

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued December 16, 2024

Decided June 26, 2026

No. 24-1050

COMMONWEALTH OF KENTUCKY, ET AL.,
PETITIONERS

v.

ENVIRONMENTAL PROTECTION AGENCY AND LEE M. ZELDIN,
IN HIS OFFICIAL CAPACITY AS ADMINISTRATOR OF THE U.S.
ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENTS

ALLIANCE OF NURSES FOR HEALTHY ENVIRONMENTS, ET AL.,
INTERVENORS

Consolidated with 24-1051, 24-1052, 24-1073, 24-1091

On Petitions for Review of a Final Action
of the Environmental Protection Agency

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Keri N. Powell was on the brief for *amicus curiae* WE ACT for Environmental Justice, et al. in support of respondents.

Jaclyn Lopez and *Rachel Curran* were on the brief for *amicus curiae* Environmental Protection Network in support of respondents.

Elizabeth J. Hubertz was on the brief for *amicus curiae* National Parks Conservation Association in support of respondents.

Jessica H. Arnell 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 respondents.

Before: MILLETT and CHILDS, *Circuit Judges*, and GINSBURG, *Senior Circuit Judge*.

Opinion for the Court filed by *Senior Circuit Judge* GINSBURG.

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GINSBURG, *Senior Circuit Judge*: Two groups of petitioners challenge a 2024 Environmental Protection Agency rule revising the National Ambient Air Quality Standards (NAAQS) for particulate matter. Their claims specifically concern the decision of the Administrator to revise the primary annual standard for fine particulate matter (PM_{2.5}) from 12 µg/m³ to 9 µg/m³. In so doing, he expressly reconsidered a decision of the previous Administrator who in 2020 had decided to leave the 12 µg/m³ standard in place based upon the scientific evidence then available.¹

A group of industry petitioners argue that the EPA lacked statutory authority to promulgate the new rule; several states contend the EPA’s decision-making was tainted by impermissible “environmental justice” considerations; and all claim the agency action was arbitrary and capricious in violation of the Clean Air Act, 42 U.S.C. § 7607(d)(9)(A).

After initially defending the new rule, the EPA now moves to vacate the rule on the grounds that it exceeded its statutory authority and acted unreasonably by failing to consider costs. Because these arguments lack merit, we deny the petitions for review and the motion for vacatur.

I. Background

The Clean Air Act (CAA) requires that the Administrator (1) publish a list of air pollutants, (2) issue air quality criteria

¹ In 2025, after this case had been fully briefed and argued, President Trump appointed a new Administrator of the EPA. For purposes of this opinion, “the Administrator” refers to the Administrator appointed by President Biden, who approved the 2024 Final Rule. References to “the previous Administrator” are to the Administrator during President Trump’s first term, who approved the 2020 Final Rule.

for those pollutants, and (3) promulgate a primary and a secondary air quality standard for each pollutant for which criteria have been issued. *See generally* 42 U.S.C. §§ 7408-09. Although this case most directly concerns a revision to the primary standard for PM_{2.5}, it necessarily implicates steps antecedent to setting the NAAQS for fine particulate matter.

A. Statutory Framework

The NAAQS-setting process begins with the statutory requirement in § 7408 that the Administrator publish and “from time to time thereafter revise” a list of air pollutants “[f]or the purpose of establishing [NAAQS].” § 7408(a)(1). Once the Administrator lists an air pollutant, he must publish air quality criteria for that pollutant, which form the scientific basis upon which the corresponding standard relies. § 7408(a)(2). Accordingly, the criteria must “accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities.” *Id.*²

² As far as “practicable,” the criteria shall include the following information:

- (A) those variable factors (including atmospheric conditions) which of themselves or in combination with other factors may alter the effects on public health or welfare of such air pollutant;
- (B) the types of air pollutants which, when present in the atmosphere, may interact with such pollutant to produce an adverse effect on public health or welfare; and

Further, § 7408(c) provides that “[t]he Administrator shall from time to time review, and, as appropriate, modify, and reissue any criteria . . . issued pursuant to this section.” The EPA complies with the requirement by preparing an “Integrated Science Assessment,” which is a “comprehensive evaluation and synthesis of the policy-relevant science” that “serves as the scientific foundation for the review of” the NAAQS. EPA, INTEGRATED SCIENCE ASSESSMENT FOR PARTICULATE MATTER P-9 (2019).

When the Administrator issues criteria for a pollutant, he must “simultaneously” propose a corresponding standard. § 7409(a)(2). After a period for public comment, the proposed standard may be promulgated and become law. § 7409(a)(1)(B). Substantively, the Administrator must base the standard upon the scientific criteria and exercise his “judgment” to set the standard at a level “requisite to protect the public health” with “an adequate margin of safety.” § 7409(b)(1).³ A NAAQS “may be revised in the same manner as promulgated.” *Id.*

(C) any known or anticipated adverse effects on welfare.

§ 7408(a)(2).

³ National primary ambient air quality standards, prescribed under subsection (a) shall be ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health. Such primary standards may be revised in the same manner as promulgated.

§ 7409(b)(1).

In short, pursuant to § 7408 the Administrator maintains a list of air pollutants and publishes scientific criteria for each one. Then, under § 7409(a) and (b), the Administrator promulgates a NAAQS for each listed pollutant and may later revise that standard in the manner in which it was promulgated.

That brings us to § 7409(d)(1), the interpretation of which the parties vigorously dispute. In full, the provision states:

Not later than December 31, 1980, and at five-year intervals thereafter, the Administrator shall complete a thorough review of the criteria published under section 7408 of this title and the national ambient air quality standards promulgated under this section and shall make such revisions in such criteria and standards and promulgate such new standards as may be appropriate in accordance with section 7408 [and section 7409(b)]. The Administrator may review and revise criteria or promulgate new standards earlier or more frequently than required under this paragraph.

As this court has recognized, the first sentence requires that the Administrator “complete a ‘thorough’ review of the NAAQS every five years” and “revise the criteria and standards or promulgate new standards as appropriate.” *Murray Energy Corp. v. EPA*, 936 F.3d 597, 605 (2019).

