Sept. 22, 2025

EPA Office of Air and Radiation (Docket ID No. EPA-HQ-OAR-2025-0194)

Re: Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards

Administrator Zeldin:

Please find attached joint legal comments from the Center for Biological Diversity, Clean Air Task Force, Earthjustice, Environmental Defense Fund, Natural Resources Defense Council, and Sierra Club on the proposed rulemaking entitled "Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards," 90 Fed. Reg. 36,288 (Aug. 1, 2025). These comments are also endorsed by Alliance of Nurses for Healthy Environments, Clean Air Council, Clean Wisconsin, Conservation Law Foundation, National Wildlife Federation, Public Citizen, Rio Grande International Study Center, and Union of Concerned Scientists.


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## INCORPORATIONS

We incorporate by reference all sources cited in this comment. Most sources cited in this comment are being submitted via regulations.gov. Each set of sources uploaded will be accompanied by an index organizing files by comment section for ease of reference. Due to time and file size constraints, we have also submitted on a thumb drive delivered to the EPA Docket Center, attention to Alan Stout, via private courier (1) sources cited in this comment, (2) sources cited in separate comments from public health and environmental organizations on EPA's proposal to rescind vehicle standards, and (3) sources cited in separate comments filed by Environmental Defense Fund. We are uploading via regulations.gov an index of the files contained on the thumb drive along with proof of delivery and receipt by Ken Powell on September 19, 2025 at 2:16 pm ET. The thumb drive also contains for inclusion in the record for this Proposal comments submitted on the 2009 Endangerment Finding and comments submitted on earlier vehicle standards that EPA now proposes to repeal.

This comment also incorporates by reference all arguments made in the associated Environmental and Public Health Organizations' GHG Vehicle Comments, which were filed to this docket Sept. 22, 2025.

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## I. Introduction

In 2009, the Environmental Protection Agency (EPA) came to the incontrovertible conclusion that greenhouse gases endanger public health and welfare. Now, EPA proposes to walk away from decades of progress reducing this harmful pollution and reverse that finding of endangerment. Rather than facing head-on the mountains of scientific evidence documenting the harms that will only worsen if greenhouse gas emissions continue unabated, EPA instead points to a cherry-picked draft report compiled in secret by hand-picked climate deniers to dispute the indisputable.

But as the nonpartisan National Academies of Sciences, Engineering, and Medicine recently determined in a consensus report, the 2009 Endangerment Finding "was accurate, has stood the test of time, and is now reinforced by even stronger evidence."[1] The evidence is "beyond scientific dispute," and we now "face[] a future in which climate-induced harm continues to worsen and today's extremes become tomorrow's norms."[2]

EPA grasps at straws to explain away its statutory obligation under the Clean Air Act and muddies the water with bogus science, but its rushed and opaque rulemaking process cannot hide that its proposed repeal is contrary to law, science, and basic common sense.

***First***, EPA is simply wrong about its authority to regulate greenhouse gases under Section 202 of the Clean Air Act. The Supreme Court found in 2007 that greenhouse gases are air pollutants subject to the Act. EPA lacks authority to read extra-statutory constraints into the Clean Air Act where none exist: EPA cannot simply make up a category of "local/regional" pollution and then claim greenhouse gases fall outside of its arbitrary categorization. Instead, EPA must follow the law as Congress enacted it and the Court has interpreted it. And the major questions doctrine has no bearing on EPA's authority here: the Supreme Court found in 2007 that the text of the Act is *unambiguous*. There is no question left open for the major questions doctrine to answer.

***Second***, EPA's tortured argument that it erred in 2009 by issuing a standalone Endangerment Finding separate from its subsequent standard-setting ignores the plain text and legislative history of the Clean Air Act, relevant case law, and the fundamental science of air pollution. EPA acted consistently with the statute in 2009 when it conducted the purely scientific inquiry as to endangerment separately from the development and issuance of vehicle standards. Similarly, the statutory text, case law, and legislative history all rebut EPA's claim that the 2009 Finding erred by treating section 202(a)(1)'s "cause-or-contribute" and "endangerment" prongs as separate inquiries.

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[1] National Academies of Sciences, Engineering, and Medicine. 2025. Effects of Human-Caused Greenhouse Gas Emissions on U.S. Climate, Health, and Welfare. Washington, DC: The National Academies Press. https://doi.org/10.17226/29239. (Summary) [hereinafter "NASEM 2025 Climate Report"]

[2] *Id.*

***Third***, scientific evidence unequivocally establishes that greenhouse gas pollution endangers public health and welfare. EPA provides no rebuttal to the broad consensus of the scientific community that does not rest on a fundamental misreading of the underlying research or cherry-picked data. The 2009 Finding was supported by mountains of scientific evidence that has only grown stronger and more precise since that time.

***Fourth***, EPA's reliance on the draft report compiled by the so-called "Climate Working Group" (CWG) within the Department of Energy is entirely misplaced. The CWG was established in blatant violation of the Federal Advisory Committee Act and fails to meet basic federal standards for data quality and scientific integrity. EPA should receive no deference for its reliance on this flawed and unlawful report.

And, ***finally***, EPA has violated fundamental principles of administrative law with its rushed rulemaking that neglects to explain why it is ignoring the extensive record underlying the 2009 Finding; disregards evidence before it; fails to discuss the Agency's divergence from reports and recommendations from the National Academies; and declines to account for significant reliance interests.

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As we explain in more detail in the subsequent pages, EPA's proposed repeal of the Endangerment Finding is fundamentally flawed. It misinterprets the Clean Air Act, misrepresents scientific evidence, and entirely misunderstands its own duty as the agency responsible for protecting public health and the environment.

EPA must withdraw this proposal in its entirety.

## II. Section 202 applies to greenhouse gas pollution.

In its proposal, EPA advances a new interpretation of the text of Section 202(a)(1) that would deprive EPA of the authority to regulate greenhouse gases. That proposal is contrary to law. The Supreme Court already decided the scope of Section 202(a)(1) and held that it grants EPA authority to regulate greenhouse gases. EPA cannot purport to get around this direct precedent, which remains binding. Even if the scope of Section 202 were in question, however, EPA's proposed interpretation is contrary to the definition of "air pollutant" Congress provided in the Act and EPA fails to establish that Congress's definition does not govern here. In any event, EPA's attempt to limit its authority to local and regional pollution that harms through direct exposure has no basis in the Act and no foundation in the pollution EPA actually regulates.

### A. EPA has no authority to re-interpret the scope of Section 202.

#### *1. This issue was decided in Mass v. EPA, which remains binding.*

In its primary proposal, EPA proposes to abandon its longstanding construction of Section 202 and, in so doing, defy direct Supreme Court precedent. In particular, EPA now proposes to advance a construction of Section 202 under which "the term 'air pollution' as used in CAA section 202(a) is best read in context as referring to local or regional exposure to dangerous air pollution." Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle

Standards, 90 Fed. Reg. 36,290 (Aug. 1, 2025). Based on that construction, EPA proposes to conclude that "CAA section 202(a) does not authorize the EPA to prescribe emissions standards to address global climate change concerns." *Id.* at 36,288. EPA cannot lawfully finalize this proposal because the scope of the Agency's authority under Section 202 was decided by the Supreme Court in *Massachusetts v. EPA*, 549 U.S. 497 (2007), which held that Section 202 authorizes EPA to regulate greenhouse gases. That opinion remains good law and EPA is bound by it. The Court's subsequent holdings in related matters only underscore that the Court has never abandoned its holding in *Massachusetts*, and has, instead, turned back challenges to *Massachusetts* and the 2009 Endangerment Finding whenever they have been presented. EPA's attempt to reinterpret the statutory text according to its policy preferences is thus beyond its lawful authority: *Massachusetts* forecloses the Agency's proposed narrowing of Section 202 so the proposal must be withdrawn.

*a. The Court in Massachusetts held that Section 202 unambiguously extends to greenhouse gas emissions.*

Under review in *Massachusetts* was EPA's denial of a petition to regulate greenhouse gases under Section 202(a). In the *Massachusetts* opinion, the Supreme Court articulated the question under consideration as "whether § 202(a)(1) of the Clean Air Act authorizes EPA to regulate greenhouse gas emissions from new motor vehicles in the event that it forms a 'judgment' that such emissions contribute to climate change." *Id.* at 528. The Court then answered that question: "We have little trouble concluding that it does." *Id.* Those statements alone foreclose EPA's primary proposal here. The Supreme Court's own words affirm that it was deciding the scope of EPA's authority under Section 202 specifically and whether that authority extends to greenhouse gases. And it found, unequivocally, that it does: "The statute is unambiguous." *Id.* at 529.

As EPA acknowledges in the proposal, the Court ruled that the plain language of "'[t]he Clean Air Act's sweeping definition of 'air pollutant' … embraces all airborne compounds of whatever stripe' and provided no textual basis for excluding $CO_2$ or the three other GHGs raised in the petitions for rulemaking." 90 Fed. Reg. at 36,294 (quoting *Massachusetts*, 549 U.S. at 528-29). In reaching that conclusion, the Court rejected EPA's suggestion that other elements of the statute support the view that Congress never intended the Agency to regulate greenhouse gas emissions, 549 U.S. at 529-30; that regulation of vehicles' greenhouse gas emission under Section 202(a) would conflict with the separate regulation of fuel economy, *id.* at 531-32; and that regulation of greenhouse gases under Section 202(a) was contrary to the principles laid out in *FDA v. Brown & Williamson* (principles we now know as the major questions doctrine), *id.* at 530-31. The Court also addressed standing, *id.* at 516-26, and rejected EPA's suggestion that even if it had authority to regulate greenhouse gases, it could reasonably decline to exercise it, *id.* at 532-34.

While the Court left to EPA the ultimate scientific question of "whether greenhouse gas emissions contribute to climate change" and so declined to reach the question of "whether on remand EPA must make an endangerment finding," *id.* at 533-34, the Court's holding was clear: "Because greenhouse gases fit well within the Clean Air Act's capacious definition of 'air pollutant,' we hold that EPA has the statutory authority to regulate the emission of such gases from new motor vehicles." *Id.* at 532.

EPA now claims that while *Massachusetts* "held that GHGs fell within the definition of 'air pollutant,'" it "did not interpret the scope of our authority to regulate air pollutants that cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 90 Fed. Reg. at 36,305. Rather, according to EPA, "our authority to regulate air pollutants that fit within the Act-wide definition turns on the particular statutory provision that confers authority to regulate." *Id.* at 36,301-02.

EPA manufactures this supposed legal gap from the *Massachusetts* Court's forbearance from deciding "whether sufficient information exists to make an endangerment finding." 549 U.S. at 534. EPA notes first that the Court "expressly declined to decide whether the EPA was required to issue an affirmative endangerment finding as to GHG emissions under the standard set out in CAA section 202(a)." 90 Fed. Reg. at 36,294. (True: the Court reserved to EPA that "scientific judgment." 549 U.S. at 533-34.) This, EPA says, means that "regardless whether GHGs are 'air pollutants' as defined in CAA section 302(g), they must still satisfy the same standard as any other 'air pollutant' by causing or contributing to air pollution which may reasonably be anticipated to endanger public health or welfare." 90 Fed. Reg. at 36,302. (True again: an endangerment finding is required before regulating emissions of any pollutant, including greenhouse gases.) But from this, EPA spins up spurious interpretive authority, claiming that because *Massachusetts* did not decide "whether on remand EPA must make an endangerment finding," the Court thereby left to EPA the *legal* question of whether Section 202 otherwise categorically precludes authority over greenhouse gases. EPA proposes that it does, suggesting that the "standard" applied to pollutants under Section 202 is "best" read to confer authority only over "air pollution … that itself endangers public health or welfare through local or regional exposures," *id.* at 36,300, and thus must be read to erase EPA's Section 202 authority as to greenhouse gases.

In this way, EPA claims to find statutory license to categorically exclude greenhouse gases from Section 202 inside of an opinion that held the exact opposite. EPA's reading of *Massachusetts* is a wolf in sheep's clothing, but EPA does not hide the wolf very well.

First, even a cursory read of the *Massachusetts* opinion shows that the Court was deciding the scope of EPA's authority *under Section 202(a)(1)*. The Court said so:

> On the merits, the first question is whether § 202(a)(1) of the Clean Air Act authorizes EPA to regulate greenhouse gas emissions from new motor vehicles in the event that it forms a "judgment" that such emissions contribute to climate change. We have little trouble concluding that it does.

