, not suggesting anything about how the data was actually used, but that makes little sense in the context of an exchange about quantitative growth loss estimates. In light of CASAC's mixed messages, we cannot say that EPA's decision to exclude the cottonwood data was arbitrary.

The 6% Target. Emphasizing CASAC's admonition that 6% tree growth loss would be "unacceptably high," EPA decided "to focus on a standard that would generally limit cumulative exposures to those for which the median [tree growth loss] estimate would be somewhat lower than 6%." 80 Fed. Reg. at 65,406-07. The Environmental Petitioners contend that CASAC "plainly specified" that 2% median growth loss was the requisite level to avoid adverse welfare effects related to tree growth loss, Envtl. Pet'rs Br. 42-44, but they misconstrue CASAC's advice.

CASAC did not identify 2% growth loss as the only sufficiently protective level, but as "*an* appropriate scientifically based value to *consider* as a benchmark of adverse impact," elaborating that it would be "appropriate to identify a *range* of levels of alternative W126-based standards that *includes* levels that aim for not greater than 2% [growth loss] for the median tree species." J.A. 537 (emphases added). CASAC in fact ultimately recommended that EPA set the standard between 7 ppm-hrs and 15 ppm-hrs, J.A. 518, which, based on the seedling data upon which CASAC relied (including the cottonwood data), corresponds to median annual tree growth loss between 2% and 5.2%, *see* J.A. 631. In other words, CASAC recommended that EPA consider limiting tree growth loss to 2% as the lower end of a range of permissible target levels. EPA followed CASAC's advice by considering a 2% growth loss target as part of a range of growth loss targets and determined that the studies underlying CASAC's low-end recommendation were insufficiently reliable to base the secondary standard on that low level of tree growth loss. *See* 80 Fed. Reg. at 65,394.

The Environmental Petitioners passingly disparage EPA's assessment of the studies associated with CASAC's 2% growth loss target, but that argument is equally unavailing. EPA reasonably explained why it thought those studies were unreliable, and its "evaluation of 'scientific data within its technical expertise'" is entitled significant deference. *See Miss. Comm'n on Envtl. Quality v. EPA*, 790 F.3d 138, 150, 155-56 (D.C. Cir. 2015) (quoting *City of Waukesha v. EPA*, 320 F.3d 228, 247 (D.C. Cir. 2003)). For instance, in support of its advice that EPA consider limiting median annual tree growth loss to 2%, CASAC highlighted a study purporting to show that stands of aspen that experienced ozone-induced biomass loss of 2% annually had cumulative biomass loss of 21% over seven years, suggesting that even relatively minor

annual growth loss can lead to significant loss over longer periods of time. J.A. 537. But CASAC had misread the study. As EPA explained, the aspen in that study in fact experienced more than 20% biomass loss annually, suggesting that their cumulative biomass loss was not much worse than their loss in any single year. 80 Fed. Reg. at 65,394.

EPA also clarified that the only other report CASAC relied on for its 2% target recommendation provided no explicit rationale for selecting that level and did not identify any new data in support of its recommendations. *See id.* at 65,394-95 & n.200. While it is true that EPA has cited that same report favorably in the past, *see, e.g.*, National Ambient Air Quality Standards for Ozone, 75 Fed. Reg. 2,938, 3,025 (Jan. 19, 2010), that alone does not make EPA's current assessment arbitrary. EPA must simply provide a "reasoned explanation" for its departure from its past position—which it has done. *See Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2125-26 (2016); *see also Mississippi*, 744 F.3d at 1351.

ii. *EPA did not adequately explain its decision to use a three-year average of the W126 index as the benchmark.*

The Environmental Petitioners raise two challenges pertaining to the W126 index, both as a benchmark and as a form and averaging time. First, they argue that EPA impermissibly departed from CASAC's advice by setting the secondary standard level using a three-year average W126 benchmark without lowering the level to protect against single-year exposures associated with median annual tree growth loss of 6%, which CASAC had advised was "unacceptably high." J.A. 518. They also contend that EPA arbitrarily disregarded CASAC's advice to adopt the W126 index as the form and

averaging time for the secondary standard. We remand to EPA on the first issue and do not reach the second.

The Three-Year Average Benchmark. CASAC advised EPA that basing the secondary standard on a "single-year period" would provide "more protection for annual crops and for the anticipated cumulative effects on perennial species" than a three-year average. J.A. 518. It explained that EPA's proposal to use a three-year averaging period was "not supported by the available data," J.A. 536, and that if EPA chose to "base the secondary standard on a three-year averaging period," then "the level of the standard should be revised downward such that the level for the highest three-month summation in any given year of the three-year period would not exceed [its] scientifically recommended" range of single-year, W126 exposure levels, J.A. 518. This was necessary, CASAC explained, to "protect against single unusually damaging years that will be obscured in the average." J.A. 536.