By statutory design, an independent council of experts — the Clean Air Scientific Advisory Committee (CASAC) — “assist[s] in this process.” *Id.* At five-year intervals, the CASAC is required to “complete a review” of existing NAAQS and criteria, and “recommend to the Administrator any new [NAAQS] and revisions of existing criteria and standards as may be appropriate.” § 7409(d)(2)(B). The CASAC’s

recommendations are timed to arrive approximately one year prior to the date by which the Administrator must complete his mandatory quinquennial review. *Compare* § 7409(d)(2)(B) (five-year intervals for the CASAC beginning on January 1, 1980), *with* § 7409(d)(1) (five-year intervals for the Administrator beginning on December 31, 1980). “[T]he ultimate decision to revise the NAAQS — and the determination of the new level — rests with the Administrator.” *Murray*, 936 F.3d at 605. To the extent the Administrator’s proposed or promulgated rule “differs in any important respect from any of [the CASAC’s] recommendations,” however, it must be accompanied by a statement that includes “an explanation of the reasons for such differences.” § 7607(d)(3); *see* § 7607(d)(6)(A); *Mississippi v. EPA*, 744 F.3d 1334, 1355 (D.C. Cir. 2013).

B. The 2020 and 2024 Final Rules

In December 2020, the previous Administrator promulgated a final rule that retained the preexisting primary annual standard for PM_{2.5} of 12.0 µg/m³. Review of the National Ambient Air Quality Standards for Particulate Matter (2020 Final Rule), 85 Fed. Reg. 82684, 82685/2-3. The Administrator’s judgment at that time was based upon the EPA’s science and policy assessments as well as comments from the CASAC and the public. *Id.* On the question whether to retain the standard of 12.0 µg/m³ for PM_{2.5}, however, the CASAC “did not reach consensus.” *Id.* at 82706/1-2. Those who supported keeping the standard at 12.0 µg/m³ “expressed the view that substantial uncertainty remains in the evidence for associations between PM_{2.5} exposures and mortality or serious morbidity effects.” *Id.* at 82706/2. Those who supported lowering the standard “emphasized recent findings of associations with PM_{2.5} in areas with average long-term PM_{2.5} concentrations below the level of the annual standard and

studies that show positive associations even when estimated exposures above 12 $\mu\text{g}/\text{m}^3$ are excluded from analyses.” *Id.* at 82707/1.

The previous Administrator’s approach in 2020 ultimately tracked the views of those CASAC members who supported keeping the standard at 12.0 $\mu\text{g}/\text{m}^3$. He emphasized “important uncertainties and limitations” in the epidemiological studies, expressed concern “about placing too much weight” on those studies, and noted his “caution in directly comparing the reported study mean values to the standard level.” *Id.* at 82716/3-82717/1. He therefore found it “more appropriate to focus on the body of studies together” and took note of “the mean of study-reported means” — 13.5 $\mu\text{g}/\text{m}^3$ — which was “above the level of the current standard.” *Id.* at 82717/1. Several groups filed petitions challenging the 2020 Final Rule, which petitions were consolidated in this court as *California v. EPA*, No. 21-1014.

Meanwhile, President Biden assumed office in January 2021, and in February the EPA filed an unopposed motion to hold the consolidated petitions in abeyance for 90 days. In its motion, the EPA explained that the President had issued an executive order directing agency review of certain actions, including the 2020 Final Rule. *See* Exec. Order No. 13990, 86 Fed. Reg. 7037 (2021). We granted the EPA’s motion and its eight subsequent motions to extend the period of abeyance, as a result of which the case has remained in abeyance for more than five years, spanning the Biden and Trump Administrations. During that time, the Administrator initiated the review that culminated in the 2024 Final Rule before us in this case. *See* Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (2024 Final Rule), 89 Fed. Reg. 16202, 16210/2 (explaining the EPA announced its decision to reconsider the 2020 Final Rule in June 2021 “because

the available scientific evidence and technical information indicate that the current standards may not be adequate to protect public health”).

As part of its review, the EPA reopened and revised the underlying air quality criteria to account for recent scientific literature. *Id.* at 16211/1-2. The result was the EPA’s Supplement to the 2019 Integrated Science Assessment for Particulate Matter and a new policy assessment. *See id.* at 16212/1-3. The CASAC also conducted a new review and this time unanimously concluded that the 12.0 $\mu\text{g}/\text{m}^3$ primary standard should be lowered. *See id.* at 16204/2, 16256/3. A majority of the CASAC recommended a standard of 8 to 10 $\mu\text{g}/\text{m}^3$, while a minority deemed a standard of 10 to 11 $\mu\text{g}/\text{m}^3$ adequate to protect public health. *See id.* at 16204/2.

The EPA promulgated the 2024 Final Rule, titled “Reconsideration of the National Ambient Air Quality Standards for Particulate Matter,” in March of that year. *Id.* at 16202/1. The Administrator considered the various positions of the CASAC members and concluded that setting the standard at 9 $\mu\text{g}/\text{m}^3$, the middle of the range recommended by the CASAC majority, was appropriate. *Id.* at 16204/3.

C. Procedural History

Industry groups and several states thereafter filed petitions challenging the 2024 Final Rule, which this court consolidated. Other states intervened in support of the rule, as did a group of health, environmental, and community entities.

We heard oral argument on the petitions for review on December 16, 2024. Two months later, the new Administrator appointed by President Trump filed a motion to hold the case in abeyance to give the agency time to review the 2024 Final Rule. We granted that motion and three more extending the

period of abeyance. In two of those motions, the EPA stated its intention to begin a new rulemaking to replace the 2024 Final Rule.

In November 2025, however, the EPA filed a motion for vacatur of the 2024 Final Rule and reversed course in two ways. First, the EPA now agreed with the Industry Petitioners that the EPA had exceeded its statutory authority in issuing the 2024 Final Rule and had acted unreasonably by ignoring costs. Second, the EPA seemingly disavowed any intention to begin a new rulemaking to replace the 2024 Final Rule. The EPA explained that it had simply been considering next steps when it said that it would begin a new rulemaking and now called any future rulemaking “irrelevant.”