549 U.S. at 528. That fact that the Court's analysis of the "broad language of § 202(a)(1)" drew on the Act's general definition of "air pollutant," *see id.* at 532, does not alter the nature of that conclusion. *See* 90 Fed. Reg. at 36,307 (claiming that *Massachusetts* only "rejected [EPA's] position that GHGs are 'categorically' excluded from the CAA" as whole, without deciding the

scope of Section 202).[3] It is, after all, the purpose of statutory definitions to inform the meaning of specific provisions. That the Court ultimately relied on the definition of "air pollutant" in Section 302(g) thus reflects only that the Court saw no mismatch between the Act's definition and its application within the text of Section 202—not that the Court was interpreting Section 302 *instead of* Section 202. If that had been the case, as EPA now claims, *id.*, the Court surely would have articulated a different holding from what it actually determined, which is this: "Because greenhouse gases fit well within the Clean Air Act's capacious definition of 'air pollutant,' *we hold that EPA has the statutory authority to regulate the emission of such gases from new motor vehicles*." *Massachusetts*, 549 U.S. at 532 (emphasis added).[4] The Court's analysis of *Brown & Williamson* confirms this. The Court assessed whether EPA regulation of vehicle greenhouse gases was the beyond the type of authority Congress would have conveyed in Section 202 and rejected that suggestion on the basis, among other things, that "EPA has not identified any congressional action that conflicts in any way with the regulation of greenhouse gases from new motor vehicles" and that "regulat[ing] carbon dioxide emissions from motor vehicles" would not conflict with federal mileage standards. *Id.* at 531; *see infra* Comment III (addressing the major questions doctrine). The scope of the Supreme Court's ruling is clear.

Second, the "judgment" reserved to the Agency concerning whether to make an endangerment finding on remand was not an invitation to retread whether greenhouse gases fell within the *legal* ambit of Section 202, as EPA tries to do now. Rather, the Court explained, EPA was tasked by the statute with "forming a *scientific* judgment" as to "whether greenhouse gas emissions contribute to climate change." 549 U.S. at 533-34 (emphasis added). In this way, the Court did not preclude the possibility of a determination that, as a scientific matter, greenhouse gas pollution was not reasonably anticipated to endanger the public. But the Agency's then-unperformed duty to weigh the science on that question did not leave EPA any space to conclude that greenhouse gases were not, in fact, *air pollutants* within the terms of Section 202. That was

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[3] For the same reason, there is no space to interpret "air pollution" as narrowing the scope of Section 202(a)(1) notwithstanding the Court's discussion of the term "air pollutant." As discussed *infra*, the two terms have different functions in the provision, but it would be absurd to interpret Section 202(a)(1) as applying unambiguously to greenhouse gases for the purposes of "air pollutant," as *Massachusetts* held, but categorically *excluding* them as a legal matter for the purposes of "air pollution" as it appears in the very same sentence.. And in any case, the Court was clear about the ultimate scope of Section 202(a)(1), which "authorizes EPA to regulate greenhouse gas emissions from new motor vehicles." *Massachusetts*, 549 U.S. at 528.

[4] EPA's proposal grasps at straws to construct an argument that *Massachusetts* did not fully resolve the scope of EPA's authority under Section 202 because it (purportedly) left it to EPA to determine whether greenhouse gases fall beyond the scope of pollutants that cause or contribute to dangerous air pollution within the meaning of Section 202. But the Agency never explains why, if the Court knowingly remanded the matter to EPA to decide that open question, *see, e.g.*, 90 Fed. Reg. at 36,307, the Court would nonetheless declare that the Agency "has the statutory authority to regulate" vehicle greenhouse gases. It is far easier to believe that the Supreme Court meant what it said, than it is to believe that EPA has discovered the Court's true meaning some two decades later.

the legal question presented to the Court. Nor did the Court's directive to EPA leave any space for the Agency to decide that the type of dangerous air pollution to which greenhouse gases contribute is, categorically, not a type of air pollution with which Section 202 is concerned. To the contrary, the Court clearly understood that petitioners were arguing that greenhouse gases contribute to dangerous air pollution *because they contribute to climate change*; there was no suggestion of any other basis for an endangerment finding on remand. Not only did the Court indicate no reservation about finding endangerment on that basis, it expressly recognized that EPA would have authority to regulate greenhouse gas emissions from vehicles under Section 202 so long as EPA concluded that such vehicles "contribute to climate change." *Id.* at 528. EPA's new position that contribution to climate change is not a contribution to dangerous pollution within the meaning of Section 202 cannot be reconciled with the Court's language.

Indeed, EPA fails to explain how a decision determining only that greenhouse gases were "air pollutants" under the first half of the first sentence of Section 202, but leaving open the possibility that the remaining text of that sentence could be read to exclude them again, would have resolved the question put to the Court (let alone constituted a reasonable pass at statutory interpretation). The Supreme Court granted certiorari on two questions in *Massachusetts*, one of which specifically asked the Court to resolve the scope of EPA's authority under Section 202: "Whether the EPA Administrator has authority to regulate carbon dioxide and other air pollutants associated with climate change under section 202(a)(1)." 548 U.S. 903 (2006) (granting writ of certiorari); *see* Petition for Writ of Certiorari, 2006 WL 558353 (Mar. 2, 2006); *see also, e.g.*, Alliance of Automobile Manufacturers, *Massachusetts v. EPA*, 2006 WL 3023028 (second question presented). If the Court had stopped where EPA claims it did—opining on the meaning of "air pollutant" but otherwise leaving undecided whether the text of Section 202 forecloses regulation of greenhouse gases—it would not have actually answered the central question. But, of course, the Court did not stop there; it reasoned, *including* on the basis of the definition of "air pollutant," that "EPA has the statutory authority [under Section 202(a)(1)] to regulate the emission of such gases from new motor vehicles." *Massachusetts*, 549 U.S. at 532.[5]

Even more to the point, the Court specifically rejected the suggestion that its broad understanding of the term "air pollutant" in Section 202 should be susceptible to further narrowing based on additional arguments from the text. Responding to the charge in Justice

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[5] In its "Proposed Conclusions" EPA attempts a new angle on its argument, claiming that its denial of the rulemaking petition in 2003 was based on a conclusion that greenhouse gases were precluded from *all* Clean Air Act regulation, and so the Supreme Court in *Massachusetts* was only considering the status of greenhouse gases under the Act at large rather than under Section 202 specifically. Under this argument, the Court remanded the case for EPA to consider the more specific legal question of how Section 202 in particular treats greenhouse gases. *See* 90 Fed. Reg. at 36,307. This view of *Massachusetts* is in conflict with the Supreme Court's own description of the question it was deciding, the conclusion it reached, and the nature of the finding it expected EPA to make on remand. And in any case, EPA's claim that the Agency has been "misconstruing" *Massachusetts* for nearly twenty years is undermined by the fact that the Court has never sought to correct the Agency's understanding, despite multiple opportunities to do so. *See infra* Comment II.A.1.b.i.

Scalia's dissent that the broad definition of air pollutant should be narrowed by the appearance of the phrase "air pollution agent," the Court rejected the possibility that "Congress would define 'air pollutant' so carefully and so broadly, yet confer on EPA the authority to narrow that definition whenever expedient by asserting that a particular substance is not an 'agent.'" *Id.* at 528-29 n.26. It strains credulity to think that the majority would have rejected the Scalia dissent's gloss on "agent" while intentionally leaving to EPA "the authority to narrow that definition" by reading further legal limitations on "particular substances" into the cause or contribute or endangerment tests. To the contrary, the Supreme Court suggested EPA could not decline to find that "greenhouse gases contribute to global warming" absent "profound" scientific uncertainty, because the "statutory question" was limited to whether "sufficient information exists to make an endangerment finding." *Id.* at 534. That holding is yet more evidence that the Court believed the questions that remained to EPA were factual, not textual, in nature.

Notably, the papers filed in the Supreme Court show that in reaching its holding, the Court considered, and rejected, many of the *same* arguments concerning Section 202 that EPA now advances in this proposal. EPA's brief claimed that it had reasonably determined that it "lacks authority to address the threat of global climate change by regulating greenhouse gas emissions from new motor vehicles," EPA Br., *Massachusetts v. EPA*, 2006 WL 3043970, at *22, because, *inter alia*, the presumption that "air pollutant" had a consistent meaning between sections was "not rigid" and allowed EPA to conclude greenhouse gases could be a pollutant for purposes of non-regulatory provisions while also falling beyond the scope of Section 202(a)(1), *id.* at *34-35; *compare* 90 Fed. Reg. at 36,299-300 & n.49.

States siding with EPA argued that Section 202 authorizes standards for emissions that cause or contribute to dangerous air pollution only "where U.S. emission reductions will measurably and meaningfully address such air pollution," excluding 202 regulation where "sources primarily generating the air pollution are outside the United States and where emission reductions from within the United States will have no meaningful effect on protecting public health and welfare." State Respondent-Intervenors Br., *Massachusetts v. EPA*, 2006 WL 3095443, at *9; *compare* 90 Fed. Reg. at 36,305, 36,311. They likewise argued that EPA's Section 202 authority did not reach to "global air quality issues," *id.* at *20; *compare* 90 Fed. Reg. at 36,299-301.

Industry parties, meanwhile, advanced arguments that Section 202 could not be used to regulate greenhouse gas pollution because "[t]he ordinary meaning of 'pollution" is the '*[c]ontamination* of air, soil, or water by the discharge of harmful substances'" and, therefore, "Congress vested the agency with authority to implement controls over emissions of chemicals and substances that *contaminate* the air by making it impure or dirty." Automakers Respondent-Intervenor Br., *Massachusetts v. EPA*, 2006 WL 3023028, at *20 (emphasis in original); *see also* CO2 Litigation Group Br., *Massachusetts v. EPA*, 2006 WL 3043971, at *9 (suggesting EPA's authority should be limited to "harmful or poisonous substances"); *compare* 90 Fed. Reg. at 36,300. This reading, they asserted, "is further reinforced by the various substances expressly identified as pollutants pursuant to section 202, such as carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter," which "dirty the air and, at excessive levels, pose substantial health problems for humans." *Id.*; *see also id.* at *23-24; *compare* 90 Fed. Reg. at 36,300. These same intervenors contended that the Court could not extend the reach of Section 202 to greenhouse gases, lest the ruling lead to absurd results including EPA regulation of "water vapor." *Id.* at *22; *see also* CO2

Litigation Group Br., *Massachusetts v. EPA*, 2006 WL 3043971, at *9 (raising hypothetical about water vapor); *compare* 90 Fed. Reg. at 36,301, 36,304. And they further objected to greenhouse gas regulation under Section 202 because "[g]lobal climate change … is not a localized phenomenon." *Id.* at *25; *see also* UARG Br., *Massachusetts v. EPA*, 2006 WL 3101955, at *47-48 (arguing that the text limited EPA's authority to "air at or near ground level that the general public breathes"); *compare* 90 Fed. Reg. at 36,300.

The Supreme Court was, evidently, not swayed by any of those arguments, several of which were also advanced in Justice Scalia's dissent. *See* 549 U.S. at 559-60 (Scalia, J., dissenting) ("EPA's conception of 'air pollution'—focusing on impurities in the 'ambient air' 'at ground level or near the surface of the earth'—is perfectly consistent with the natural meaning of that term."). Had the Court accepted any of them as accurate readings of the text of Section 202—and therefore determinative of Congressional intent that Section 202 reach only locally or regionally dangerous pollution—the Court would have been compelled to uphold EPA's denial of the petition to regulate. But it did not. *See id.* at 529 n.26 (rejecting the Scalia dissent's conception of the "ambient air").

In fact, the Court rejected any suggestion that distinctions in the nature of pollution were relevant to the authority question. The opinion acknowledged EPA's suggestion that "Congress designed the original Clean Air Act to address *local* air pollutants rather than a substance that 'is fairly consistent in its concentration throughout the *world's* atmosphere.'" *Id.* at 512 (quoting EPA's denial of the petition for rulemaking). But the Court rejected the relevance of such potential distinctions, explaining that whether or not Congress anticipated a problem like climate change, "[t]he broad language of § 202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall [the provision's] obsolescence." *Id.* at 532; *see also id*. at 506 (noting that the definition of "welfare" "is also defined broadly: among other things, it includes 'effects on . . . weather . . . and climate.'"). Accordingly, the Court rejected the Agency's belief that because "Congress did not intend it to regulate substances that contribute to climate change … carbon dioxide is not an 'air pollutant' within the meaning of the [Section 202(a)(1)]": per the Court, "[t]he statutory text forecloses EPA's reading." *Id.* at 528.

EPA cannot plausibly assert that the Supreme Court "did not construe the scope of the EPA's authority to regulate under CAA section 202(a)," 90 Fed. Reg. at 36,301-02, when that is precisely what the Court was asked to do and declared it was doing—and where the Court sided with petitioners', not respondents', view of EPA's authority. Because EPA's proposal relies on an inaccurate understanding of *Massachusetts*, it fails to consider an important aspect of the problem, is unreasonable and unlawful, and must be withdrawn.

*b. Massachusetts remains good law.*

*i. Subsequent Supreme Court decisions have confirmed—not overturned—Massachusetts' holding.*

The holding in *Massachusetts* has not been overruled by the Supreme Court, and it remains binding precedent that governs the question the Agency now proposes to reopen. EPA acknowledges as much in the proposal, *see* 90 Fed. Reg. at 36,300 n.46 (citing *Hohn v. United States*, 524 U.S. 236, 252-53 (1998), for the proposition that "Supreme Court decisions 'remain

binding precedent until [the Supreme Court] see[s] fit to reconsider them, regardless of whether subsequent cases have raised doubts about their continuing vitality'"), which makes the Agency's attempt to avoid the implications of that principle all the more bizarre.