EPA argues it gave effect to CASAC's recommendation by using a three-year average benchmark of 17 ppm-hrs, which, after adjusting for the cottonwood data, was "somewhat below" the 19 ppm-hrs associated with 6% annual growth loss that CASAC had advised was "unacceptably high." 80 Fed. Reg. at 65,406-07 (quoting J.A. 518). But CASAC had advised a maximum level associated with 5.2% annual biomass loss, *see* J.A. 631, and it expressly cautioned that 6% median growth loss in a *single year* was unacceptable, *see* J.A. 518. EPA's use of a benchmark that *averages out* to less than 6% biomass loss over three years does not accord with CASAC's advice. Indeed, as commenters informed EPA during the rulemaking, *see* J.A. 1836-40, EPA's own air quality data suggests that many large national parks and wilderness areas that have met EPA's chosen three-year average 17 ppm-hrs benchmark—

areas that Congress considers significant to the public welfare, *see* 42 U.S.C. §§ 7470(2), 7472(a)—have meanwhile recorded single-year W126 values at and above 19 ppm-hrs, which is associated with "unacceptably high" *annual* biomass loss of 6% and higher. *See* J.A. 1061-64; 80 Fed. Reg. at 65,391. EPA critiques that data as marred by outdated handling procedures, but the agency acknowledged that other data derived through updated procedures produced results "similar to" those showing harmful exposure spikes. J.A. 1213. Critically, EPA points us to no data or analysis (based on new or old procedures) suggesting that the chosen benchmark prevents single seasonal exposures of 19 ppm-hrs or higher. In short, EPA has not demonstrated how its chosen benchmark protects against "unusually damaging years that will be obscured in the average." J.A. 536.

EPA alternatively defends its decision to use the three-year-average benchmark as providing a focus on public welfare effects of "potentially greater" significance than effects "associated with a single year" of exposure. 80 Fed. Reg. at 65,404. This position, however, is inconsistent with EPA's other actions. In establishing the secondary standard, for example, EPA heavily relied on data showing *annual* 6% median tree growth loss at 19 ppm-hrs, *see id.* at 65,406, and acknowledged the potential for a single season of high ozone exposure to "alter biomass allocation and plant reproduction in seasons subsequent to [that season's] exposure," thereby leading to "a negative impact on species regeneration in subsequent years," *id.* at 65,371-72; *see also* J.A. 740-41. EPA additionally recognized that "ozone effects in plants are cumulative," *id.* at 65,373 (quoting EPA, *Integrated Science Assessment* 2-44 (2013)), meaning that the adverse vegetative effects from single, high-ozone years are not offset by subsequent low-ozone years. EPA has identified no contrary

evidence in the record demonstrating why these single-year effects matter less than a three-year average.

We therefore remand this issue for EPA to either lower the standard to protect against unusually damaging cumulative seasonal exposures that will be obscured in its three-year average, or explain its conclusion that the unadjusted average is an appropriate benchmark notwithstanding CASAC's contrary advice. Alternatively, EPA could adopt the single-year W126 exposure index as the form and averaging time, which would presumably moot any problems with the way it translated that index to use as a benchmark.

The Form and Averaging Time. CASAC also recommended that EPA use the single-year W126 index as the form and averaging time for the secondary standard. J.A. 518. EPA instead chose to retain the existing form and averaging time—the three-year average of the fourth-highest daily maximum eight-hour concentration. Adopting the W126 index as the form and averaging time was unnecessary, EPA explained, because the ozone exposure levels associated with the existing form and averaging time and a three-year average of the W126 index are "highly correlated," especially at lower levels, and "future control programs designed to help meet a primary [ozone] standard based on the" current form and averaging time should "provide similar improvements in terms of the 3-year average of the annual W126 metric." J.A. 1253; *see also* 80 Fed Reg. at 65,400-01, 408-09.

The Environmental Petitioners argue that EPA did not justify its decision not to adopt the W126 index as the form and averaging time. We lack any basis to assess the reasonableness of EPA's actions, however, because a critical piece of the puzzle is missing. To review: EPA chose not to use the W126 index as the form and averaging time because it found that

ozone exposure levels associated with the existing form and averaging time are "highly correlated" to a three-year average of the W126 index. But, as discussed, EPA never explained why it is reasonable to focus on a three-year average of the W126 index in the first place. Therefore, we cannot assess the relevance of the claim that the two are "highly correlated." EPA's reconsideration on remand of the three-year averaging issue should supply us with the information necessary to resolve this question, or, if EPA chooses to follow CASAC's advice to lower the standard to control for unusually high single years, potentially moot the Environmental Petitioners' concern that the current form tolerates even three-year average W126 levels higher than 17 ppm-hrs during periods when a 0.07 ppm, 8-hour level is met. Accordingly, we decline to reach this question.

iii. *EPA arbitrarily failed to identify a level of air quality requisite to protect against adverse effects from visible leaf injury.*

The Environmental Petitioners also fault EPA for deciding not to specify a level of air quality to protect against adverse welfare effects from ozone-induced visible leaf injury. Because EPA failed to offer a reasoned explanation, we remand for it to reconsider.