The intervenors opposed the EPA’s motion for vacatur. The Health Group Intervenors filed a cross-motion for this court to lift the abeyance and decide the merits of the petitions for review. The EPA agrees that we should lift the abeyance and asks us to reach the merits, hold the 2024 Final Rule unlawful, and vacate it. We now grant the cross-motion to lift the abeyance and proceed to the merits of the petitions for review and the motion for vacatur.

II. Analysis

We have jurisdiction under 42 U.S.C. § 7607(b)(1). We review the 2024 Final Rule under the same standard as applies to claims brought under the Administrative Procedure Act. *Heating, Air Conditioning & Refrigeration Distribs. Int’l v. EPA*, 71 F.4th 59, 63 (D.C. Cir. 2023). As relevant here, we will set aside the rule if it is “arbitrary, capricious, an abuse of discretion,” or “in excess of statutory jurisdiction, authority, or limitations, or short of statutory right.” § 7607(d)(9)(A), (C).

The standard by which we determine whether the Administrator acted within his statutory authority differs from the standard applicable when reviewing the Administrator's judgment on the merits. With respect to the former, this court exercises its "independent judgment in deciding whether an agency has acted within its statutory authority." *Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 412 (2024). When as here "a particular statute delegates authority to an agency consistent with constitutional limits, courts must respect the delegation, while ensuring that the agency acts within it." *Id.* at 413; see § 7409(b)(1) (delegating NAAQS-setting authority to the "judgment of the Administrator" within statutorily defined limits); *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 474 (2001) (upholding the constitutionality of this delegation).

With respect to this court's review of the Administrator's decision on its merits, we "defer to the EPA's scientific judgment while examining the record to ensure the Agency has considered the relevant factors and reasonably explained how it reached its conclusions." *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 519-20 (D.C. Cir. 2009). "We will give an extreme degree of deference to the agency when it is evaluating scientific data within its technical expertise." *Ctr. for Biological Diversity v. EPA*, 749 F.3d 1079, 1087-88 (D.C. Cir. 2014) (cleaned up).

A. Statutory Authority

The Industry Petitioners, the State Petitioners, and the EPA contend the Administrator lacked statutory authority to promulgate the 2024 Final Rule. They argue first that the Administrator acted unlawfully when he reconsidered the 2020 Final Rule and issued the Final Rule only four years after the previous rulemaking; any implicit authority the EPA may have had to reconsider its rules was displaced, they say, by

§ 7409(d)(1), which requires the Administrator to review and revise (if appropriate) criteria and NAAQS every five years and allows him to review and revise them more frequently than required. They argue second that insofar as the 2024 Final Rule can be characterized as a revision rather than a reconsideration, § 7409(d)(1) requires the Administrator to perform a “thorough review” of criteria and NAAQS as part of any revision — including any off-cycle revision such as this one. Because the EPA did not perform such a review, they ask us to set aside the 2024 Final Rule.

According to the State and Health Group Intervenors, § 7409(d)(1) does not displace but supplements the Administrator’s authority to revise a NAAQS under § 7409(b)(1); § 7409(d)(1) establishes a mandatory duty — that the Administrator perform a “thorough review” of NAAQS every five years — that is “distinct from EPA’s authority to otherwise reconsider or revise its NAAQS.”

1. Reconsideration or revision?

We need not delineate the precise boundaries of the Administrator’s reconsideration authority because the 2024 Final Rule is best understood as a revision to the criteria and NAAQS for particulate matter. Although titled a “reconsideration” of the 2020 Final Rule, it is in substance a revision of an individual NAAQS. Indeed, the first paragraph unambiguously states that it provides the “rationale for the Administrator’s final decisions to revise the primary annual PM_{2.5} standard.” 89 Fed. Reg. at 16203/1.

The Industry Petitioners argue the 2024 Final Rule must be a reconsideration because the Administrator “prepared only an ‘[Integrated Science Assessment] Supplement’” and “deferred consideration of a number of available scientific studies” until the next quinquennial review. They say those

facts are controlling because a true revision “must build a record from scratch” while a “reconsideration would take as its starting point the previous decision not to revise and the associated record.” Nothing in the statutory scheme, however, reflects that distinction. We see no reason the Administrator cannot revise a NAAQS and, in the process, reconsider a prior rule that left the existing NAAQS unchanged.⁴

The Industry Petitioners call upon *SEC v. Chenery Corp.*, 318 U.S. 80 (1943), to argue that the EPA cannot “recast” its reconsideration as a revision. “Under the *Chenery* doctrine, a reviewing court must confine itself to the grounds upon which the record discloses that the agency’s action was based.” *Byers v. Comm’r*, 740 F.3d 668, 680 (D.C. Cir. 2014). The *Chenery* doctrine, however, has no application here because the EPA consistently characterized its rule as a revision. It did so in its proposed and final rules, *see* 88 Fed. Reg. 5558, 5560/2 (2023); 89 Fed. Reg. at 16203/1, and it repeatedly referred to its decision to “revise” the “existing” NAAQS in its responses to comments, *see* EPA, Responses to Significant Comments on the 2023 Proposed Rule for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (Responses to Comments) at 27, 34, 46, 56, 118 (2024). This characterization is unsurprising because the principal change worked by the 2024 Final Rule was its revision of the primary annual standard for PM_{2.5}.

⁴ To the extent the Industry Petitioners argue that the Administrator lacks any reconsideration authority, they are mistaken. The CAA explicitly requires the Administrator to “convene a proceeding for reconsideration” under certain circumstances. § 7607(d)(7)(B). We need not, however, fully define the interplay between the Administrator’s reconsideration authority and his other powers. It is enough that we conclude the Administrator may revise criteria and NAAQS and, in the course of so doing, reconsider a previous rule.