In particular, EPA cannot escape binding Supreme Court precedent concerning the scope of Section 202 by noting other precedents—*UARG*, *West Virginia*, and *Loper Bright*—applicable to other sections and other questions. EPA, notably, does not claim that any of these cases overturned *Massachusetts*, claiming only that *Massachusetts* should be read "in harmony with [these] subsequent decisions bearing on the EPA's authority and statutory interpretation." 90 Fed. Reg. at 36,300. As the Supreme Court has not "see[n] fit to reconsider" *Massachusetts*, however, these subsequent cases are irrelevant ("regardless" of what EPA claims they say[6]). *Cf. Bosse v. Oklahoma*, 580 U.S. 1, 3 (2016) ("It is this Court's prerogative alone to overrule one of its precedents." (cleaned up)).

In any case, EPA is wrong to suggest that "harmonizing" these precedents would have the effect of narrowing the meaning of *Massachusetts*; if they bear on *Massachusetts* at all, it is to affirm, not cast doubt on, that case's conclusion. To begin with the obvious, none of the three cases cited by EPA considered the Agency's authority under Section 202. So none uproots *Massachusetts*'s conclusions concerning the reach of Section 202. Much to the contrary, the *UARG* Court affirmed that *Massachusetts* decided the authority question (purportedly) at issue in this proposal: "In 2007, the Court held that Title II of the Act authorized EPA to regulate greenhouse gas emissions from new motor vehicles if the Agency formed a judgment that such emissions contribute to climate change." *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 310 (2014) (cleaned up). Though the *UARG* opinion went on to conclude that a portion of the Act's stationary source provisions should not be understood to extend to greenhouse gases given its specific statutory context, the Court nowhere cast doubt on the holding it attributed to *Massachusetts* or on any aspect of EPA's greenhouse gas regulations under Section 202. Rather, it relied on EPA's regulation of greenhouse gases from vehicles in concluding that EPA retained its authority to impose "best available control technology" for greenhouse gases on at least some statutory sources. *See id.* at 332-34 & n.9 (explaining that greenhouse gases are "indisputably" a "pollutant subject to regulation under this chapter"—a fact only attributable, at that point, to EPA's vehicle rules—and so would allow the regulation of greenhouse gases from stationary sources otherwise subject to Prevention of Significant Deterioration ("PSD") and Title V permitting requirements, so-called "anyway" sources). EPA's reliance on *UARG* for the premise that *Massachusetts* "'did not embrace EPA's [then] current, equally categorical position that

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[6] Even if EPA could make the case—which it cannot—that *Massachusetts* rested on premises rejected in these other cases, that still would not be a basis for EPA to defy *Massachusetts*'s holding. As the Supreme Court held in *Rodriguez de Quijas v. Shearson/American Express, Inc.*: "If a precedent of this Court has direct application in a case, yet appears to rest on reasons rejected in some other line of decisions, the Court of Appeals should follow the case which directly controls, leaving to this Court the prerogative of overruling its own decisions." 490 U.S. 477, 484 (1989); *see also, e.g.*, *Mallory v. Norfolk S. Ry. Co.*, 600 U.S. 122, 136 (2023) (quoting *Rodriguez*). EPA has no more power than a Court of Appeals to alter the explicit holding in *Massachusetts* or declare that it was decided in error.

[greenhouse gases] must be air pollutants for all purposes regardless of the statutory context,'" 90 Fed. Reg. at 36,302 (quoting *UARG*, 573 U.S. at 320), is thus beside the point. While *Massachusetts* may not have decided the status of greenhouse gases under every provision in the Clean Air Act, it *did* decide their status under Section 202, as *UARG* acknowledged. *Cf., e.g.*, *Coalition for Responsible Regulation, Inc. v. EPA*, 571 U.S. 951 (2013) (denying petitions for a writ of certiorari in the case that became *UARG* that sought review of questions concerning EPA's subsequent endangerment finding).

The Court's opinion in *West Virginia v. EPA* is even further afield from questions about *Massachusetts* or the scope of Section 202—neither of which it even mentions. 597 U.S. 697 (2022). The Court's rejection of a specific "system of emission reduction" chosen by EPA to reduce greenhouse gas emissions from power plants under Section 111 has no bearing on the scope of the pollutants covered by Section 202. That is especially true where the Court, even while rejecting EPA's specific regulatory choices, nonetheless affirmed that EPA has authority to regulate greenhouse gases from power plant sources under the Clean Air Act, *see id.* at 730 (referencing the Court's earlier holding in *Am. Elec. Power Co. v. Connecticut* that Section 111 applies to carbon dioxide emissions from power plants, which itself was based on the fact that *Massachusetts* allowed regulation of greenhouse gases, 564 U.S. 410, 424 (2011) ("*AEP*"). That conclusion cannot possibly be restyled as suggesting that EPA *lacks* Clean Air Act authority as to vehicles. Nor can EPA claim *Massachusetts* was narrowed by the *West Virginia* Court's reliance on the major questions doctrine. The application of that doctrine to a particular regulation under Section 111 had no power to alter *Massachusetts*'s holding as to Section 202. *See Hohn*, 524 U.S. at 252-53. But in any event, and as discussed below, *Massachusetts* considered and rejected "major questions" concerns under the same line of case law applied in *West Virginia*, so the two cases are already in doctrinal "harmony." *See infra* Comment III.A.

So too with *Loper Bright Enterprises v. Raimondo*, a case that demands that courts determine the "single, best meaning" of a statute, including by resolving statutory ambiguities as to which courts previously extended deference to agency constructions. 603 U.S. 369, 398-400 (2024). Under *Loper*, EPA is not empowered to change the meaning of "pollutant" in the Act to suit its policy preferences, even assuming, *arguendo*, that its new interpretation might have been upheld under previous precedents as "a permissible construction of the statute." *Id.* at 397. Rather, EPA's interpretation here must reflect the "best" meaning of that term, which, as discussed above, was already decided in *Massachusetts*. *Cf. Massachusetts*, 549 U.S. at 529 n.26 (rejecting the dissent's application of *Chevron* deference because the text is clear).[7] *Loper* thus cuts

[7] *Massachusetts* was clear that the statutory terms "unambiguous[ly]" extended EPA's Section 202 authority to the regulation of greenhouse gases. *See* 549 U.S. at 529. In so doing, the Court announced the statute's "single, best meaning." *Loper*, 603 U.S. at 400. But even if that were not the case, EPA would still lack discretion here to reinterpret the scope of Section 202. As *Loper* made clear, the Court's decision in that case did not overrule earlier precedents decided under prior interpretative principles. *See id.* at 412 (explaining that overruling *Chevron* did not disrupt precedents decided under that case's interpretive methodology because "[m]ere reliance on *Chevron* cannot constitute a 'special justification' for overruling such a holding" as the mere fact that a "precedent was wrongly decided … is not enough to justify overruling a statutory

against, rather than for, EPA's claimed authority to (re)define the meaning of "pollutant" as used in Section 202.

These precedents plainly do nothing to disturb *Massachusetts*' direct precedential effect in this case. At the same time, EPA fails to reckon with the Supreme Court's consistent, repeated affirmation of its action in *Massachusetts*. As noted above, such affirmations can be found in *UARG*, which explicitly affirmed the *Massachusetts* Court's determination as to the reach of Section 202, and *West Virginia*, which takes as a given that EPA has Clean Air Act authority over greenhouse gases. Another such affirmation appears in *AEP*, where the Court described *Massachusetts* as concluding that "EPA had authority to set greenhouse gas emission standards" and so had not acted in accordance with law when denying a petition "seeking controls on greenhouse gas emissions from new motor vehicles." 564 U.S. at 416. As a prelude to its decision on the federal displacement issues in that case, the Court went on to describe how EPA, "[r]esponding to our decision in *Massachusetts*," then established vehicle greenhouse gas standards. *Id.* And the Court's displacement holding, as in *West Virginia*, was built on the premise that Congress authorized EPA to regulate greenhouse gases from emitting sources under the Clean Air Act. *See, e.g.*, *id.* at 428 (explaining that Congress "designated" EPA "to serve as primary regulator of greenhouse gas emissions"), 424 ("*Massachusetts* made plain that emissions of carbon dioxide qualify as air pollution subject to regulation under the Act."). As with the discussion in *UARG*, at no point in describing *Massachusetts* did *AEP* cast even the slightest shade on EPA's exercise of its authority over vehicle greenhouse gas emissions—a truly strange result if, as EPA now suggests, the Court never understood EPA to have that authority.

That result would be stranger still considering the outcome of the challenges *actually* brought against the 2009 Endangerment Finding. The D.C. Circuit decided the first set of these challenges—to the Finding and to EPA's denial of several 2010 petitions for reconsideration—in *Coalition for Responsible Regulation, Inc. v. EPA*. 684 F.3d 102 (D.C. Cir. 2012). There, the court held that "the Endangerment Finding … [is] neither arbitrary nor capricious," *id.* at 113, rejecting challenges to EPA's interpretation of Section 202(a)(1), to the scientific record supporting the Finding, to the decision "not to 'quantify' the risk of endangerment," to the definition of the air pollutant as an aggregate of six greenhouse gases, to internal EPA process decisions, and to EPA's denial of petitions for reconsideration. Among these arguments, the court specifically addressed petitioners' assertion that EPA "improperly interpreted CAA § 202(a)(1) as restricting the Endangerment Finding to a science-based judgment devoid of considerations of policy concerns and regulated consequences." *Id.* at 117. The court rejected this contention, explaining that it was "foreclosed by the language of the statute and the Supreme Court's decision in *Massachusetts v. EPA*," which dictated that the endangerment evaluation to be performed by EPA following *Massachusetts* was limited to a "'scientific judgment' about the

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precedent"); *CBOCS W., Inc. v. Humphries*, 553 U.S. 442, 457 (2008) (holding "changes in interpretive approach" within the case law do not "justify reexamination of well-established prior law" because "[p]rinciples of *stare decisis* … demand respect for precedent whether judicial methods of interpretation change or stay the same"). Thus, *Massachusetts* deprives EPA of authority to redefine the scope of Section 202 under any possible (or, in this case, impossible) reading of that case.

potential risks greenhouse gas emissions pose to public health or welfare." *Id.* at 117-18; *see id.* at 120 (describing EPA as having properly "determine[d] whether the evidence warranted an endangerment finding for greenhouse gases as it was required to do under the Supreme Court's mandate in *Massachusetts v. EPA*"). The court in *Coalition for Responsible Regulation* thus upheld EPA's issuance of the 2009 Endangerment Finding, concluding that it was "consistent with *Massachusetts v. EPA* and the text and structure of the CAA." *Id.* at 117.

Following the decision in *Coalition for Responsible Regulation*, the Supreme Court overturned a portion of that opinion (in *UARG*) concerning separate petitions challenging EPA's "Timing" and "Tailoring" rules that had been consolidated in the D.C. Circuit with challenges to the Endangerment Finding. But the Supreme Court notably declined to grant certiorari on questions concerning the validity of the 2009 Endangerment Finding. *See Chamber of Com. v. EPA*, 571 U.S. 951 (2013) (granting petition for a writ of certiorari only as to a question concerning the triggering of statutory source permitting requirements and denying as to questions concerning the validity of EPA's endangerment finding); *Texas v. EPA*, 571 U.S. 951 (2013) (same); *Southeastern Legal Found. v. EPA*, 571 U.S. 951 (2013) (same); *Virginia v. EPA*, 571 U.S. 951 (2013) (denying petition for a writ of certiorari as to questions concerning EPA's endangerment finding); *Pacific Legal Found. v. EPA*, 571 U.S. 951 (2013) (same); *Coal. for Responsible Regul., Inc. v. EPA*, 571 U.S. 951 (2013) (same). Amongst those denials, the Court specifically denied a request that it consider whether to overrule *Massachusetts*. *Texas v. EPA*, 571 U.S. 951 (2013). The Supreme Court's categorical denial of (diverse) questions concerning the validity of the Endangerment Finding left the *Coalition for Responsible Regulation* court's affirmation of the 2009 Endangerment Finding in place—and is definitive evidence that the Court considered these authority questions (as well as the endangerment conclusion itself, *see infra* Comment VII) settled for purposes of vehicle regulation under Section 202.

When petitioners sought to force litigation over the Endangerment Finding for a second time in 2022 (after filing new petitions for reconsideration with EPA that were subsequently denied), those challenges were again rebuffed by the D.C. Circuit. *Concerned Household Elec. Consumer's Council v. EPA*, 2023 WL 3643436 (May 25, 2023); *see also Concerned Household Elec. Consumer's Council v. EPA*, 2023 WL 4669311 (July 20, 2023) (denying petition for rehearing *en banc*). And for a second time, the Supreme Court declined to grant a writ of certiorari. *Concerned Household Elec. Consumer's Council v. EPA*, 114 S. Ct. 497 (Mem.) (2023).