EPA has found that the "strongest evidence for effects from [ozone] exposure on vegetation is from controlled exposure studies, which 'have clearly shown that exposure to [ozone] is causally linked to visible foliar injury.'" 80 Fed. Reg. at 65,370 (quoting EPA, *Integrated Science Assessment* 1-15). Relying on that evidence, CASAC advised EPA of its "scientific judgment" that "a level of 10 ppm-hrs is required to reduce foliar injury." J.A. 538. EPA nonetheless concluded that there were too many "uncertainties and complexities" in

the evidence to specify a level of air quality to protect against leaf injury. *See* 80 Fed. Reg. at 65,407-08. But the mere invocation of "substantial uncertainty" is not a justification for the agency's failure to fulfill its statutory mandate. *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 52 (1983) (internal quotation marks omitted). EPA "must explain the evidence which is available, and must offer a 'rational connection between the facts found and the choice made.'" *Id.* (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)). Where CASAC has "reached a scientific conclusion that adverse [welfare] effects [are] likely to occur," EPA must "explain why the evidence on which CASAC relied cannot support the degree of confidence CASAC placed in it." *Mississippi*, 744 F.3d at 1357; *see also Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 529-30 (D.C. Cir. 2009). We defer to EPA's judgment that the available evidence is too uncertain only when the agency reasonably explains its decision, *see State Farm*, 463 U.S. at 51-53, and EPA has failed to carry that burden here.

None of the identified uncertainties justifies EPA's decision not to set a standard to protect against visible leaf injury. For instance, EPA argues that it lacked criteria for assessing the welfare effects of visible leaf injury, but that does not square with its conclusion in the Integrated Science Assessment (compiling all available scientific criteria) that visible leaf injury "has been well characterized and documented over several decades." J.A. 985-86. EPA had at its fingertips a wealth of new data regarding visible leaf injury, including new controlled exposure studies, multiyear field surveys, and biomonitoring data of ozone-induced visible leaf injury on public lands. J.A. 749. Using that data, EPA analyzed how visible leaf injury affects "ecosystem services" like aesthetic value and recreation on "Class I" lands—lands that "have particular public welfare significance." J.A. 749-50,

1036-44; *see also* 42 U.S.C. §§ 7470(2), 7472(a). CASAC pointed out that those same ecosystem services are relevant in identifying "damage that is adverse to public welfare." J.A. 532-33.

CASAC concluded, based on the same data available to EPA, that "a level of 10 ppm-hrs is required to reduce foliar injury." J.A. 538. EPA counters that "decreases in leaf injury [also occur] with decreasing ozone exposures across a range of values well above 10 ppm-hrs," and that CASAC recommended a range of ozone levels that included values above 10 ppm-hrs. *See* EPA Br. 89; 80 Fed. Reg. at 65,395-96. Be that as it may, EPA has not explained why, unlike CASAC, it was unable to choose a level at all. Indeed, "[b]ecause the EPA failed to identify any target level, we need not decide whether it was reasonable for the agency to reject the target recommended by . . . CASAC." *Am. Farm Bureau*, 559 F.3d at 530.

EPA objects that it only found that visible leaf injury has the "*potential* to be adverse to the public welfare," and that the Clean Air Act does not require EPA "to identify a precise, quantified level of public welfare protection for every potentially adverse public welfare impact" it considers when revising the secondary standard. EPA Br. 87-88 (first quoting 80 Fed. Reg. at 65,388). But EPA has failed to justify its inaction where CASAC unequivocally found that "damage to resource use from foliar injury" was an "adverse welfare effect." J.A. 518. In light of CASAC's "scientific conclusion that adverse [welfare] effects were likely to occur" from visible leaf injury, EPA's inaction in the face of such effects is "unacceptable." *Mississippi*, 744 F.3d at 1357. Nor was it sufficient for EPA simply to conclude that the standard set to protect against tree growth loss sufficed because it provided "additional" protection against leaf injury. 80 Fed. Reg. at

65,407-08. Nothing in the record suggests that tree growth loss is a surrogate for leaf injury. EPA's assurance that the standard set to protect against tree growth loss will provide "incidental[]" protection against visible leaf injury "cannot save its decision." *Am. Farm Bureau*, 559 F.3d at 529-30.

Other purported uncertainties do not support EPA's inaction. For instance, EPA asserts that the Administrator "lacked evidence that would allow her to measure the relationship between leaf injury and other vegetation effects that she might find adverse," EPA Br. 87, but EPA and CASAC both determined that visible leaf injury itself can "impact the public welfare" by harming "aesthetic value and outdoor recreation" in public lands, 80 Fed. Reg. at 65,379; J.A. 533. Visible leaf injury impairs a variety of outdoor activities, including "scenic viewing, wildlife watching, hiking, and camping, that are of significance to the public welfare" and generate "millions of dollars in economic value" annually. 80 Fed. Reg. at 65,381; J.A. 749. Much of the documented visible leaf injury is in Class I areas, *see* 80 Fed. Reg. at 65,378, the preservation and enjoyment of which is a "clear public interest," *id.* at 65,377 (quoting 73 Fed. Reg. at 16,496). Those interests are manifest whether or not the relationship between leaf injury and other vegetative effects has been well characterized.