2. Authority to revise NAAQS

Our conclusion that the 2024 Final Rule is best understood as a revision does not answer whether the Administrator acted within his statutory authority to revise a NAAQS. The question is particularly important here because the parties dispute the source of the Administrator’s revision authority. The Industry and State Petitioners — joined by the EPA in its motion for vacatur — argue that § 7409(d)(1) provides the sole source of the Administrator’s revision authority and authorizes him to revise NAAQS off-cycle only if he first performs a “thorough review” of the criteria and NAAQS, which the EPA concedes it did not do before promulgating the 2024 Final Rule. The intervenors respond that § 7409(b) authorizes the Administrator to revise a standard and does not require him to first perform a “thorough review.”

“Statutory interpretation, as we always say, begins with the text.” *Ross v. Blake*, 578 U.S. 632, 638 (2016). As relevant here, two provisions of § 7409 refer to the Administrator’s authority to revise a NAAQS. Section 7409(b) provides the substantive principles the Administrator is to apply when setting a primary or secondary standard and states that each “may be revised in the same manner as promulgated.” This provision was added to the CAA in 1970, Pub. L. No. 91-604, § 4(a), 84 Stat. 1676, 1679-80, and predates the addition of § 7409(d)(1) by seven years, Clean Air Act Amendments of 1977, Pub. L. No. 95-95, § 106(a), 91 Stat. 685, 691. Consequently, the Administrator indisputably had authority to revise primary and secondary NAAQS at any time. So far, so clear.

The first sentence of § 7409(d)(1) then requires the Administrator to “complete a thorough review” of the existing criteria and standards every five years and to revise them if appropriate. The reason for that requirement is obvious: By

requiring a “thorough review” the Congress ensured the Administrator would comprehensively evaluate each and every existing criterion and standard on a regular basis. In other words, it serves as an action-forcing device to ensure NAAQS do not fall too far behind the evolving scientific evidence.

Together § 7409(b) and the first sentence of § 7409(d)(1) provide that the Administrator may revise NAAQS “in the same manner as promulgated” and must revise NAAQS as appropriate every five years.⁵ The second sentence of § 7409(d)(1) then adds that “[t]he Administrator may review and revise criteria or promulgate new standards earlier or more frequently than required under this paragraph,” *i.e.*, under the first sentence. The plain objective of this sentence is to clarify that the quinquennial review required by the first sentence of § 7409(d)(1) does not limit the Administrator’s authority to

⁵ When questioned about § 7409(b)(1) at oral argument, the Industry Petitioners again invoked *Chenery* to argue that the EPA could not rely upon § 7409(b)(1) as the source of its revision authority. As an initial matter, we have long held the *Chenery* doctrine inapplicable “when the question presented [was] one of statutory construction.” *Bldg. & Constr. Trades Dep’t, AFL-CIO v. U.S. Dep’t of Lab. Wage Appeals Bd.*, 829 F.2d 1186, 1189 (1987); *see also Canonsburg Gen. Hosp. v. Burwell*, 807 F.3d 295, 304 (D.C. Cir. 2015) (“We have explained that *Chenery* only limits judicial review of factual determinations or policy judgments that the agency alone is authorized to make” (cleaned up)). In any event, the *Chenery* doctrine does not apply here because the EPA raised § 7409(b) as a basis for the 2024 Final Rule in response to comments: “The EPA understands [§ 7409(b)] to authorize the Administrator to revise the NAAQS.” Responses to Comments at 120. The EPA also cited its “implicit and explicit authority to revisit earlier decisions on the NAAQS,” *id.* at 118, a matter we discuss below at 21, and its “authority under [§ 7409]” generally, *id.* at 118, 122, as authorizing its revision.

revise a standard sooner; nothing in § 7409(d)(1) displaces the Administrator’s revision authority in § 7409(b).

The petitioners and the EPA raise several objections to this conclusion. The EPA agrees that it had revision authority before the Congress added § 7409(d)(1), but it disputes the source of that authority. The EPA claims it had “inherent authority” to revise a standard before 1977, and § 7409(b) provided only the procedure for doing so. As we have explained, however, “the term ‘inherent’ is misleading because it is axiomatic that administrative agencies may act only pursuant to authority delegated to them by Congress. Thus, the more accurate label for the power [the] EPA describes is ‘statutorily implicit.’” *Nat. Res. Def. Council v. Regan*, 67 F.4th 397, 401 (2023) (cleaned up). More to the point, § 7409(b) expressly recognizes that a NAAQS “may be revised.” The EPA offers no evidence the Congress intended to limit the Administrator’s pre-existing revision authority in 1977 when it added the periodic-review requirement. We therefore do not agree with the EPA and the petitioners that § 7409(d)(1) provides the “exclusive source of [the Administrator’s] revision authority.”

Even if § 7409(b) provides revision authority, says the EPA, we must read that provision in harmony with § 7409(d)(1). The petitioners and the EPA reason that the “thorough review” requirement applies not only to the quinquennial review mandated by the first sentence of § 7409(d)(1), but also to the off-cycle revisions referenced in the second sentence. We do not, however, understand § 7409(d)(1) to require a “thorough review” as a precondition to an off-cycle revision.

We begin again with the statutory text. The requirement that the Administrator “complete a thorough review” of the existing criteria and standards every five years resides in the first sentence of § 7409(d)(1). The phrase “thorough review,”

however, does not appear in the second sentence of § 7409(d)(1): “The Administrator may review and revise criteria or promulgate new standards earlier or more frequently than required under this paragraph.” The Industry Petitioners and the EPA argue this sentence nonetheless implicitly cross-references the first sentence through the phrases “review” and “under this paragraph.” Per this reading of § 7409(d)(1), the sole difference between the two sentences is one of timing; the process for revising a standard — whether at the required intervals or off-cycle — is the same.

We are not persuaded. Starting with “review,” the absence of the word “thorough” in the second sentence of § 7409(d)(1) is significant: “When Congress includes particular language in one section of a statute but omits it in another — let alone in the very next provision — this Court presumes that Congress intended a difference in meaning.” *Loughrin v. United States*, 573 U.S. 351, 358 (2014) (cleaned up). Omitting the word “thorough” in the second sentence of § 7409(d)(1) suggests the Congress did not intend to require the Administrator to perform such a review when making an off-cycle revision.