Reading the Supreme Court's precedents concerning EPA's greenhouse gas authority "in harmony" thus tells a clear story: at every possible turn, the Supreme Court (like the lower courts) has affirmed that Section 202 extends to greenhouse gases and rejected attempts to undo either its holding or EPA's regulations to that effect. No further analysis of this question is necessary on EPA's part: because *Massachusetts* decided the scope of the Agency's authority, EPA cannot advance a new interpretation that would narrow it. So the primary proposal must be withdrawn.

*ii. Subsequent acts of Congress do not call Massachusetts into question.*

At various points, the proposal suggests that acts of Congress post-dating *Massachusetts* have called that case into question. *See* 90 Fed. Reg. at 36,306-07. Not so. To the contrary, Congress' actions since 2009 demonstrate its understanding that EPA may regulate greenhouse gas emissions under Section 202(a).

Most critically, Congress has had full power to overrule *Massachusetts* since the moment the Supreme Court announced its decision. *See, e.g.*, *Kimble v. Marvel Ent., LLC*, 576 U.S. 446, 456 (2015). It has never done so—notwithstanding that every administration has issued and enforced vehicle emissions standards for greenhouse gases since 2009. Indeed, Congress has repeatedly declined to amend the Clean Air Act to remove EPA's authority over greenhouse gases or to nullify the 2009 Endangerment Finding. *See, e.g.*, Joint Resolution, S.J. Res. 26, 111th Congress (2010) (joint resolution of disapproval not enacted); Defending America's Affordable Energy and Jobs Act, S. 228, 112th Cong. (2011) (bill not enacted); Energy Tax Prevention Act, H.R. 910, 112th Cong. (2011) (bill not enacted); Stopping EPA Overreach Act of 2017, H.R. 637, 115th Cong. (2017) (bill not enacted).

Congress has also had power under the Congressional Review Act to disapprove and invalidate via abbreviated procedures EPA rules establishing vehicle emission standards promulgated since 2009. *See generally* 5 U.S.C. § 801 *et seq.* But again, it has not done so. In fact, a prior Congress used the Congressional Review Act to disapprove a rule enacted by the first Trump Administration that would have *rescinded* certain emissions standards for methane and volatile organic compounds applicable to the oil and natural gas sector and required EPA to make certain additional findings before it could regulate greenhouse gases under Section 111's new source performance standards. *See* Pub. L. No. 117-23; 85 Fed. Reg. 57,018 (Sept. 14, 2020).

The Inflation Reduction Act of 2022 likewise demonstrates Congress' agreement that the Clean Air Act was intended to confer authority to regulate greenhouse gas emissions. *See, e.g.*, 42 U.S.C. § 7436(f)(6)(A) (referencing Section 111 standards of performance for methane emissions from the oil and gas source category); *id.* § 7435(a)(6) (referencing reductions in greenhouse gas emissions from the electricity sector achieved via existing authorities within the Clean Air Act, *i.e.*, Section 111), *id.* § 7436(f)(6)(A); *see also* Greg Dotson & Dustin J. Maghamfar, The Clean Air Act Amendments of 2022: Clean Air, Climate Change, and the Inflation Reduction Act, 53 Envtl. L. Rptr. 10017, 10026–35 (2023) (summarizing 2022 amendments and implications for regulation of greenhouse gases under the Clean Air Act), https://perma.cc/4JPV-AE2M.[8] Provisions added by the Inflation Reduction Act repeatedly refer to carbon dioxide and other greenhouse gases as "air pollutants," with no indication that the usage of that term was intended to be distinct from its other appearances in the Act. For example,

[8] As discussed further below, Public Law No. 119-21 (the 2025 Reconciliation Act) repeals or rescinds appropriations for some Inflation Reduction Act subsidy programs. But the 2025 act does not undercut EPA's authority to set greenhouse gas emissions standards under, *e.g.*, Section 202(a).

Section 132 states that "[t]he term 'greenhouse gas' means *the air pollutants* carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons, and sulfur hexafluoride." 42 U.S.C. § 7432(d)(4) (emphasis added); *accord id.* §§ 7435(c), 7436(i), 7438(d), 7545(o)(1)(G). Section 133 concerns grants "to reduce air pollution" and directs consideration of strategies to reduce, among other things, greenhouse gases—defined as "the air pollutants carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons, and sulfur hexafluoride." *Id.* § 7433(d)(2). Section 137 refers to "Greenhouse Gas Air Pollution Plans and Implementation Grants," and establishes funding for states to "develop[] a plan for the reduction of greenhouse gas air pollution." *Id.* § 7437(b); *see also id.* § 7437(d)(2) (defining the "air pollutants" comprising greenhouse gas). Coming well after *Massachusetts* and after EPA's regulation of greenhouse gases under Section 202(a)(1) specifically, these provisions reflect Congressional ratification of EPA's longstanding understanding and application of *Massachusetts*.[9]

Likewise supportive is the fact that Congress has appropriated money to EPA in response to EPA budget requests specifically referencing the need for appropriations to fund the development and promulgation of greenhouse gas regulations under the Clean Air Act—in some cases, after rejecting the efforts of individual legislators to prohibit the use of funds for developing greenhouse gas emissions regulations. *See, e.g.*, U.S. Environmental Protection Agency, Fiscal Year 2015, Justification of Appropriation Estimates for the Committee on Appropriations, at 12, 213, EPA-190-R-14-002 (2014); Continuing Appropriations Resolution, 2015, Pub. L. No. 113-164, 128 Stat. 1867 (2014); Consolidated and Further Continuing Appropriations Act, 2015, Pub. L. No. 113-235, 128 Stat. 2130 (2014); *see generally* Greg Dotson, Looking for Your Friends at a Cocktail Party: the Dubious Role of Rejected Legislation and the Overlooked Potential of the Presidential Appropriations Process, Harv. L. S. J. on Legis. Online (2024), https://perma.cc/3HW7-7G2J. And with regard to vehicles standards in particular, Congress has repeatedly recognized EPA's authority to set greenhouse gas emissions limits—including by creating tax credits for vehicles that meet EPA's standards. *See, e.g.*, 26 U.S.C. §§ 30B(b)(3)(B), 30D(f)(7)[10]; *see also* 42 U.S.C. §§ 17013(a)(1)(establishing incentive program for advanced technology vehicles, defined with regard to compliance with EPA standards), 13212(f)(3)(C).

None of the legislative activities cited in the proposal undermine this consistent recognition of EPA's authority.

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[9] The fact that those definitions were "[f]or purposes of" the given section does not alter that fact. *See, e.g.*, 42 U.S.C. § 7432(d). That chapeau text confirms a provision-specific meaning of the term "greenhouse gas," *i.e.*, which *particular air pollutants* are considered greenhouse gases under the given provision. It does not alter the meaning of the term "air pollutants" as Congress used it in that definition. Recent Congressional action to revoke some of the funding provided under those provisions is also irrelevant. Regardless of the total size of those grant programs at this moment, Congress did not amend the statutory text or its understanding of the definitions applicable to pollutants that would fall within the program's purview.

[10] The 2025 Reconciliation Act cut off the tax credit for vehicles acquired after September 30, 2025. *Id.* § 30D(h).

*First*, the proposal cites the 2020 American Innovation and Manufacturing (AIM) Act, which amended the Clean Air Act by adding a section providing a comprehensive system for phasing down the production and consumption of hydrofluorocarbons—a potent family of greenhouse gases, with many times the warming potential of carbon dioxide. 42 U.S.C. § 7675; *see generally* https://www.ccacoalition.org/short-lived-climate-pollutants/hydrofluorocarbons-hfcs. The act requires the production and use of hydrofluorocarbons to drop below set targets in certain subsectors, including vehicle A/C systems. *See* 89 Fed. Reg. 27,842, 27,918 (Apr. 18, 2024). But it does not speak to—let alone displace—EPA's separately conferred authority to regulate vehicle tailpipe emissions. There is no conflict between delegating to EPA the authority to limit greenhouse gas emissions from vehicles under Section 202(a) and enacting a detailed regime placing additional restrictions on the refrigeration and air conditioning sector's use of a particularly deleterious subset of greenhouse gases. *Cf. Massachusetts*, 549 U.S. at 530 n.29 ("We are moreover puzzled by EPA's roundabout argument that because later Congresses chose to address stratospheric ozone pollution in a specific legislative provision, it somehow follows that greenhouse gases cannot be air pollutants within the meaning of the Clean Air Act."). Indeed, EPA itself acknowledged just last year that its rule implementing the AIM Act phasedown and its vehicle emissions standards under Section 202(a) complement each other. *See* 89 Fed. Reg. at 27,918. The proposal fails to acknowledge or explain EPA's deviation from its own prior position that the two regulatory authorities coexist harmoniously, as required for reasoned administrative decision-making. *See generally FCC v. Fox Television Stations, Inc.,* 556 U.S. 502, 515-16 (2009) ("*Fox*").

*Second*, for largely the same reasons, there is no conflict between EPA's regulation of vehicle greenhouse gas emissions under Section 202(a) and Congress' decision in the Inflation Reduction Act to impose a charge on waste emissions of methane from the oil and gas production sector. *See* 42 U.S.C. § 7436(c). Just the opposite: Section 136's methane charge provision *confirms* Congress' understanding that greenhouse gases are subject to regulation under the Act. Congress specified that no fee would be collected for sources that were in compliance with "methane emissions standards and plans pursuant to subsections (b) and (d) of section 111 [that] have been approved and are in effect," provided that those standards were at least as stringent as EPA's 2021 proposed rule to regulate greenhouse gases from the oil and gas sector. 42 U.S.C. § 7436(c) & (f)(6). Section 136 therefore explicitly acknowledges EPA's authority to regulate greenhouse gas emissions under Section 111. And Section 111, like Section 202, requires EPA to determine that sources "contribute" to air pollution that "may reasonably be anticipated to endanger public health or welfare" (with sources in Section 111 subject to regulation only if they contribute "significantly"). *See id.* § 7411(b)(1)(A). Because the text of Section 111 and Section 202 ask an essentially identical question about what pollutants may be considered for regulation under each provision (save for Section 111's requirement of a "significant[]" contribution), Congress's explicit ratification of EPA's authority over greenhouse

gases under Section 111 serves to affirm EPA's authority over that same pollutant under those same terms in Section 202.[11]

The proposal nevertheless contends that Congress's choice to enact a special provision for dealing with waste methane emissions shows that EPA does not otherwise have authority to regulate greenhouse gases under the Clean Air Act. But it is well established that EPA may regulate emissions of air pollutants under its general authority to set standards for certain categories of sources (such as stationary sources that contribute significantly to dangerous pollution under Section 111, and vehicles under Section 202(a)), notwithstanding that specialized provisions of the Clean Air Act impose additional restrictions on the same pollutants. For example, EPA sets standards for emissions of volatile organic compounds (VOCs) from vehicles under Section 202(a), *see, e.g.*, 89 Fed. Reg. at 28,095, and from stationary source categories listed under Section 111, *see generally* 40 C.F.R. part 60, notwithstanding that Section 183 of the Act directs EPA to set emissions standards for VOCs from consumer or commercial products, *see* 42 U.S.C. § 7511b(e), and Section 112 directs EPA to regulate named VOCs as part of the hazardous pollutants program, *id.* § 7412(b). EPA also regulates precursor pollutants that cause acid rain under the National Ambient Air Quality Standards, *see* 40 C.F.R. §§ 50.11, 50.17, and under Section 202(a), *see* 89 Fed. Reg. at 27,833, notwithstanding that Title IV provides additional authority to curb acid deposition. *See* 42 U.S.C. § 7651 *et seq*.

*Third*, there is likewise no conflict between EPA's authority to regulate greenhouse gas emissions from vehicles and Congress' subsequent establishment of programs that—in the proposal's words—"incentivize" the reduction greenhouse gas emissions from various sources. 90 Fed. Reg. at 36,306 (citing 26 U.S.C. § 45Q; 42 U.S.C. §§ 7432-38).[12] As an initial matter, at least two of those provisions affirmatively support EPA's authority to regulate greenhouse gases under general provisions of the statute. One—Section 136's waste methane emissions charge—has already been discussed. The other, Section 135, provides substantial funding to the EPA Administrator "to ensure that reductions in greenhouse gas emissions are achieved through use of the existing authorities of this Act." *Id.* § 7435. That phrase would make little sense if EPA lacked any authority to secure reductions of greenhouse gas emissions. But one need not guess its purpose: when Congress added that instruction in 2022, EPA was, and had been, actively pursuing greenhouse gas reductions through its existing authorities in Section 111, 202, and 231. *See, e.g.*, Repeal of the Affordable Clean Energy Rule, 89 Fed. Reg. 39,798, 39,824-25 (May 9, 2024) (summarizing history of Section 111 greenhouse gas standards for power plants); 89 Fed.

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[11] The fact that Section 111 applies to stationary sources and Section 202 to mobile sources does not provide any statutory or practical basis for treating the nearly identical language in the two sections differently.