This case is a far cry from *Center for Biological Diversity v. EPA*, where we upheld EPA's determination that the available data was too uncertain to support setting a standard for acid rain precursors. 749 F.3d 1079 (D.C. Cir. 2014). In the administrative record in that case, EPA "explained in great detail" why the scientific uncertainties were so "unusually profound" that EPA "could not form" a reasoned judgment as to a requisite level of protection. *Id.* at 1088, 1090-91. CASAC concurred with that assessment. *Id.* at 1086 n.11. Here, in

contrast, CASAC expressed its scientific judgment that a target level of 10 ppm-hrs was "required to reduce" leaf injury. J.A. 538. EPA's failure to explain why it could not accept data that CASAC deemed informative falls short of reasoned decisionmaking.

B. Industry Petitioners' Challenge

The Industry Petitioners glancingly claim that EPA failed to explain why, when faced with the same scientific evidence that was available in 2008, it revised the secondary standard downward. As we have explained in reference to the primary standard, it is a "conceptual error" to assume that "EPA is somehow bound by" a prior standard in a subsequent review. *Mississippi*, 844 F.3d at 1344. What is more, EPA did in fact rely on new scientific evidence, including more than 400 new studies and various new analyses of existing data, which "strengthen[ed] [its] confidence" that the 2008 secondary standard was no longer as demanding as was "requisite" to protect the public welfare. *See* 80 Fed. Reg. at 65,369-70, 65,384. "[A]dditional certainty . . . that the line marked by the term 'requisite' has shifted" is a reasonable—if not paradigmatic—basis for EPA to revise its prior standards. *Mississippi*, 844 F.3d at 1344.

IV. Cross-Cutting NAAQS Challenges

We now turn to the arguments of State and Industry Petitioners that EPA failed to take into account all the factors required by law when setting the primary and secondary standards. First, they fault EPA for not considering the "overall adverse economic, social, and energy impacts" of the revised NAAQS. Second, they argue that the Clean Air Act requires EPA to consider the impact of background ozone on the ability of states to attain the revised NAAQS. And, lastly, they argue that EPA's interpretation of the Act, which excluded

consideration of background ozone, leaves no "intelligible principle" by which to set NAAQS, creating a constitutional nondelegation issue. None of these arguments has merit.

A. Adverse Impacts

According to section 109(b) of the Clean Air Act, EPA must set the NAAQS at a level "requisite to protect the public health" and "the public welfare." 42 U.S.C. § 7409(b). The NAAQS should be revised periodically "as may be appropriate." *Id.* § 7409(d)(1). Industry Petitioners invoke the term "appropriate" and claim that "an evaluation of 'appropriateness' must take into account the adverse socioeconomic and energy impacts" of the revised NAAQS. Indus. Pet'rs Br. 33. To bolster this argument, they point to *Michigan v. EPA*, which held that the phrase "appropriate and necessary" in section 112(n) of the Act—governing power plants' hazardous air pollution—"requires at least some attention to cost" because "'appropriate' is 'the classic broad and all-encompassing term that naturally and traditionally includes consideration of all the relevant factors.'" 135 S. Ct. at 2707 (quoting *White Stallion Energy Ctr., LLC v. EPA*, 748 F.3d 1222, 1266 (D.C. Cir. 2014) (Kavanaugh, J., concurring in part and dissenting in part)).

In *Whitman*, the Supreme Court considered a similar argument regarding NAAQS-setting, with challengers asserting that the words "requisite" and "adequate" in section 109(b)(1) meant that EPA must consider the economic costs of implementing revised NAAQS. 531 U.S. at 468. The *Whitman* Court rejected this reading, finding that the plain text of the Act "unambiguously bars cost considerations from the NAAQS-setting process." *Id.* at 471. The text of the Act refers only to the "public health," and though it uses the terms "requisite" and "adequate," the *Whitman* Court found it "implausible that

Congress would give to the EPA through these modest words the power to determine whether implementation costs should moderate national air quality standards," especially given that other Clean Air Act provisions "explicitly permit[] or require[] economic costs to be taken into account in implementing [other] air quality standards." *Id.* at 467-68.

According to *Whitman,* the Act commands EPA to follow a specific process when setting primary NAAQS: "[I]dentify the maximum airborne concentration of a pollutant that the public health can tolerate, decrease the concentration to provide an 'adequate' margin of safety, and set the standard at that level." *Id.* at 465. Industry Petitioners argue that this account of the NAAQS-setting process is incomplete, and that consideration of other "adverse economic, social, and energy impacts" is required. But at bottom this is the same argument rejected in *Whitman*, with the "costs" of the revised and more stringent NAAQS merely reframed as "impacts." In listing those impacts, Industry Petitioners emphasize that stricter standards could reduce gross domestic product, drive up energy costs, "stymie economic growth by forcing the early retirement of facilities unable to implement controls, contributing to job losses[,] discourag[e] existing businesses from expanding in nonattainment regions[,] and driv[e] away potential new investments," Indus. Pet'rs Br. 35, but these "impacts" are no different than the "economic costs" that the petitioners in *Whitman* worried "might produce health losses sufficient to offset the health gains achieved in cleaning the air—for example, by closing down whole industries and thereby impoverishing the workers and consumers dependent upon those industries," 531 U.S. at 466. *Whitman* forbids EPA from taking these considerations into account, however denominated.