The phrase “under this paragraph” does refer to the first sentence of § 7409(d)(1), but we do not read that reference as importing into the second sentence all the requirements in the first sentence. As the State Intervenor explain, that reference simply clarifies that the Administrator may act sooner than required by the first sentence of § 7409(d)(1), that is, “earlier or more frequently” than every five years. Indeed, the Industry Petitioners themselves characterize that phrase as “a cross-reference to the five-year intervals mandated in the first sentence of [§ 7409(d)(1)].” To read it as also importing the “thorough review” requirement into the second sentence, as the Industry Petitioners and the EPA ask us to do, would stretch its meaning to the point of frustrating it. That seems certain when

one considers that this interpretation would undermine rather than advance the plain objective of the first sentence: Requiring a full review whenever the Administrator seeks to revise a single criterion or standard off-cycle would prevent the Administrator from responding promptly to changes in the relevant science.

When pressed on this point at oral argument, the Industry Petitioners suggested a “thorough review” outside the five-year cycle would require only that the Administrator thoroughly review the scientific criteria underlying the standard he seeks to revise. Oral Arg. Tr. 39:24-40:15. Even this more limited understanding of “thorough review” in the second sentence would undercut the Administrator’s ability to keep a NAAQS up-to-date. Requiring a comprehensive review of all the scientific inputs to the criteria for a single standard would unnecessarily delay promulgation of a new standard.

This case illustrates the problem. By 2021 the EPA became aware of certain scientific studies likely to require a change in the standard for fine particulate matter and began updating its science and policy assessments. That process resulted in the EPA’s Supplement to the 2019 Integrated Science Assessment for Particulate Matter and a new policy assessment, both published in May 2022. *See* 89 Fed. Reg. 16212/3-16213/1. Requiring the EPA to expend limited resources to review other scientific studies unlikely to affect the final standard could delay but not improve the result.⁶ That

⁶ At oral argument, the Industry Petitioners said that in order to perform a “thorough review” of a NAAQS off-cycle the EPA would not need to revisit studies that it had considered during its prior review. Oral Arg. Tr. 35:21-36:7. As for new studies, the notice-and-comment process provides an opportunity for interested parties to argue that the EPA did not consider relevant studies or that it did not provide a reasoned explanation for the studies it chose to rely upon.

the Congress gave the agency discretion to address the criteria most relevant to protecting public health is the only sensible reading of the statute.

The EPA says its reading of § 7409(d)(1) better consists with other provisions of the Clean Air Act, particularly the requirement that the Administrator establish air quality criteria based upon the “latest scientific knowledge.” § 7408(a)(2). To the contrary, as the Health Group Intervenors argue, importing the “thorough review” requirement into the second sentence of § 7409(d)(1) would create tension with several other parts of the statutory scheme. For example, the provision requiring the Administrator to issue criteria for newly designated air pollutants also requires that the Administrator “from time to time review, and, as appropriate, modify, and reissue any criteria . . . issued pursuant to this section.” § 7408(c). It says nothing of performing a thorough review first and instead affords the Administrator maximum flexibility to update criteria so as to reflect the prevailing science. Under the Industry Petitioners’ and the EPA’s interpretation of the second sentence of § 7409(d)(1), however, the Administrator could “revise criteria . . . more frequently than required” by the mandatory review only if he performs the “thorough review” required by the first sentence. That effectively reads the thoroughness requirement into § 7408(c), which is inconsistent with the broad and flexible terms used in that provision. *See Loper Bright Enters.*, 603 U.S. at 395 (recognizing “appropriate” as a term that “leaves agencies with flexibility”); *cf. Waterkeeper All. v. EPA*, 140 F.4th 1193, 1215 (9th Cir. 2025) (explaining that the use of the phrase “from time to time” in the Clean Water Act “sug-

Indeed, the Industry Petitioners did the former in this rulemaking proceeding, but they did not raise that argument on appeal. *See* Oral Arg. Tr. 86:23-88:7.

gests that EPA has discretion about when to revise such standards”).

The Industry Petitioners and the EPA resist this conclusion by arguing that an off-cycle revision without a thorough review would undermine the periodic-review requirement. We do not see how. Acting sooner than the five-year review cycle required by § 7409(d)(1) does not excuse the Administrator from doing a thorough review every fifth year. Nor are the Industry Petitioners correct that an off-cycle revision under our interpretation of § 7409 would be “*without any limitations or requirements whatsoever*.” Any revision must satisfy the substantive standard in § 7409(b) and comply with the strictures of the CAA, including its requirement of reasoned decisionmaking. *See Heating, Air Conditioning & Refrigeration Distribs.*, 71 F.4th at 63. Those requirements are not toothless and have been applied by this court when reviewing NAAQS on many occasions.

In sum, the Administrator must “complete a thorough review” and, if appropriate, revise criteria and NAAQS every five years pursuant to the first sentence of § 7409(d)(1), but he may revise them more frequently without completing a “thorough review.” The Administrator therefore acted within his statutory authority by promulgating the 2024 Final Rule revising the air quality standard for fine particulate matter.

B. Arbitrary and Capricious

An agency rule will be held arbitrary and capricious if, among other reasons, in formulating it the agency (1) relied upon an impermissible consideration, (2) entirely failed to consider an important aspect of a problem, (3) explained the rule in a way that runs counter to the evidence before it, or (4) adopted a rule that “is so implausible that it could not be ascribed to a difference in view or the product of agency exper-

tise.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins.*, 463 U.S. 29, 43 (1983). The Industry and State Petitioners claim the EPA violated the CAA in each of these respects, and the EPA itself, in moving for vacatur, now joins the petitioners in asserting that the Administrator unreasonably ignored the costs associated with the mid-cycle review giving rise to the 2024 Final Rule. Each of these arguments is either foreclosed by precedent or unsupported by the record.