[12] In the same footnote discussing incentive programs, the proposal also cites to the renewable fuel program codified at 42 U.S.C. § 7545(o). The renewal fuel program is regulatory, not a voluntary program. In any event, EPA recognized as recently as 2024 that its authority to regulate greenhouse gas emissions under Section 202(a) is consistent with the renewable fuel program. *See, e.g.*, Light/Medium Duty Response to Comments at 326. The proposal fails to acknowledge or explain this change in position.

Reg. at 27,882-83 (summarizing history of Section 202(a) greenhouse gas standards on vehicles); Control of Air Pollution From Airplanes and Airplane Engines, 86 Fed. Reg. 2,136 (Jan. 11, 2021) (setting Section 231 greenhouse gas standards on aircraft engines). The meaning of "existing authorities" in Section 135 is thus evident from context, ratifying EPA's authority to address greenhouse gases under those standard-setting provisions.[13]

Nor do the other voluntary incentive provisions cited by the proposal undermine EPA's regulatory authority under Section 202(a). Congress is free to offer both sticks and carrots to tackle the same or related issues. The use of one does not logically preclude the other, particularly where the provisions are complementary—for example, regulatory restrictions on the quantity of greenhouse gases emitted from heavy-duty vehicles, and the establishment of rewards and rebates for switching to zero-emission heavy-duty vehicles. *See* 42 U.S.C. § 7432.

*Fourth*, nothing in the 2025 Reconciliation Act shows that Congress has made a (much belated) about-face on EPA's authority under Section 202(a). The 2025 Reconciliation Act was a budgetary statute only. The act rescinds unobligated balances to carry out some of Inflation Reduction Act's incentive programs to reduce greenhouse gases. *See* Pub. L. No. 119-21, §§ 60001 (rescinding unobligated balances to carry out 42 U.S.C. § 7432), 6006 (same re § 7435), 60012 (same re § 7436), 60013 (same re § 7437), 60016 (same re § 7438). It also delays for ten years the collection of the methane waste charge enacted by the Inflation Reduction Act, *see* Pub. L. No. 119-21, § 60012(b), and repeals a provision of the Inflation Reduction Act that created grants for reducing greenhouse gas emissions, *id.* § 6002. But nothing in the act restricts EPA's authority to regulate greenhouse gases under Section 202(a). The Reconciliation Act, therefore, says nothing about EPA's longstanding authority to regulate vehicle greenhouse gas emissions under separate statutory authority that it did not amend.

Nor is it relevant that the 2025 Reconciliation Act repealed a sub-provision of the grant program formerly codified at 42 U.S.C. § 7434, which defined "greenhouse gas" for purposes of that program to include "the *air pollutants* carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons, and sulfur hexafluoride" (emphasis added). As noted, the act repealed the grant program in its entirety. *See* Pub. L. No. 119-21, § 6002. In doing so, it necessarily rendered the program-specific definition obsolete. The act did not single out or express any disagreement with the now-defunct definition's recognition that greenhouse gases are air pollutants. To the contrary, the act leaves undisturbed the identical definition included in other IRA provisions. *See* 42 U.S.C. §§ 7435, 36.

*Fifth*, the Congressional Review Act disapprovals cited by the proposal are inapposite. Congress' disapproval of EPA's maiden effort to implement the Inflation Reduction Act's charge on waste methane emissions by oil and gas producers, *see* Pub. L. No. 119-2; Waste Emissions Charge for Petroleum and Natural Gas Systems, 90 Fed. Reg. 91,094 (Nov. 18, 2024), invalidated the particular regulatory approach EPA took in that rulemaking, but did not alter the underlying statutory command in Section 136, which obligates producers to pay a charge for the tons of

[13] As discussed further below, the 2025 Reconciliation Act rescinded unobligated balances to carry out this provision, but Congress has not repealed it.

methane they emit in excess of certain thresholds unless they can demonstrate compliance with a sufficiently strict EPA Section 111 standards for greenhouse gases, as discussed above.[14] In any case, disapproval of an oil and gas waste emission charge rulemaking under Section 136 says nothing about EPA's authority to issue greenhouse gas emissions standards for vehicles under a separate section of the statute. *Cf.* 5 U.S.C. § 801(b)(2) (barring an agency from promulgating a rule that is "substantially the same" as one disapproved under the Congressional Review Act, but leaving the agency's statutory authority unchanged). The adverse inference EPA nevertheless posits would be particularly illogical here, given that—as discussed—Congress has never disapproved the many EPA greenhouse gas standards issued under Section 202(a).

The resolutions of disapproval relating to EPA's decision to grant California a waiver to issue its own vehicle emission standards under Section 209 of the Clean Air Act, Pub. L. No. 119-17 (2025), are likewise uninformative. *See* 5 U.S.C. § 801(b)(2). The disapproved waivers affect specific California standards that diverged from federal standards and have no effect on EPA's own statutory authority to regulate vehicle greenhouse gas emissions under Section 202(a). (Indeed, the California standards covered by those waivers reached far beyond greenhouse gas standards, addressing criteria pollutant emissions and sales of zero emission vehicles.) Moreover, they do not undermine California's authority to seek waivers for future vehicle standards, and the waivers for California's prior vehicle standards remain in effect. *See, e.g.*, California State Motor Vehicle Pollution Control Standards, 87 Fed. Reg. 14,332 (Mar. 14, 2022).[15]

#### 2. *The proposal fails to acknowledge, let alone clear, the high bar set by principles of statutory* stare decisis.

To the extent that EPA's interpretation depends on an implicit premise that *Massachusetts* must be overturned, EPA has failed to present any legal justification for moving forward under that premise.[16] It is—of course—beyond EPA's power to overturn Supreme Court precedent, and so agency action conflicting with Supreme Court precedent is unlawful, notwithstanding EPA's belief or prognostication that such precedent should be overturned. But even if such a prognostication were legally relevant, EPA has not substantiated it here. In particular, EPA fails to address any of the considerations for departing from statutory *stare decisis* or demonstrate that they would apply here. As the Supreme Court has repeatedly confirmed, overruling precedent requires a "'special justification'" beyond a mere determination that the court "would decide a case differently now than we did then." *Kimble*, 576 U.S. at 455-56 (quoting *Halliburton Co. v.*

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[14] To the contrary, Congress recently amended the provision to extend compliance deadlines but pointedly did *not* remove the obligation to pay emissions fees or the exemption from those fees for facilities complying with suitable EPA greenhouse gas regulations.

[15] Plus, California has challenged those resolutions as unlawful. *See California v. United States*, No. 3:25-cv-04966 (N.D. Cal.).

[16] Although EPA declares that its proposed interpretation is "[c]onsistent with *Massachusetts*," *see* 90 Fed. Reg. at 36,302, 36,305, that particular bluff is easily dismantled by even a cursory read of *Massachusetts*, as explained above. Thus, advancing the proposal here would require that EPA establish that *Massachusetts* no longer governs. It has not done so.

*Erica P. John Fund, Inc.,* 573 U.S. 258, 266 (2014)); *Kisor v. Wilkie*, 588 U.S. 558, 587 (2019). "Considerations of *stare decisis* have special force in the area of statutory interpretation, for here, unlike in the context of constitutional interpretation, the legislative power is implicated, and Congress remains free to alter what [the Court has] done." *Patterson v. McLean Credit Union*, 491 U.S. 164, 172-73 (1989) (citing *Square D Co. v. Niagara Frontier Tariff Bureau, Inc.,* 476 U.S. 409, 424 (1986) and *Illinois Brick Co. v. Illinois,* 431 U.S. 720, 736 (1977)); *see also Kimble*, 576 U.S. at 456; *Allen v. Milligan*, 599 U.S. 1, 39 (2023) (explaining that "until and unless" Congress corrects the Court's chosen statutory construction, "statutory *stare decisis* counsels our staying the course"); *see id.* at 42-43 (Kavanaugh, J., concurring in part) ("Although statutory *stare decisis* is not absolute, the Court has ordinarily left the updating or correction of erroneous statutory precedents to the legislative process." (cleaned up)).

To advance a proposal dependent on the presumption that the Supreme Court might choose to overturn *Massachusetts*, then, EPA would need to explain what specific factors counseled overruling that precedent. *See, e.g.*, *Loper*, 603 U.S. at 407 (explaining that overruling precedent must consider factors like "the quality of the precedent's reasoning, the workability of the rule it established, and reliance on the decision"); *Janus v. Am. Fed'n of State, Cnty., & Mun. Emps., Council 31*, 585 U.S. 878, 917 (2018) (identifying and applying factors to overrule a constitutional precedent). But not only that: EPA would also need to meet the "greater" burden imposed on parties seeking to "overrule a point of statutory construction," *Patterson*, 419 U.S. at 172-73—a bar made yet higher when a party seeks to overrule a "long line of precedents," *Kisor*, 588 U.S. at 587; *see supra* (concerning *UARG, AEP, West Virginia, etc.*), or an interpretation that "Congress has spurned multiple opportunities to reverse," *Kimble*, 576 U.S. at 456; *see infra* (concerning failed legislation to remove EPA's greenhouse gas authority). Absent an explanation of how the present circumstances create the type of "special justification" demanded (and absent consideration of public comments on that explanation), EPA cannot lawfully base its proposal on a presumption that *Massachusetts* should be overturned.

For these reasons, EPA's primary proposal is dead on arrival. The Agency is bound by direct Supreme Court precedent addressing the scope of EPA's authority under Section 202 and holding that that section of the Clean Air Act unambiguously authorizes EPA to regulate vehicle emissions of greenhouse gases where the science shows that such emissions are contributing to dangerous air pollution. EPA's alternative proposal—asserting that the science does not support that showing—is also baseless for the reasons discussed below. *See infra* Comment VI & VIII. But the realm of judgment the Supreme Court reserved for EPA over that scientific question did not extend to the legal question of whether greenhouse gases are a pollutant under Section 202. The Court held that they are, so EPA's proposal otherwise is in defiance of Supreme Court precedent, is unlawful, and must be withdrawn.

### B. Even if Section 202's scope were in question, EPA's proposed interpretation falls short of the best reading.

Even if *Massachusetts* were not dispositive, which it plainly is, EPA's attempts to read greenhouse gases out of Section 202 fail from the bottom up. First, the statutory text is definitive that Section 202(a)(1) gives EPA authority to regulate "any air pollutant," a broad grant of authority that is defined in pertinent part by the Act itself and which plainly encompasses greenhouse gases. Second, that broad definition is not susceptible to further examination on the

basis of *UARG*, so EPA's proposal is unreasonable and unlawful. Third, even if there were an open question as to Section 202(a)(1)'s scope, EPA cannot plausibly assert that the text includes other (unstated) limitations on the regulated pollutants. Its attempt to claim that Section 202(a)(1) applies only to local and regional pollutants that harm through direct exposure is contrary to the text and factually dubious, and would impose limitations on Section 202 that are unnecessary to EPA's execution of the Act. As such, EPA's suggestion that its authority under Section 202 stops short of greenhouse gases is baseless and must be rejected.

### *1. EPA's authority under Section 202(a) to regulate "any" air pollutant, including greenhouse gases, is evident from the plain text and confirmed by context and practice.*

Even if *Massachusetts* had not already disposed of this question, EPA cannot sustain an argument that the best reading of Section 202(a) excludes authority to regulate vehicles' greenhouse gas emissions. To begin, the statutory text directs otherwise. Section 202(a) grants EPA authority to regulate "any air pollutant" for which it makes the necessary findings. As the Supreme Court has explained, "the word 'any' has an expansive meaning, that is, 'one or some indiscriminately of whatever kind.'" *Dep't of HUD v. Rucker,* 535 U.S. 125, 131 (2002) (internal quotation omitted); *see J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) ("In choosing such expansive terms … , modified by the comprehensive 'any,' Congress plainly contemplated that the [statutory provision] would be given wide scope." (cleaned up)). EPA's suggestion that its authority is narrow is, thus, anomalous from the start.

Congress also provided a definition in the Act of the term "air pollutant." That definition, in Section 302(g), affirms that Congress intended to grant EPA comprehensive authority to address all possible types of air pollution problems. That subsection defines "air pollutant" as:

> any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air. Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term "air pollutant" is used.

42 U.S.C. § 7602(g). Applying these unmistakably broad terms, the phrase "any air pollutant" in Section 202(a) grants EPA authority to regulate essentially *any* substance emitted into the air, provided it contributes to air pollution and that EPA has found that air pollution to endanger public health or welfare.[17]

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[17] The reference to "air pollution agents" in 302(g) does not alter either the breadth of 302(g) or the operation of 202(a). *See Massachusetts*, 549 U.S. at 529 n.26. Air pollutants create air pollution, with the latter reflecting instances where the former have been released or have accumulated in the environment in concentrations that lead to harm to human health or welfare. *Cf.* 90 Fed. Reg. at 36,300 (describing a pollutant as the "substance" and pollution as the

That the expansive phrase "any air pollutant" in Section 202(a) includes greenhouse gases should be obvious (they are unquestionably physical and chemical substances emitted into the ambient air that cause or contribute to air pollution—as even EPA does not dispute), but is further reinforced by context and past practice. As discussed further below, EPA must regulate vehicle emissions that contribute to "air pollution that may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a). The definition of "welfare" provided in Section 302(h)—which, by its use in Section 202, defines (along with "public health") the types of harm that section was intended to address—explicitly includes "effects on … weather … and climate." *Id.* § 7602(g). The only sensible conclusion drawn from this plain language is that Congress intended air pollution with effects on the climate to fall squarely within the Act's, and Section 202(a)'s, purview. Only a tortured reading of Section 202 would suggest that EPA should ignore the primary pollutant threatening the climate when assessing whether vehicle emissions contribute to threats to the climate.