As for Petitioners' reliance on *Michigan* and the Act's use of the word "appropriate," that argument fails twice over. We have already rejected the idea that "appropriate" in section 109(d) requires consideration of economic costs. *Am. Trucking Ass'ns, Inc. v. EPA*, 175 F.3d 1027, 1040-41 (D.C. Cir. 1999). Further, *Michigan* involved a different provision of the Clean Air Act, and the Court was careful to emphasize that its reading of "appropriate" was dependent on the statutory context, explaining that "[t]here are undoubtedly settings in which the phrase 'appropriate and necessary' does not encompass cost." 135 S. Ct. at 2707. Indeed, *Michigan* explicitly distinguished section 112(n) from section 109(b)(1), explaining yet again that the criteria for setting NAAQS "do[] not encompass cost." *Id.* at 2709.

Industry Petitioners also point to section 109(d)(2)(C) of the Act, which requires CASAC to advise EPA "of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance" of revised NAAQS. 42 U.S.C. § 7409(d)(2)(C). According to Petitioners, the fact that CASAC is required to supply information to EPA about the "social, economic, or energy effects" of the revised NAAQS implies that EPA is obliged to consider that information in setting the NAAQS. That argument, however, was also raised and rejected in *Whitman*, where the Supreme Court concluded that this provision was intended to "enable the [EPA] to assist the States in carrying out their statutory role as primary *implementers* of the NAAQS," but had "no bearing upon whether cost considerations are to be taken into account in *formulating* the [NAAQS]." 531 U.S. at 470-71 (second emphasis added).

Petitioners' remaining arguments rely heavily on Justice Breyer's concurrence in *Whitman*, in which he urged that the Act "does not require the EPA to eliminate every health risk,

however slight, at any economic cost, however great, to the point of hurtling industry over the brink of ruin, or even forcing deindustrialization." *Id.* at 494 (Breyer, J., concurring in part and concurring in the judgment) (internal quotation marks omitted). But the concurrence does not govern our decision, and in any event, Justice Breyer agreed with the majority that economic costs could not be considered in setting NAAQS. *Id.* at 490.

B. Background Ozone

Under the Clean Air Act, "background ozone" is ozone "that would exist in the absence of any man-made emissions inside the U.S." 80 Fed. Reg. at 65,436. This includes ozone generated by both natural sources anywhere (*e.g.*, a wildfire) and foreign man-made sources (*e.g.*, a factory in Mexico). *See id.* According to the Industry and State Petitioners, EPA failed to take into account background ozone when setting the new NAAQS. As a result, certain areas of the country with high levels of background ozone fail right off the bat to meet the new standards, which is unlawful, Petitioners argue, because the Act requires EPA to set NAAQS that are attainable. Therefore, they contend EPA's failure to consider background ozone when revising the NAAQS was arbitrary and capricious.

The text of the Act forecloses this argument. Section 109(b) directs EPA to set NAAQS "requisite to protect the public health" and "the public welfare." 42 U.S.C. § 7409(b). Accepting Petitioners' argument would mean that, if the level of background ozone in any part of the country exceeds the level of ozone that is "requisite to protect the public health," EPA must set the NAAQS at the higher, unhealthy level. The statutory text leaves no room for this hidden caveat: "[W]hen Congress directs an agency to consider only certain factors in reaching an administrative decision, the agency is not free to

trespass beyond the bounds of its statutory authority by taking other factors into account." *Lead Indus.*, 647 F.2d at 1150.

Petitioners argue that states cannot be required to do the impossible, and the presence of background ozone will make it impossible to achieve attainment. But Congress recognized the possibility that some states could not achieve attainment because of the presence of background ozone and, rather than watering down the nationally applicable standards, allowed EPA to relax enforcement on a case-by-case basis. When ozone exceedances are caused by events beyond a state's control, three enforcement exceptions in the Act allow the state some leeway as a practical matter: A showing of an "Exceptional Event" may allow a state to avoid a nonattainment designation. *See* 42 U.S.C. § 7619(b) (defining "exceptional event" as one caused by "human activity that is unlikely to recur at a particular location" or "a natural event," and that "affects air quality" but is "not reasonably controllable or preventable"). And a state that meets the requirements of either the "International Transport" or "Rural Transport" provision may avoid having its state implementation plan (SIP) rejected due to the exceedance. *See id.* §§ 7509a(a)-(b) (directing EPA to approve a SIP if attainment is not met due to "emissions emanating from outside of the United States"), 7511a(h) (excluding nonattainment regions that themselves "do not make a significant contribution" to ozone levels, so long as they are not within or next to a "Metropolitan Statistical Area"). These provisions make little sense under Petitioners' reading of the Act. And even if, as the states claim, it is more difficult to meet the terms of these exceptions than EPA asserts, State Pet'rs Br. 34-44, the fact remains that Congress decided that EPA should account for background ozone during enforcement, not when setting standards.