1. Impermissible considerations

The State Petitioners argue that the Administrator relied upon impermissible considerations — namely, promoting environmental justice and countering climate change — to justify the 2024 Final Rule. They begin by correctly observing that the Administrator’s remit under the CAA is to set primary NAAQS “requisite to protect the public health” with “an adequate margin of safety.” § 7409(b)(1). They then point to President Biden’s Executive Order No. 13990, which served as the initial catalyst for the EPA’s review, as evidence of the Administrator’s impermissible environmental goals. *See* 89 Fed. Reg. at 16210/2 (explaining the order “directed review of certain agency actions” including the 2020 Final Rule).

The EPA, for its part, did not dispute in its response brief the State Petitioners’ premise that environmental justice and climate change are impermissible reasons for setting primary NAAQS under § 7409(b)(1). Instead, the agency defended the record it made and characterized the State Petitioners’ argument as little more than an “unsubstantiated accusation that climate or environmental justice considerations improperly influenced the Agency’s course of action.” We agree with the latter point.

The EPA here is on solid ground; the administrative record simply does not support the State Petitioners’ claim. The 2024

Final Rule accurately sets out and adheres to the appropriate legal framework for setting primary NAAQS consistent with § 7409(b)(1). *See* 89 Fed. Reg. at 16206/1-16207/1. The 2024 Final Rule explained that the Administrator announced his decision to reconsider the 2020 Final Rule in June 2021 “because the available scientific evidence and technical information indicate[d] that the current standards may not be adequate to protect public health.” *Id.* at 16210/2. Indeed, in the lead-up to its review the EPA “preliminarily concluded” that certain new studies “were likely to be relevant” and “would potentially warrant a reopening of the air quality criteria.” *Id.* at 16211/1. None of these statements suggests the Administrator considered environmental justice or climate change. On the contrary, the EPA made clear in its response to public comments that it had “no intention or goal to reduce greenhouse gases through this rulemaking.” Response to Comments at 135.

Against that, the best the State Petitioners can muster are repeated references to Executive Order No. 13990, which they unilaterally christen “the Climate Order.” The references to climate change in that order, however, are not specific to NAAQS-setting and cannot overcome the evidence — or lack of it — in the administrative record.

In any event, the EPA addressed this issue head-on when responding to comments regarding the proposed rule. The agency made clear that the decision to revisit the NAAQS for particulate matter “rested with the EPA” and was grounded upon “additional available information, as well as advice from the CASAC and public comment.” *Id.* at 134. Notably, although the Administrator ultimately adopted the recommendation of the CASAC, the State Petitioners do not accuse the CASAC of improper motives. At bottom, the State Petitioners’ mixture of conjecture and strident accusations falls far short of

demonstrating that the Administrator relied upon something other than public health when setting the NAAQS for particulate matter.

2. Considerations other than public health

The Industry and State Petitioners, now joined by the EPA, also argue that the 2024 Final Rule is invalid because the Administrator failed to consider matters other than public health, principally costs and attainability. Both the Supreme Court and this court have repeatedly rejected similar efforts to inject considerations unrelated to public health into the NAAQS-setting process. *See Am. Trucking*, 531 U.S. at 464 (citing D.C. Circuit cases holding that “economic considerations may play no part in the promulgation of ambient air quality standards” (cleaned up)); *Murray*, 936 F.3d at 621-22; *Am. Petroleum Inst. v. Costle*, 665 F.2d 1176, 1185 (D.C. Cir. 1981). These cases are controlling.

The petitioners invite us to read these precedents narrowly in light of the Supreme Court’s opinion in *Michigan v. EPA*, 576 U.S. 743 (2015). In that case the Court considered whether the phrase “appropriate and necessary” in a different provision of the CAA required the EPA to consider costs. *Id.* at 752. Justice Scalia, writing for the Court, concluded that it did. *Id.* He explained that it was not “rational, never mind ‘appropriate,’ to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits.” *Id.* Yet Justice Scalia explicitly distinguished that case from *American Trucking*, an opinion he had authored a decade earlier. He explained that the provision at issue in the earlier case — § 7409(b)(1) — “expressly” directed the EPA to set NAAQS at levels requisite to protect public health and therefore should not be read “as implicitly allowing the [EPA] to consider cost anyway.” *Id.* at 755-56. Consistent with that

understanding of the statutory scheme, in *Murray* this court rejected an invitation based upon *Michigan* to incorporate cost considerations into § 7409(d)(1). 936 F.3d at 622 (explaining the word “appropriate” in § 7409(d)(1) did not require consideration of economic costs and that the outcome in *Michigan* turned upon its “statutory context”). In other words, *Michigan* reinforces rather than undermines *American Trucking*.

Murray similarly forecloses the petitioners’ argument that the Administrator was required to consider attainability. In that case the petitioners argued the CAA “requires EPA to set NAAQS that are attainable.” *Id.* To the contrary, we explained that the Congress “recognized the possibility that some states could not achieve attainment,” but “rather than watering down the nationally applicable standards, [it] allowed EPA to relax enforcement on a case-by-case basis.” *Id.* at 623. The EPA, that is, may consider attainability “during enforcement, not when setting standards.” *Id.*; see also *Costle*, 665 F.2d at 1190 (“[T]he question of attainability is not relevant to the setting of ambient air quality standards under the Clean Air Act”).

The Industry and State Petitioners attempt to elude these cases by distinguishing between setting a NAAQS (to which § 7409(b) applies) and the anterior decision to revise a NAAQS. In their view, the EPA must consider costs and attainability when it initially decides “*whether* a revision ‘may be appropriate.’” They reason that the first sentence of § 7409(d)(1) provides for revisions “as may be appropriate in accordance with [§ 7408] and [§ 7409(b)],” and *Michigan* says the word “appropriate . . . requires at least some attention to cost,” 576 U.S. at 752. The Industry Petitioners attempt to bolster this conclusion by pointing to § 7409(d)(2)(C), which requires the CASAC to “advise the Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment

and maintenance of such national ambient air quality standards.” It is only when the EPA formulates a standard that the Industry Petitioners concede the EPA may disregard costs and attainability. The EPA, for its part, asserts that nothing in § 7409(d)(1) prevents it from considering costs, but it tellingly fails to address *American Trucking* or *Murray*.