Furthermore, the Act repeatedly refers to carbon dioxide and other greenhouse gases as "air pollutants," with no indication that the usage of that term was intended to be distinct from its other appearances in the Act, as discussed above. And in several provisions, the Act lists greenhouse gases alongside other regulated "pollutants," reinforcing that Congress intended and treated these pollutants as similar for purposes of the Clean Air Act. *See McDonnell v. United States*, 579 U.S. 550, 568-69 (2016) ("Under the familiar interpretive canon *noscitur a sociis*, a word is known by the company it keeps." (cleaned up)). Section 103(g), for example, authorizes a research and development programs concerning "[i]mprovements in nonregulatory strategies and technologies for preventing or reducing multiple air pollutants, including sulfur oxides, nitrogen oxides, heavy metals, PM-10 (particulate matter), carbon monoxide, and carbon dioxide." 42 U.S.C. § 7403; *see also id.* § 7433(d)(3)(A) (directing the formulation of strategies to reduce emissions of greenhouse gases, air pollutants listed under Section 108(a), and hazardous air pollutants); *id.* § 7438(a)(2) (referring to grants for activities that help reduce "greenhouse gas emissions and other air pollutants," including to mitigate "climate and health risks," promote "climate resiliency," and "reduc[e] indoor toxics and indoor air pollution").[18]

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"harmful addition" of that substance "into the environment").] While not every emission of an air pollutant creates dangerous air pollution in fact, the Act provides that all substances *capable* of creating air pollution are air pollution agents. Defining an air pollutant as "any air pollution agent … including any physical, chemical, biological, radioactive … substance or matter" thus simply reflects that the fact that the Act governs those substances (air pollutants) capable of causing air pollution—and so would reasonably exclude substances that are emitted with no prospect of accumulating or causing harm. In this manner, Justice Scalia was incorrect that the majority opinion in *Massachusetts* would turn frisbees into air pollutants; they may be emitted into the air but they do not result in air pollution because they are not capable of being released or accumulated in concentrations that lead to harm.

[18] As noted above, the fact that grant funds have been rescinded from some of these programs does not change the meaning of the text, which Congress left intact. *See supra* note 9.

Additional text in the Act shows not only that Congress considers greenhouse gases an air pollutant, but that Congress has specifically confirmed that greenhouse gas pollution can, and indeed should, be addressed under the Act's various emissions-standards provisions, as discussed above.[19] So too with other statutes: Section 303 of the Energy Policy Act of 2005 governs the procurement of the federal vehicle fleet and provides in 303(f)(3)(B) that EPA's guidance for federal fleet standards must account for "the most stringent standards for vehicle greenhouse gas emissions applicable to and enforceable against motor vehicle manufacturers for vehicles sold anywhere in the United States." 42 U.S.C. § 13212(f)(3)(B). That provision would have little meaning if EPA could not set any standards for vehicle greenhouse gas emissions. It is true that California also possesses that authority under Clean Air Act Section 209. *See id.* § 7543(b). But the phrase "sold anywhere in the United States" would be surplusage if it did not reflect *both* California's *and* EPA's authorities to set vehicle greenhouse gas standards. *Fischer v. United States*, 603 U.S. 480, 496 (2024) (noting that "surplusage is … disfavored" and a "construction that creates substantially less of it is better than a construction that creates substantially more" (internal quotation marks omitted)); *Montclair v. Ramsdell*, 107 U.S. 147, 152 (1883). If only EPA had that authority—or if only California did—there would be only one set of standards and so no variance among the vehicles "sold anywhere in the United States." The text only makes sense if Congress anticipated that more stringent standards might apply to vehicles sold in states following California's standards as compared to vehicles sold in states following EPA's standards, or vice versa.

"In determining the legislative intent," the Agency, like the courts, must "favor an interpretation which would render the statutory design effective in terms of the policies behind its enactment and to avoid an interpretation which would make such policies more difficult of fulfillment, particularly where, as here, that interpretation is consistent with the plain language of the statute." *Nat'l Petroleum Refiners Ass'n v. F.T.C.*, 482 F.2d 672, 689 (D.C. Cir. 1973), *cert. denied*, 415 U.S. 951 (1974) (citing *Bird v. United States*, 187 U.S. 118, 124 (1902)). Nothing in the history of either Section 202 or the Clean Air Act as a whole suggests Congress sought to grant only narrow authority even as it used broad terms. It plainly suggests the opposite.

On top of these textual and contextual indications, EPA's authority to regulate vehicle greenhouse gases is confirmed by past practice. EPA's proposal suggests that the Agency first "took the unprecedented step of asserting authority to regulate GHG emissions" in 2009, when it issued the Endangerment Finding, and that its new interpretation "would effectively return" to the pre-2009 status quo. 90 Fed. Reg. at 36,289, 36,301. But EPA announced its understanding that the Clean Air Act's definition of "air pollutant" extended to greenhouse gases well before 2009 and even before the Supreme Court's decision in *Massachusetts*. In a 1998 memorandum to the EPA Administrator, EPA's general counsel confirmed that "$CO_2$ … [is] a 'physical [and] chemical … substance which is emitted into … the ambient air,' and hence, [it] is an air pollutant

[19] These include Clean Air Act Sections 111, 202, and 231. 42 U.S.C. §§ 7411(b)(1), 7521(a), & 7571(a)(2)(A). In the 1970 Clean Air Act amendments, Congress standardized the language to, among other things, "emphasize the preventative or precautionary nature of the [Act]" and "assure consideration of the cumulative impacts of all sources of a pollutant in setting … emission standards." H.R. Rep. 95-294 at 49, 1997 U.S.C.C.A.N. 1077, 1127-28.

within the meaning of the Clean Air Act."[20] EPA reiterated that view again a year later in Congressional testimony, explaining that "[g]iven the clarity of the statutory provisions defining 'air pollutant' and providing authority to regulate air pollutants, there is no statutory ambiguity" about greenhouse gases' status as air pollutants under the Act.[21] While both pronouncements were clear that EPA had not yet made the "factual and scientific" conclusions on endangerment that were the predicates to *regulating* under that authority, both were equally clear that EPA did not lack for authority over greenhouse gases.

The 1998 Cannon memorandum did not mark a change of position. EPA did not propose a limiting construction of Section 202 until the early 2000s, nearly 40 years after the statute was enacted. In fact, in the 60 years between Section 202's enactment and the present proposal, only five years (2003-2008) have passed where EPA has purported to constrain its understanding of the term "pollutant" in Section 202 to exclude globally-distributed pollutants like greenhouse gases. And that brief period ended, of course, following the Supreme Court's definitive rejection of EPA's approach in *Massachusetts*.[22]

Moreover, the rebuke of EPA's current position did not come only from the Supreme Court. At every possible juncture in the nearly two decades since the Supreme Court's ruling in *Massachusetts*, EPA itself has consistently affirmed its authority to regulate greenhouse gases under Section 202. EPA has set standards under that authority on multiple occasions over the last fifteen years. *See* 75 Fed. Reg. 25,324 (May 7, 2010); 77 Fed. Reg. 62,624 (Oct. 15, 2012); 81 Fed. Reg. 73,478 (Oct. 25, 2016); 89 Fed. Reg. at 27,842. And it has rejected petitions to reconsider its 2009 Endangerment Finding on three separate occasions, including during the first Trump Administration. 75 Fed. Reg. 49,556, 49,564 (Aug. 13, 2010); 87 Fed. Reg. 25,412 (Apr.

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[20] Memorandum, Jonathan Z. Cannon, General Counsel, U.S. EPA (Apr. 10, 1998) at 2, available at: https://perma.cc/R3Q2-B4EP.

[21] Testimony of Gary S. Guzy, General Counsel, U.S. EPA, Before a Joint Hearing of the Subcommittee on National Economic Growth, Natural Resources and Regulatory Affairs of the Committee on Government Reform and the Subcommittee on Energy and Environment of the Committee on Science, U.S. House of Representatives (October 6, 1999), available at: https://perma.cc/3S6R-6QP4.

[22] EPA claims in passing that the 2009 Endangerment Finding "failed adequately to address [EPA's] prior practice." 90 Fed. Reg. at 36,301. But the 2009 Finding fairly addressed questions concerning whether and how greenhouse gases fit within the text of the statute—including why greenhouse gas pollution fell within Section 202 notwithstanding its differences from other types of pollution regulated under Section 202. 74 Fed. Reg. 66,496, 66,538-39, 66,541 (Dec. 15, 2009). EPA reasonably explained there why its finding did not conflict with past practice, and EPA points to no evidence that EPA historically believed that only locally or regionally dangerous pollutants were validly regulated under Section 202.

29, 2022).[23] Those denials were considered by the courts and never overturned. *Coalition for Responsible Regulation, Inc. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012), *certiorari denied in pertinent part*, 571 U.S. 951 (2013); *Concerned Household Elec. Consumer's Council v. EPA*, 2023 WL 3643436 (May 25, 2023), *certiorari denied*, 114 S. Ct. 497 (Mem.) (2023).

### 2. *EPA's effort to narrow Section 202(a) to address only "local or regional exposure to dangerous air pollution" is baseless.*

Even if the plain text were not dispositive, and if *Massachusetts* could be fancifully reimagined as having determined the scope of "air pollutant" in Section 302(g) without determining its applicability to Section 202(a), EPA fails to justify that the phrase "air pollutant" must have a narrower meaning in Section 202 than in Section 302. Regulating greenhouse gases under Section 202 does not raise textual alarm bells as in *Utility Air Regulatory Group v. EPA*, and EPA fails to identify any plausible basis for demanding that pollutants under Section 202 be limited to either "local or regional" pollutants or those pollutants that endanger through direct exposure—words that appear nowhere in the text of 202(a)(1). As such, EPA's interpretation is unreasonable, arbitrary, capricious, and contrary to law.

#### a. UARG *is inapposite here, so EPA's claim that the definition of "air pollutant" in Section 302 should not govern the use of that phrase in Section 202 must fail.*

It is a "standard principle of statutory construction" that "identical words and phrases within the same statute should normally be given the same meaning." *Powerex Corp. v. Reliant Energy Servs., Inc.*, 551 U.S. 224, 232 (2007). While courts have occasionally found cause to vary from that presumption in circumstances where demanded by context—for example, because applying a consistent meaning would "render [statutory provisions] unworkable as written," *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 320 (2014) ("*UARG*")—EPA cannot reasonably assert that the Act's definitions do not govern Section 202(a). When Congress defines the terms it uses, both the agency and the courts must respect its definitions as "virtually conclusive." *Sturgeon v. Frost*, 587 U.S. 28, 56 (2019). Courts "will deviate from a statutory definition only when applying the definition would be 'incompatible with Congress['s] regulatory scheme' or would 'destro[y] one of the statute's major purposes.'" *Dep't of Agric. Rural Dev. Rural Hous. Serv. v. Kirtz*, 601 U.S. 42, 59-60 (2024) (quoting *Digital Realty Trust, Inc. v. Somers*, 583 U.S. 149, 163-164 (2018) (cleaned up)); *cf. Pulsifer v. United States*, 601 U.S. 124, 149 (2024) (explaining that the principle that "the same term usually has the same meaning" is "generally useful" and "mostly applied to terms with some heft and distinctiveness, whose use drafters are likely to keep track of and standardize").

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[23] *See also* 2021 Denial of Petitions to Reconsider the EPA's Greenhouse Gas Endangerment Finding (Jan. 19, 2021) (withdrawn and replaced by 87 Fed. Reg. at 25,412), available at: https://perma.cc/MVM3-KKVB.

Unlike the context presented by *UARG*, there is no textual basis for carving greenhouse gases out of the phrase "any air pollutant" in Section 202(a). *See* 90 Fed. Reg. at 36,300-301 (claiming the definition of "air pollution" must be read in the context of *UARG*). First, such a carve-out would be contrary to *Massachusetts*. That case rejected arguments that, under *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000), the apparently broad meaning of "air pollutant" should take a narrower construction in context. *Massachusetts*, 549 U.S. at 530-31. Instead, the *Massachusetts* Court held that Congress unambiguously defined "air pollutant" in Section 302 and that this definition unambiguously applies to Section 202. *Id.* at 528-29. In *UARG*, the Court considered whether the definition in Section 302 was similarly determinative of the use of "air pollutant" in the Act's "prevention of significant deterioration" and Title V permitting provisions. But its context-specific holding in that case did not and could not overrule *Massachusetts*. Because the Supreme Court in *Massachusetts* already determined the best reading of the phrase "any air pollutant" in Section 202 and because that case remains good law, *see supra* Comment II.A.1.b, EPA's suggestion that it can choose to reopen the definitional question in Section 202 is patently unlawful regardless of what the Court has held regarding other sections.