We rejected a version of Petitioners' argument in *American Petroleum Institute v. Costle*, 665 F.2d 1176 (D.C. Cir. 1981). There, the City of Houston urged us to find that EPA's primary ozone standard was arbitrary because "natural factors ma[de] attainment impossible" for that City. *Id*. at 1185. We emphasized that "Congress [was] aware that some regions [were] having difficulty in meeting the national standard," and had responded not by requiring EPA to ease the NAAQS but by developing a distinct program for nonattainment areas that gives states resources to bring those areas into compliance while also protecting the public health and welfare. *Id.* at 1185-86. Industry Petitioners argue that *Costle*, a case about one city, is not binding when "*numerous areas* of the country cannot attain the NAAQS due to background levels" of ozone. Indus. Pet'rs Br. 26-27 (emphasis added). But neither our precedent nor the Act allows for such a distinction. Indeed, in *Costle*, we rejected the argument that EPA had ignored comments related to the issue of whether "attainment of the proposed standards would be precluded in *most areas* of the nation by natural background levels of ozone." 665 F.2d at 1190 (emphasis added) (internal quotation marks omitted). Simply put, "the question of attainability is not relevant to the setting of ambient air quality standards under the Clean Air Act." *Id.*

State Petitioners argue that *Costle* is distinguishable because the petitioner there was not a state, and several parts of the Act place the burden to attain NAAQS on states rather than cities. Indus. Pet'rs Br. 25-26 (citing 42 U.S.C. §§ 7407(a), 7410(a)(2)(C)); State Pet'rs Br. 32-33 (citing 42 U.S.C. § 7407(a)). True, if Houston cannot attain NAAQS due to background ozone, the Act places the burden on Texas, not the City, to identify a plan to bring the area into attainment. But *Costle* was not limited to its particular facts—it relied instead on the premise that "[a]ttainability and technological feasibility

are not relevant considerations in the promulgation of [NAAQS]," 665 F.2d at 1185, a premise that does not change whether it is a state or city arguing that the NAAQS are unattainable. Congress intended NAAQS to be *national* ambient air quality standards, and EPA is not required to "tailor national regulations to fit each region or locale." *Id.* Because the Clean Air Act prohibits EPA from adjusting for background ozone in setting the NAAQS, EPA did not act unlawfully or arbitrarily and capriciously in setting the NAAQS without regard for background ozone.

C. Nondelegation

Finally, State Petitioners argue that EPA's interpretation of the Clean Air Act runs afoul of the Constitution's limit on the authority of Congress to delegate lawmaking power to an agency. "Congress generally cannot delegate its legislative power to another Branch" unless it provides an "intelligible principle" for the agency to follow in exercising that delegated power. *Mistretta v. United States*, 488 U.S. 361, 372 (1989) (second quoting *J.W. Hampton, Jr., & Co. v. United States*, 276 U.S. 394, 409 (1928)). We refer to this as the nondelegation doctrine. *Id.*

State Petitioners do not argue that the Act lacks an intelligible principle. Nor could they, as the Supreme Court held in *Whitman* that Congress provided one when it directed EPA to set NAAQS "requisite to protect public health"—meaning "sufficient, but not more than necessary." 531 U.S. at 473-74 (internal quotation marks omitted). Instead, Petitioners claim that EPA's *interpretation* of the Act has *created* a nondelegation problem by "ignor[ing] the 'intelligible' principle[] that Congress provided." State Pet'rs Br. 45. But in a nondelegation challenge, "the constitutional question is whether the *statute* has delegated legislative power to the

agency." *Whitman*, 531 U.S. at 472 (emphasis added). EPA cannot alter the text of the Clean Air Act, so EPA's interpretation of the Act cannot alter whether the Act included an intelligible principle. *Cf. id.* at 473 ("Whether the statute delegates legislative power is a question for the courts, and an agency's [interpretation] has no bearing upon the answer."). There is no nondelegation issue here.

V. Grandfathering Challenge

Finally, we address EPA's decision to allow those who completed applications for preconstruction permits before the 2015 Rule was adopted to demonstrate compliance with the previous NAAQS rather than the new, more stringent standards. *See* 80 Fed. Reg. at 65,431-35; 40 C.F.R. §§ 51.166(i)(11), 52.21(i)(12). The Environmental Petitioners argue that this "grandfathering" provision violates the Clean Air Act, which requires permit applicants to demonstrate compliance with "any" NAAQS regardless of when their application was completed. *See* Envtl. Pet'rs Br. 57-62. EPA argues that the Act is ambiguous with respect to the treatment of permit applications pending at the time that new NAAQS are adopted, and that the grandfathering provision is lawful as a reasonable interpretation of the Act. We find no such ambiguity.