The Industry Petitioners’ and the EPA’s interpretation does not square with that controlling precedent: Their approach necessarily, but impermissibly, injects economic considerations and attainability into the NAAQS-setting process. *See Am. Trucking*, 531 U.S. at 464-65; *Murray*, 936 F.3d at 622-23. Whether the Administrator considers costs and attainability when deciding whether to revise a NAAQS or when setting the NAAQS would have the same impermissible effect.

Moreover, nothing in § 7409(d)(1) suggests the Congress intended to distinguish between the Administrator considering whether to revise a standard and his setting a standard. That section requires that the Administrator revise a NAAQS “as may be appropriate in accordance with [§ 7408] and [§ 7409(b)].” In this way, the Congress tied the word “appropriate” in § 7409(d)(1) to § 7409(b), which in turn prescribes NAAQS that “are requisite to protect the public health.” *See Am. Trucking Ass’n v. EPA*, 175 F.3d 1027, 1040 (D.C. Cir. 1999) (explaining that “the clause immediately following ‘appropriate’ . . . affirmatively precludes consideration of costs in revising NAAQS”).⁷ Indeed, this court in *Murray* explained

⁷ The petitioners briefly argue that this conclusion results in an interpretation of the statutory scheme that violates the non-delegation doctrine. That argument is foreclosed by *American Trucking*, in which the Supreme Court held that the “scope of discretion [§ 7409(b)(1)] allows is in fact well within the outer limits of our nondelegation precedents.” 531 U.S. at 474. The petitioners have

that we had “already rejected the idea that ‘appropriate’ in [§ 7409(d)(1)] requires consideration of economic costs.” 936 F.3d at 622 (citing *Am. Trucking Ass’n*s, 175 F.3d at 1040-41, *aff’d in relevant part*, 531 U.S. at 464-65).

Nor does § 7409(d)(2)(c) support the petitioners’ two-step approach. In *Murray* we explained why § 7409(d)(2)(C) did not imply that economic costs were permissible considerations in the NAAQS-setting process: “[T]his 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].’” *Id.* (quoting *Am. Trucking*, 531 U.S. at 470-71). Although *Murray* spoke of “*formulating* the NAAQS,” and not the anterior decision whether to revise a standard, we do not see how its reasoning would permit the Administrator to consider costs at either stage.⁸

preserved the issue whether that case was correctly decided expressly for further review before the Supreme Court.

⁸ The Industry Petitioners also argue, based upon their two-step interpretation of § 7409(d)(1), that the Administrator was required to consider current air quality when deciding whether to revise the NAAQS. They claim the Administrator “overstated the benefits of a NAAQS revision by assuming a fictional world in which no area of the country had better air quality than the NAAQS standard of 12 µg/m³,” when in fact “the current air quality in most areas significantly out-performs that standard.” As we have explained, however, it was “not unreasonable for the EPA to measure expected benefits from the new NAAQS in part upon the assumption that, if the new NAAQS were not adopted, then each area would in the future just meet the existing standard.” *Am. Petroleum Inst. v. EPA*, 684 F.3d 1342, 1352 (2012).

The State Petitioners take a slightly different tack and, without quite saying so, challenge the holding of *American Trucking* directly. They point to the Supreme Court’s statement that “ozone and particulate matter are ‘nonthreshold’ pollutants that inflict a continuum of adverse health effects at any airborne concentration greater than zero, and hence require the EPA to make judgments of degree.” 531 U.S. at 475. Consequently, when setting NAAQS for these pollutants the Administrator must exercise “discretion” guided by the requirements of § 7409(b)(1). *Id.* at 475-76. Then, quoting Justice Breyer’s concurrence, the State Petitioners attempt to read consideration of costs into the exercise of the Administrator’s discretion. *See id.* at 494 (Breyer, J., concurring in part and concurring in the judgment) (The CAA “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” (cleaned up)).

The opinion of the Court to the contrary, however, was clear: § 7409(b)(1) “unambiguously bars cost considerations from the NAAQS-setting process.” 531 U.S. at 471. As we explained in *Murray* in response to the petitioners’ reliance on the same passage from Justice Breyer’s concurrence, “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.” 936 F.3d at 622 (citing *Am. Trucking*, 531 U.S. at 490).

In short, “when 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. Ass’n v. EPA*, 647 F.2d 1130, 1150 (D.C. Cir. 1980). Here the EPA properly followed the Congress’s direction and declined

to consider non-public health factors throughout the NAAQS-setting process.

3. Other objections

The petitioners also contend the Administrator's decision was inadequately explained and insufficiently supported by the evidence. Their arguments are of three types. First, the Administrator did not sufficiently justify performing an off-cycle review. Second, the Administrator failed adequately to explain his reasons for departing from the conclusions of the 2020 Final Rule. Third, the scientific evidence does not justify a standard of 9 $\mu\text{g}/\text{m}^3$.

Off-Cycle Revision. The petitioners' first argument requires little additional discussion. Their charge is that the Administrator's decision to perform an off-cycle revision was unprecedented and without regard for the reliance interests of those affected by the revised standard. As already explained, however, the Congress authorized the Administrator to revise criteria and NAAQS outside the five-year cycle in the interests of public health.