The conclusion reached in *UARG* is also easily distinguishable from the context here, as *UARG* itself recognized. In that case, all parties, including EPA, recognized that the plain text of the statute commanded specific regulatory steps at numeric pollution thresholds that, if applied to greenhouse gases, "would be inconsistent with—in fact, would overthrow—the Act's structure and design," by increasing the number of sources subject to air permitting requirements, as well as program costs, by multiple orders of magnitude. *UARG*, 573 U.S. at 321-322.[24] The fact that Congress had not intended EPA to require "best available control technology" for any source emitting more than 100 or 250 tons of greenhouse gases per year was thus "beyond reasonable debate," *id.*, as was the fact that EPA had "no power" to accommodate greenhouse gases "by rewriting [those] unambiguous statutory terms" in order to avoid extending the program's reach far beyond any reasonable limits. *Id.* at 325-26.[25]

The essentially irreconcilable statutory problem created by the Act's binding numeric pollution thresholds—which the Court found to be definitive evidence that Congress had excluded greenhouse gases from the meaning of "air pollutant" in the subject sections—has no analogue in Section 202. Including greenhouse gases within the phrase "any air pollutant" in Section 202 follows, rather than rewrites, the statutory terms. As described above, Congress consistently used capacious language to describe the pollutants falling within EPA's Section 202 authority. And no

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[24] *See also, e.g.*, Light/Medium Duty Response to Comments at 307-08 (explaining that EPA's vehicle rulemaking "regulates the same community of regulated entities as earlier EPA rules" and represented only "iterative strengthening of the program," and so were distinguishable from the types of concerns identified in *UARG*).

[25] Of course, in reaching its holding, *UARG* also specifically affirmed the scope of the holding in *Massachusetts* that—regardless of how the term air pollutant should be interpreted elsewhere—the use of the phrase "any air pollutant" in Section 202(a)(1) definitively allowed regulation of greenhouse gases under that provision. 573 U.S. at 310, 318.

part of the section's requirement that EPA assess whether vehicle emissions contribute to dangerous air pollution and, if so, set feasible emission standards is rendered inoperable or absurd if applied to greenhouse gases. *Massachusetts*, 549 U.S. at 531. To the contrary, the auto industry has continued to make and market tens of millions of vehicles subject to EPA's greenhouse gas standards for more than a decade.

In particular, Section 202 also differs from the provisions at issue in *UARG* because the definition of "air pollutant" in Section 202 does not and cannot, by itself, trigger the type of absurd regulatory consequences (*e.g.*, a dramatic and unprecedented expansion of the program's regulatory footprint) that would command a narrower interpretation. Rather, Section 202 interposes additional criteria that apply when EPA actually exercises its authority to set standards for covered pollutants under Section 202: these include Section 202(a)(1)'s predicate determination that vehicle emissions of those pollutants are contributing to dangerous air pollution and then Section 202(a)(2)'s the requirement that standards be set with due consideration for lead time and costs. The space created between Section 202's grant of authority and the actual exercise ensures that EPA's issuance of standards will not produce regulatory outcomes that, as in *UARG*, would be "unrecognizable" to Congress and undercuts a parallel conclusion that "air pollutant" must be read narrowly to avoid such outcomes.

Indeed, the Clean Air Act standard-setting provisions, like Section 202, are the very places where the broad definition of "air pollutant" in Section 302 fits most naturally. Those technology-based limits do not depend on specific regulatory thresholds, as with the PSD program, or on the ability of specific geographic areas to meet predetermined health- or welfare-based pollutant concentrations, as with the NAAQS program. In those other contexts, the obligations of the emitting sources are highly reliant on the volume or nature of the pollutant in question, since those characteristics make compliance with the Act's requirements more or less difficult. But that is not the case with standard-setting provisions like Section 202, where the standard reflects, among other things, what is feasible for the emitting source, not the level necessary to be protective to the public. Such technology-based standards operate by the same criteria, and operate equally well, whether the source emits a small amount of toxic pollution or large amounts of dispersed pollution. EPA cannot explain why, if the Agency identifies a risk to public health or welfare and can identify a cost-effective technology for reducing that risk, Congress would have sought to limit its authority to do so to only a subset of pollutants without saying so.

EPA's interpretation here is thus a solution in search of a problem. There is simply no reason why the definition of the pollutants subject to regulation under a technology-based standard like Section 202 would need to be narrowed (to either local/regional pollution or pollution that harms by direct exposure) for that provision to function. Section 202 can be applied just as naturally to greenhouse gases (a globally-dispersed pollutant) as to nitrogen oxides (a regionally-dispersed pollutant), and just as naturally to pollutants that endanger by creating extreme weather (among other things) as by direct toxicity. Because the application of Section 202 to greenhouse gases requires no legislative rewriting and creates no absurdities, the principles articulated in *UARG*

affirm, rather than undercut, EPA's longstanding assertion of Section 202 authority over vehicle greenhouse gas emissions.[26]

Lacking any basis in text or purpose, EPA claims such narrowing is necessary to prevent Section 202 from granting EPA sweeping regulatory authority. But EPA's purported concern about a limiting principle begs the question of what it is the Agency's believes its present interpretation would serve to limit. Excluding greenhouse gas regulation would not, for example, preclude EPA from broadly regulating vehicle technology—including by setting standards that take account of the greater penetration of "zero emission" electric vehicles. That technology eliminates vehicle emissions of greenhouse gases, but the technology is equally effective at eliminating emissions of the "local and regional" pollutants EPA now describes as being the focus of Section 202.[27] 89 Fed. Reg. at 27,846 ("[Z]ero- and near-zero emission cars and trucks can simultaneously reduce both criteria pollutant and GHG emissions by a large margin."). So EPA's proposed limiting principle would not actually prevent uses of its authority that it now calls unduly broad. *Cf. infra* Comment III.C.2 (disputing that EPA's authority is transformative); Comments of Environmental NGOs on Repeal of Greenhouse Gas Emissions Standards for Vehicles (filed to this docket Sept. 22, 2025) (explaining why EPA's standards taking account of electric vehicles are lawful). Nor would EPA's proposed construction preclude the type of farfetched hypotheticals it says necessitate a limiting principle in the first place. Assuming, *arguendo*, that anthropogenic emissions of water vapor could be understood as contributing to air pollution (which, as discussed in Comment V.B.3, they decidedly *cannot*), they would qualify as local or regional pollutants.[28] And Justice Scalia's hypothetical about a profusion of frisbees (which

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[26] It does not matter whether "statute's application in these cases reaches 'beyond the principal evil' legislators may have intended or expected to address." *Bostock v. Clayton Cnty., Georgia*, 590 U.S. 644, 674 (2020) (quoting *Oncale v. Sundowner Offshore Servs., Inc.*, 523 U.S. 75, 79 (1998)). "[T]he fact that a statute has been applied in situations not expressly anticipated by Congress does not demonstrate ambiguity; instead, it simply demonstrates the breadth of a legislative command." *Id.* (cleaned up). In any event, in this case, Congress *expressly* referred to "effects on . . . weather . . . and climate" in defining "welfare" under the Act, 42 U.S.C. § 7602(h), and has subsequently ratified EPA's exercise of this authority. *See supra*.

[27] EPA, Electric Vehicle Myths, available at: https://perma.cc/DMK2-JQWY ("Electric vehicles have no tailpipe emissions.").

[28] *See, e.g.*, NASA, *Steamy Relationships: How Atmospheric Water Vapor Amplifies Earth's Greenhouse Effect* (Feb. 8, 2022), https://perma.cc/3CGV-V6RF (explaining that "a molecule of water vapor stays in the atmosphere just nine days, on average" rather than accumulating, and depicting localized changes in water cycling). The state of water (liquid, snow, ice, or vapor) depends on temperature, and thus local concentrations of water vapor are constantly changing; moreover, because of the nature of water on our planet, "even large additions of water vapor would have negligible warming effects on climate" and "added water vapor [added at the Earth's surface] rains out before it can reach the altitudes required to significantly contribute to Earth's greenhouse effect." Steven C Sherwood *et al*, The global warming potential of near-surface emitted water vapour, 2018 *Environ. Res. Lett.* 13 104006, https://iopscience.iop.org/article/10.1088/1748-9326/aae018.

would be both local and dangerous in themselves if tossed about by sources in sufficient quantities) would fall *within* the new lines EPA proposes to draw around Section 202. *See Massachusetts*, 549 U.S. at 558 n.2 (Scalia, J., dissenting).

The claim that Section 202 can be lawfully applied only if limited in the manner EPA suggests is thus fallacious. EPA's construction would not resolve any practical issues with implementing Section 202. On the other hand, the Act already includes intelligible limiting principles: it limits EPA's exercise of authority to substances that fall within the definition of air pollutant and to pollutants that contribute to potentially dangerous air pollution. And it limits EPA to establishing regulations based on feasible technology, giving due consideration to cost and lead time.

These constraints are already sufficient to prevent absurd results, and they remain, as always, policed by the courts. By way of example: EPA rests much of its logic on the premise that the present interpretation must be unlawful because it would allow EPA to regulate water vapor (because, EPA says, water vapor can have a similar "greenhouse" effect to regulated greenhouse gases and because rain can cause flooding). As it so happens, in the case of water vapor, EPA grossly misunderstands or misrepresents the hydrologic cycle; vehicular or industrial water vapor emissions do not increase the amount of water vapor held in the atmosphere. *See infra* Comment IV.D. No doubt this is why EPA has never attempted to regulate it. *Cf.* 74 Fed. Reg. at 66,520 (addressing in the 2009 Finding why EPA was not addressing water vapor). But as Justice Scalia's frisbee example shows, it is possible to draw out absurd hypotheticals from nearly any statutory construction. The ability to generate such hypotheticals—like the specter of regulating water vapor—does not mean a statute's terms lack adequate specificity to prevent unreasonable applications. In any such case, EPA would still have to show that its regulatory choices were reasonable. Like "frisbees or flatulence," *see Massachusetts*, 549 U.S. at 558 n.2 (Scalia, J., dissenting), water vapor or any other theoretical pollutant could not be regulated under the Act unless and until it contributed to an actual pollution problem that, as a scientific matter, endangered health or welfare, *and* a pollution problem for which, at the standard-setting stage, EAP determined reasonable standards could be set. At that point, like $NO_X$ or $SO_2$ or greenhouse gases, EPA would be complying with the will of Congress by ensuring that vehicles deployed available technology to help prevent public harms. And EPA's choices in doing so would be subject to judicial review.

As such, Section 202's construction is easily distinguished from instances where the law fails to sufficiently "guide the agency's exercise of authority." *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 463 (2001); *see id.* at 474 ("In the history of the Court we have found the requisite 'intelligible principle' lacking in only two statutes, one of which provided literally no guidance for the exercise of discretion, and the other of which conferred authority to regulate the entire economy on the basis of no more precise a standard than stimulating the economy by assuring 'fair competition.'"); *see* 90 Fed. Reg. at 36,301 n.59 (citing *Gundy v. United States*, 588 U.S. 128 (2019)). As EPA's own cited case law confirms, the standards for finding an intelligible principle "are not demanding." *Gundy*, 588 U.S. at 146. Courts have rarely found Congress to have fallen short and only where it has "failed to articulate *any* policy or standard" to confine an Agency's discretion, *id.* (quoting *Mistretta v. U.S.*, 488 U.S. 361, 373 n. 7 (1989)). That is a far cry from the circumstances here, where Section 202 includes constraints on both what emissions can be regulated and how they can be regulated. Indeed, EPA has regulated under the current interpretation on numerous occasions addressing numerous pollutants, and those regulations

have been upheld by the courts. *See, e.g.*, *Coalition for Responsible Regulation, Inc. v. EPA*, 684 F.3d at 126-129. Some have also been rejected, confirming that courts have had no difficulty using the Act's principles to distinguish reasonable and unreasonable exercises of EPA's discretion. *See, e.g.*, *Truck Trailer Mfrs. Ass'n v. EPA*, 17 F.4th 1198 (D.C. Cir. 2021); *Int'l Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 622 (D.C. Cir. 1973). Whether the standards have been upheld or rejected, no court has hinted at a non-delegation problem. EPA's sudden discovery of potential flaws in the statute thus rings hollow.

If anything, it is EPA's proposed interpretation that raises concerns about limiting principles. EPA bases its exclusion of greenhouse gases from Section 202 on general arguments that are not unique to that provision, namely dictionary definitions of pollutant and pollution, nearby references to local or regional pollutants, general causation principles, the relative recency of greenhouse gas regulation, and non-delegation concerns associated with such regulation. If the appearance of these general elements were adequate to establish that Congress intended some tacit, provision-specific definitions of "air pollutant" to supplant its chosen definition in Section 302, it is unclear what purpose would still be served by Section 302. EPA does not explain how its proposed reading could be duly limited to the specific context of this provision without swallowing the Act as a whole, or how it would avoid rendering Section 302 a nullity. EPA cannot advance a reading that would do such fundamental and far-reaching damage to the statutory text, and it certainly cannot do so in the face of Supreme Court precedent with which it is bound to comply.