Under section 165(a) of the Act, before beginning construction of any "major emitting facility," the owner or operator must demonstrate "that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any . . . national ambient air quality standard." 42 U.S.C. § 7475(a). This "demonstration requirement" is part of EPA's PSD program. Generally, EPA requires permit applicants to demonstrate compliance with the NAAQS in effect at the time a permit is issued. 80 Fed. Reg.

at 65,433; EPA Br. 130. The revised ozone NAAQS were effective on December 28, 2015, so under the usual rule no permit could be granted for the construction of a major emitting facility after that date unless the operator demonstrated that the facility would not cause or contribute to ozone levels in excess of the revised NAAQS. But when EPA issued the 2015 Rule, it waived that requirement for projects that either (1) had complete permit applications as of October 1, 2015, or (2) had a draft permit or preliminary determination publicly noticed before December 28, 2015.[1] *See* 80 Fed. Reg. at 65,460 (codified at 40 C.F.R. §§ 51.166(i)(11), 52.21(i)(12)).

In the 2015 Rule, EPA asserted the need for this grandfathering provision because section 165(c) of the Act instructs EPA and state permitting authorities that "[a]ny completed permit application . . . shall be granted or denied not later than one year after the date of filing such completed application." 42 U.S.C. § 7475(c). As EPA sees it, requiring applicants with already-completed permit applications to demonstrate compliance with the newly revised NAAQS "could hinder compliance with the requirement under section 165(c) to issue a permit within one year." 80 Fed. Reg. at 65,433-34. According to EPA, the Act does not "clearly address" how to handle such a situation, therefore it was "permissible under the discretion provided by the [Act] for the EPA to craft a reasonable implementation regulation that balances competing objectives of the statutory PSD program." *Id.* at 65,433.

We evaluate EPA's interpretation of the Act under *Chevron*. "If the Act unambiguously authorizes or forecloses EPA's . . . rule, step one of the *Chevron* analysis requires that

[1] The second type of waiver was necessary because not all agencies that issue preconstruction permits issue formal completeness determinations. *See* 80 Fed. Reg. at 65,432-33.

we follow Congress's express policy choice. If the Act is unclear on the matter, step two of *Chevron* requires that we defer to EPA's reasonable interpretation." *Sierra Club v. EPA*, 536 F.3d 673, 677 (D.C. Cir. 2008) (citing *Chevron*, 467 U.S. at 842-43). We hold, under step one of *Chevron*, that the Act unambiguously precludes EPA's interpretation of section 165(a) and vacate the grandfathering provision of the Final Rule.

The revised NAAQS were effective on December 28, 2015. As a result of the grandfathering provision, a major emitting facility that demonstrates compliance with the previous NAAQS of 0.075 ppm, but not the revised NAAQS of 0.07 ppm, can still be built even after the new NAAQS take effect, provided the project had completed its application within certain time limits. That is exactly what the plain text of the Act forbids: the "construction" of a "major emitting facility" with emissions that will "cause, or contribute to, air pollution in excess of *any* . . . [NAAQS]." 42 U.S.C. § 7475(a) (emphasis added). "Read naturally, the word 'any' has an expansive meaning, that is 'one or some indiscriminately of whatever kind.'" *United States v. Gonzalez*, 520 U.S. 1, 5 (1997) (quoting WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 97 (1976)). EPA gives no reason why, in the context of section 165(a), the word "any" should not carry its natural meaning and hence refer to the newly revised NAAQS once they have become effective.

In *New York v. EPA*, we observed that the meaning of "any" can differ if, for instance, the "Supreme Court has required heightened standards of clarity to avoid upsetting fundamental policies," or if there would be "'strange and indeterminate results' that would emerge from adopting the natural meaning of 'any'" in a statute. 443 F.3d 880, 885-86 (D.C. Cir. 2006) (quoting *Nixon v. Mo. Mun. League*, 541 U.S.

125, 132-33 (2004)). But none of those factors is present here. Indeed, NAAQS are set based on the "maximum airborne concentration of a pollutant that the public health can tolerate," *Whitman*, 531 U.S. at 465, so the "strange" result would be if the Act, focused as it is on the protection of public health, left the door open for construction projects that will cause or contribute to ozone levels higher than the "public health can tolerate." Thus, we read section 165(a) to forbid construction of any facility that cannot demonstrate compliance with "any" effective NAAQS.

There is no ambiguity created by reading section 165(a) alongside the timeliness requirement of section 165(c). EPA thought the grandfathering provision necessary to allow permitting authorities to "issue a permit within one year." 80 Fed. Reg. at 65,433-34. But the Act does not require that a permit be "*issued*" within one year. It requires only that the permitting authority "grant[] *or* den[y]" completed permit applications within one year. 42 U.S.C. § 7475(c) (emphasis added). "[N]othing in the [Act] provides for issuance of a [] permit as a matter of right." *Am. Corn Growers Ass'n v. EPA*, 291 F.3d 1, 12 (D.C. Cir. 2002) (internal quotation marks omitted). If a permit applicant has not shown that it can meet the new NAAQS, EPA or a state permitting authority can comply with the timeliness requirement of section 165(c) by denying the application.