Changed Course. The petitioners' second argument merits more attention but is equally unavailing. From our review of the 2024 Final Rule, we hold that the Administrator satisfactorily explained his basis for revising the standard his predecessor had decided not to revise in the 2020 Final Rule. Far from ignoring the earlier rule, the Administrator acknowledged that his analysis differed from that of "the prior Administrator," 89 Fed. Reg. at 16276/2, and he explained the bases for his decision at length, *id.* at 16273/3-16277/1. His reasons included newly available scientific evidence, the unanimous recommendation of CASAC, and a reweighing of the previously available evidence. *Id.*

With respect to new evidence, the Administrator explained that “a number of studies” were published after the previous literature cutoff date, and he therefore had “additional information for consideration in reaching his final conclusions.” *Id.* at 16275/2. Several of these studies improved upon those that were available to the previous Administrator, *see id.* at 16276/1 (explaining the studies “employed statistical approaches that attempted to more extensively account for confounders and are more robust to model misspecification”); and at 16276/3 (identifying “several [new] accountability studies”), including the “study that report[ed] the long-term mean PM_{2.5} concentration of 9.3 µg/m³,” *id.* at 16275/3. The last-referenced study was particularly significant because the Administrator set the standard “somewhat below the lowest long-term study-reported mean PM_{2.5} concentration reported in key U.S. epidemiologic studies, which is 9.3 µg/m³.” *Id.*

The Administrator also explained that the CASAC had unanimously agreed that the 2020 standard was inadequate based upon the newly available scientific evidence. *Id.* at 16204/3, 16256/3, 16275/1. Although most of the CASAC’s membership had changed since its earlier review, two members remained the same. Of those, one had previously concluded that the annual PM_{2.5} standard should remain at 12 µg/m³ only later to conclude, as the Administrator did, that this standard was inadequate to protect public health based upon the latest evidence. *See id.* at 16257 n.93.

With respect to his evaluation of the scientific evidence, the Administrator explained that he disagreed with the approach of the previous Administrator in certain respects. Recall that the previous Administrator took a mean-of-means approach to the scientific studies — *i.e.*, he “placed weight on the average of the study-reported means (or medians) across the U.S. monitor-based studies of 13.5 µg/m³.” *Id.* at 16275/3.

The new Administrator, as already explained, set the revised standard “below the lowest long-term study-reported mean PM_{2.5} concentration.” *Id.* Additionally, the new Administrator gave weight to “U.S. hybrid model-based epidemiologic studies,” which he considered “an advancement in the available science.” *Id.*

Considering the deference we owe the Administrator’s scientific judgments, we readily conclude that he adequately explained his reasons for not retaining the standard set in the 2020 Final Rule. *See Mississippi*, 744 F.3d at 1344 (explaining that the Administrator is not bound by previous NAAQS).

Appropriate Standard. The petitioners also argue that the evidence does not support a standard of 9 µg/m³. Because § 7409(b)(1) expressly delegates the setting of NAAQS to the “judgment” of the Administrator, however, we must respect the Congress’s delegation and take care not to substitute our judgment for that of the Administrator, *see Loper Bright Enters.*, 603 U.S. at 412-13, which “necessarily requires the exercise of policy judgment,” *Mississippi*, 744 F.3d at 1358. Put another way, we must “defer to the EPA’s scientific judgment while examining the record to ensure the agency has considered the relevant factors and reasonably explained how it reached its conclusions.” *Am. Farm Bureau Fed’n*, 559 F.3d at 520.

Here the petitioners do not claim the Administrator overlooked an important scientific study or ignored a key public-health factor. Nor do they provide meaningful evidence that the Administrator misapplied the relevant scientific evidence; rather, the Administrator followed a methodology that this court has upheld on several occasions. *See Nat’l Ass’n of Mfrs. v. EPA*, 750 F.3d 921, 924 (D.C. Cir. 2014) (collecting cases in which this court has upheld a NAAQS set “somewhat below the lowest long-term mean concentration shown by certain key

epidemiologic studies to cause adverse health effects”). Under these circumstances, we cannot agree that the Administrator’s decision was unreasoned or contrary to the evidence.

That is not to say the Administrator’s application of § 7409(b)(1) was the only permissible judgment on this record. *See Mississippi*, 744 F.3d at 1348 (“That the evidence in the record may also support other conclusions . . . does not prevent us from concluding that [these] decisions were rational” (cleaned up)). Setting NAAQS for particulate matter entails the exercise of judgment in the face of scientific uncertainty. *See* 89 Fed. Reg. at 16276/2 (recognizing “uncertainties and limitations associated with the epidemiologic studies”); *Am. Trucking*, 531 U.S. at 475 (explaining that “judgments of degree” are necessary for “nonthreshold” pollutants). Unsurprisingly, then, all members of the CASAC recommended revising the NAAQS downward to levels ranging from 8-11 $\mu\text{g}/\text{m}^3$. *See* 89 Fed. Reg. at 16280/1 (explaining that “the majority and minority of the CASAC . . . weighed the studies in different ways”). The Administrator ultimately set the standard near the middle of the range recommended by the CASAC majority.

The Industry Petitioners fault the Administrator for not sufficiently explaining why he did not select 10 $\mu\text{g}/\text{m}^3$, which also would have fallen within the range staked out by the majority and minority members of the CASAC. The Industry Petitioners contend that the Administrator’s “own evidence and reasoning pointed more toward 10.0 $\mu\text{g}/\text{m}^3$ than 9.0 $\mu\text{g}/\text{m}^3$.” So they say because the 2024 Final Rule recognized that “an annual standard level that is no more than 15-18% higher than the study-reported means[, or 10.7 to 11.0 $\mu\text{g}/\text{m}^3$,] would generally maintain air quality exposures to be below those . . . for which we have the strongest support for adverse health effects occurring.” 89 Fed. Reg. at 16241/3. Yet the Administrator

explained that he was setting the standard “below the lowest study-reported mean” to ensure that those living where PM_{2.5} concentrations are highest “will be exposed to PM_{2.5} concentrations below the PM_{2.5} concentrations reported in the epidemiologic studies where there is the highest confidence of an association” with adverse health effects. *Id.* at 16263/2. The Administrator’s regard for populations in areas with the highest PM_{2.5} concentration was permissible. *See Nat’l Ass’n of Mfrs.*, 750 F.3d at 926 (finding the Administrator’s consideration of populations near heavily trafficked roads reasonable “[i]n the context of [§ 7409]”).

In short, the Administrator “offered reasoned explanations for how [he] approached and weighed the evidence, and why the scientific evidence supported [his] revision of the NAAQS.” *Id.* at 924. That is sufficient for us to uphold his decision on its merits.

III. Conclusion

For the reasons stated, the petitions for review and the EPA’s motion for vacatur are

Denied.