This reading is confirmed by the structure of the Act. When amending the Act to add section 165(a)'s demonstration requirement, Congress expressly exempted projects that had begun construction prior to passage of that amendment. *See* 42 U.S.C. § 7475(a); Pub. L. No. 95-95, § 127(a), 91 Stat. 685, 735-39 (Aug. 7, 1977). The inclusion of this grandfather clause implies that Congress did not intend EPA to have some inherent grandfathering authority, and that, in the future,

NAAQS would be enforced as enacted. *See Andrus v. Glover Constr. Co.*, 446 U.S. 608, 616-17 (1980) ("Where Congress explicitly enumerates exceptions to a general prohibition, additional exceptions are not to be implied, in the absence of evidence of a contrary legislative intent."). Congress has spoken on this question, and EPA cannot displace the statutory determination simply because the agency's "preferred approach [might] be better policy." *See Engine Mfrs. Ass'n v. EPA*, 88 F.3d 1075, 1089 (D.C. Cir. 1996). Nor does it matter that EPA has evidently relied on this grandfathering authority in the past. *See, e.g.*, National Ambient Air Quality Standards for Particulate Matter, 78 Fed. Reg. 3,086, 3,258-59 (Jan. 15, 2013) (adopting grandfathering provision for revised NAAQS); Regulations for Implementing Revised Particulate Matter Standards, 52 Fed. Reg. 24,672, 24,683 (July 1, 1987) (same). "[P]revious statutory violations cannot excuse the one now before the court." *New Jersey v. EPA*, 517 F.3d 574, 583 (D.C. Cir. 2008).

The Ninth Circuit addressed a related issue in *Sierra Club v. EPA*, 762 F.3d 971 (9th Cir. 2014). EPA had failed to grant or deny a completed permit application within one year as required by section 165(c), and in the meantime the agency had lowered the relevant NAAQS. *See id.* at 974-75. After the applicant filed suit to compel issuance of the permit under the old standards, EPA initially took the position—contrary to its stance here, but consistent with our holding—that the Act prohibited it "from granting the Permit unless [the applicant] complies with the superseding standards." *Id.* at 975. Then, after a "policy review," EPA changed its mind and asserted "inherent grandfathering authority," *id.*, relying on the alleged tension that it advances here between sections 165(a) and (c), *see id.* at 978. The Ninth Circuit discerned no such tension and held that, under *Chevron* step one, EPA must "apply the

regulations in effect at the time of the permitting decision." *Id.* at 979.

After concluding that EPA had violated the plain terms of the Act, the *Sierra Club* court added in dicta that the agency could create a grandfathering exception through "formal notice and comment rulemaking." *Id.* at 982. The Ninth Circuit cited 42 U.S.C. § 7601(a), which includes a general grant of authority to the EPA Administrator to "prescribe such regulations as are necessary" to carry out the Act. EPA argues that we should follow the Ninth Circuit's dicta because EPA used formal rulemaking to grandfather these applications. But we decline to do so. Dicta is never binding on any court, *Glus v. Brooklyn E. Dist. Terminal*, 359 U.S. 231, 235 (1959), nor is it persuasive here, because it is fundamentally incorrect. A general grant of authority cannot displace the clear, specific text of the Act. *Air All. Hous. v. EPA*, 906 F.3d 1049, 1061 (D.C. Cir. 2018) ("[A]n agency may not circumvent specific statutory limits on its actions by relying on separate, general rulemaking authority."). As the *Sierra Club* court recognized, the Act requires compliance with the NAAQS that are in effect "at the time of the permitting decision." 762 F.3d at 979. EPA has no authority to change that provision of the Act, whether by ad hoc waiver or rulemaking. *See also Citizens to Save Spencer Cty. v. EPA,* 600 F.2d 844, 873 (D.C. Cir. 1979) (explaining that a general power cannot "provide the [EPA] Administrator with Carte blanche authority to promulgate any rules, on any matter relating to the [Act], in any matter that the Administrator wishes").

The grandfathering provision of the 2015 Rule, as codified at 40 C.F.R. §§ 51.166(i)(11) and 52.21(i)(12), contradicts Congress's "express policy choice" not to allow construction which will "cause or contribute to" nonattainment of "any" effective NAAQS, regardless of when they are adopted or

when a permit was completed. Accordingly, we grant the petition for review with respect to the grandfathering provision, and vacate that portion of the Rule.

* * *

In setting the secondary standard, EPA failed to justify its decision to use a three-year average benchmark without lowering the level to account for single-year spikes in ozone exposures, and it arbitrarily declined to set a level to protect against adverse welfare effects associated with visible leaf injury. EPA also impermissibly allowed sources that had completed applications for preconstruction permits before the 2015 Rule was adopted to demonstrate compliance with the previous NAAQS rather than the new, more stringent primary and secondary standards. Accordingly, we grant those portions of the Environmental Petitioners' petition, vacate the grandfathering provision, and remand to EPA for reconsideration of the secondary standard.

So ordered.