*b. In any event, EPA's attempt to narrow the plain language of Section 202(a) is unsupported and unreasonable.*

EPA's attempts to manufacture a textual basis to exclude greenhouse gases from Section 202, like its arguments concerning *UARG*, never get off the ground. The Agency fails to locate any genuine support—let alone support adequate to overcome the plain text—for the proposition that Section 202 was actually intended to apply only to local and regional pollutants, and only to those that harm through direct exposure. EPA's arguments not only lack a basis in statutory text, they fail basic tests of logic. As such, they must be rejected.

*i. Nothing in Section 202 limits its scope to local and regional pollutants.*

The statute does not support EPA's assertion that the broader context of Section 202(a) implicitly limits EPA's authority to "local or regional" air pollution.

As described above, the text of Section 202(a) explicitly signals its breadth. It uses the phrase "any air pollutant" and—lest the obvious go unspoken—nowhere narrows that expansive phrasing with the modifiers "local" or "regional." *See generally* 42 U.S.C. § 7521(a). Congress could have imposed such a limitation in Section 202(a) or 302(g), but it never did—a meaningful omission when Congress was indisputably attentive to global pollution problems as well as local or regional ones. *See, e.g*., 42 U.S.C. § 7671 *et seq*. (concerning "Stratospheric Ozone Protection"); 42 U.S.C. § 7521(a)(6) (concerning local ozone non-attainment areas), 7521(f) (concerning high altitude areas), 7521(j)(2)(B) (concerning local carbon monoxide attainment areas). Rather, those invisible modifiers have been concocted by EPA here as an atextual gloss

on a provision they hope to narrow, they admit, for policy reasons.[29] 90 Fed. Reg. at 36,297 ("[T]he election of a new Administration is an independent and sufficient basis for changing legal interpretation and policy within the boundaries set by statute.").[30] Such aspirations cannot lawfully override the plain text.

Even if EPA's effort to reinterpret this statute were not fatally pretextual, *see* Environmental and Public Health Organizations' GHG Vehicle Comments at Comment IV & IV.B, it would still be unsupported. Lacking direct evidence that "any air pollutant" was intended to mean "any local or regional air pollutant," EPA contends instead that this limitation is inferable from references to other pollutants elsewhere in Section 202. Yet these subsections on select individual pollutants do not in any way work to narrow the operation of Section 202(a)(1).

Section 202(a)(1)'s general authority to set emission standards for "any air pollutant" is not narrowed by additional provisions enacted for specific pollutants and specific classes of vehicles. Those provisions exist as a complement to EPA's general authority: Congress separately provided that *among* the regulations authorized by 202(a)(1), those "applicable to emissions of" certain pollutants from certain classes of vehicles should be subject to additional specifications. *See, e.g.*, 42 U.S.C. § 7521(a)(3), (b)(1), (g), (h) (i). But individual provisions applicable to a subset of regulations issued under Section 202(a)(1) do not define the nature of the full set of regulations authorized in that section. The definition of "air pollutant" does. The addition of the word "any" would be an anomalous choice if Congress had actually meant "only air pollutants akin to hydrocarbons, carbon monoxide, oxides of nitrogen, and particulate matter." That remains true whether or not Congress anticipated or identified greenhouse gas regulation specifically. *See supra* n.26 (citing the Supreme Court's explanation in *Bostock v. Clayton Cty.*, 590 U.S. 644, 674 (2020), that "unexpected applications of broad language reflect only Congress's presumed point to produce general coverage—not to leave room for courts to

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[29] EPA, Press Release: EPA Launches Biggest Deregulatory Action in U.S. History, available at: https://perma.cc/SS6J-4G9C (describing EPA's intent to "driv[e] a dagger into the heart of the climate religion").

[30] Nor could the statute be read as limiting EPA's regulatory authority by suggesting it is the air pollution, rather than the air pollutants, that is local or regional—that is, by reading Section 202 as applying to air pollutants that "cause, or contribute to, air pollution that endangers health or welfare locally or regionally." Once again, Congress could easily have included such modifiers to limit the kind of "air pollution" or "endanger[ment]" that it meant to address, but did not do so. And as noted above, "welfare" as defined under Section 302(h) explicitly covers "effects on . . . weather . . . and climate," terms that can clearly apply at a global scale. 42 U.S.C. § 7602(g); *see, e.g.*, *Massachusetts,* 549 U.S. at 532 ("[T]here is nothing counterintuitive to the notion that EPA can curtail the emission of substances that are putting the *global* climate out of kilter.") (emphasis added). Thus, regardless of whether EPA attaches its concocted "local or regional" limitation to "air pollutant or "air pollution," the proposal is still directly at odds with the statutory text.

recognize ad hoc exceptions" (internal quotation omitted)[31]); *cf. Ethyl Corp. v. EPA*, 541 F.2d 1, 6 (D.C. Cir. 1976) (calling EPA a "watchdog agenc[y] whose task it is to warn us, and protect us, when technological 'advances' present dangers unappreciated or unrevealed by their supporters" and to "evaluat[e] the effects of unprecedented environmental modifications, often made on a massive scale").[32] Indeed, the text is best read as confirming the opposite proposition: that Congress's choice to convey general authority in addition to the provisions addressing specific pollutants shows that it intended to grant EPA authority to regulate beyond the listed pollutants. If not, the general grant of authority would serve no function and would be rendered surplusage. *Fischer*, 603 U.S. at 496; *Morpho Detection, Inc. v. Transp. Sec. Admin.*, 717 F.3d 975, 981 (D.C. Cir. 2013) ("We will not adopt a reading that would so render the [Agency's] general rule a nullity."). That is what *Massachusetts* meant when it concluded that "[t]he broad language of § 202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall [the provision's] obsolescence." 549 U.S. at 532. It is a broad grant of authority, rather than a narrow one, that makes sense of Congress's choices in Section 202.

The text lacks other hallmarks that might be a basis for a narrow reading of "air pollutant" in this context. For example, Congress did not describe EPA's authority in Section 202(a) as applying to "hydrocarbons, carbon monoxide, and other air pollutants," in which case the canon of *esjudem generis* (where the general term is guided by the express examples that precede it) might have indicated that "air pollutants" should be read to have the same character as those specifically addressed. And Congress described its additional specifications in succeeding subparts of Section 202 as governing groups of regulations that were notably distinct (addressing specific classes, model years, and pollutants) from the broader group of regulations possible under Section 202(a)(1). The statute leaves no room for *noscitur a sociis*-type arguments where the specific mentions of particular pollutants are particularized carve-outs from the phrase "any air pollutant," not its common bedfellows.

At the same time, the text plainly does not limit itself to regulation of the four identified pollutants. Rather, it separately directs EPA to study the feasibility of controlling emissions of "toxic air pollutants which are unregulated under this chapter" and then regulate those substances "under subsection (a)(1)." 42 U.S.C. § 7521(*l*). And it directs EPA to consider the effect of

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[31] *See also* Richard L. Revesz, Bostock *and the End of the Climate Change Double Standard*, 46 Colum. J. of Env't L. 1 (2020).

[32] The Congressional record shows, however, that Congress was not ignorant of greenhouse gases or climate change harms when it wrote expansive language into Section 202—yet more evidence that Congress was cognizant of what the breadth of its word choices could mean for future regulation of pollutants including greenhouse gases. *See* 116 Cong. Rec. 32914 (1970) (statement by Sen. Boggs that "[a]ir pollution alters the climate and may produce global changes in temperature"); Special Message To the Congress On Conservation and Restoration of Natural Beauty 1 Pub. Papers 155, 161, 1965 WL 190123, at *7 (Feb. 8, 1965) (message from President Johnson to Congress noting that, "Air pollution is no longer confined to isolated places. This generation has altered the composition of the atmosphere on a global scale through … a steady increase in carbon dioxide from the burning of fossil fuels.").

particular vehicle or engines designs on "emissions of any unregulated pollutants," 42 U.S.C. § 7521(a)(4)(B), showing Congress intended EPA to have its eye on pollution beyond the compounds it had specified. *See also id.* § 7521(e) (allowing EPA to postpone certification of new vehicles or engines until the Agency prescribes standards for unregulated pollutants that still warrant regulation). Nothing in Congress's desire to prioritize certain pollutant problems, or investigate other specific pollutants, thus serves to contradict its grant of authority to address other, even unknown, pollution problems as they arose.

Nor is further investigation or development as to a pollutant a sign that regulation of that pollutant is not also permitted. EPA claims that Congress's enactment of non-regulatory provisions concerning greenhouse gases shows that they are beyond the purview of Section 202. But that cannot be correct. First, as noted above, the *Massachusetts* Court considered this argument and explicitly rejected it. 549 U.S. at 533-34. Second, EPA ignores the fact that, throughout the Clean Air Act, Congress routinely included provisions studying or providing funding associated with pollutants that it plainly believes fall within EPA's authority to regulate. Section 202(*l*)'s study of toxic air pollution is but one example. *See also, e.g.*, 42 U.S.C. § 7403 (including 7403(g)(3) concerning "nonregulatory strategies and technologies" for "sulfur oxides, nitrogen oxides, heavy metals, PM-10 (particulate matter), carbon monoxide, and carbon dioxide"), 7432 (providing grants for clean heavy duty vehicles that eliminate emissions of any criteria pollutant and any greenhouse gas); 7433 (providing grants for clean technology and better planning at ports related to greenhouse gases, criteria pollutants, and hazardous pollutants). Congress's choice to direct immediate regulation of some compounds, fund improvements related to others, and study yet still others speaks, at most, to matters of priority and scientific certainty, not to the scope of EPA's ultimate regulatory authority where the Act *also* provides general authority to regulate. *Cf.* 90 Fed. Reg. at 36,306. Third, EPA's examples do not demonstrate what it suggests. Congressional funding and support for technologies that reduce greenhouse gases would just as easily lend itself to an inference that Congress sees climate change as an urgent pollution problem deserving of multiple, simultaneous strategies of attack, as an inference that Congress intended EPA to ignore these pollutants. *Id.* at n.81 (citing provisions funding carbon capture and sequestration and grants for, inter alia, procuring of zero-emission vehicles and equipment, and requiring EPA to consider "the impact of the production and use of renewable fuels on … climate change" when setting fuel volumes under the renewable fuel standard). And enactments like the Global Climate Change Research Act of 1990 specify that they do not affect EPA authority otherwise granted under the Clean Air Act. *See* 15 U.S.C. § 2938(c).

Textual evidence aside, EPA's reading also makes no logical sense. As noted above, the design and effect of Section 202's standard-setting provision operates equally well regardless of whether a pollutant is local, regional, or global. In each instance, there is no *practical* barrier to EPA assessing contribution and endangerment, or determining feasible standards based on "requisite technology." EPA cannot explain why, if cost-effective vehicle technologies can reduce emissions of pollutants that cause harm, Congress would have intended EPA to impose some of those technologies (to reduce supposedly local or regional pollutants) but not others (to reduce supposedly global pollutants). Limiting EPA in that manner is decidedly contrary to the Act's purpose, which is "pollution prevention" writ large. *See* 42 U.S.C. § 7401(c), (b)(1) (announcing that one of the purposes of the Act is "to protect and enhance the quality of the

Nation's air resources so as to promote the public health and welfare and the productive capacity of its population").

EPA's argument also purports to draw lines between greenhouse gases and other supposedly "local" and "regional" pollutants, but fails to provide any factual or logical basis to do so. First, EPA is incorrect that greenhouse gases have no direct local impacts. As EPA has previously acknowledged, "locally elevated carbon dioxide concentrations" "can have local impacts on, for instance, the extent of ocean acidification." 87 Fed. Reg. at 14,365-66 & n.317.[33] Even setting that aside, other than enabling the Agency to evade its regulatory responsibilities concerning greenhouse gases, EPA does not articulate any reason why regulation of pollutants that pollute on a global scale should be less of a target for regulation than those that pollute across smaller areas. As noted above, standards for global pollutants are no more difficult to set or comply with—and no more stringent or costly as a categorical matter—so attempting to distinguish them from supposedly "local" or "regional" pollutants is arbitrary and satisfies no logical or practical demand in the statute.

Relatedly, EPA fails to demonstrate that being a "local" or "regional" pollutant denotes a set of distinguishing traits that make such pollutants appropriate for regulation while excluding global pollutants. On the contrary, pollutants EPA concedes fall under Section 202 bear relevant similarities to greenhouse gases, including in terms of having effects across a range of scales, from local to global. For example, pollutants like $NO_X$ affect areas hundreds of miles distant from their point of emission, cause harm because of their interaction with solar radiation (and VOCs), and mix with emissions from international sources. *EPA v. EME Homer City Generation, LP*, 572 U.S. 489, 496 (2014) (noting $NO_X$ transport over "hundreds of miles"); 86 Fed. Reg. 23,054, 23,063, 23,083.[34] Mercury, meanwhile, is emitted in different chemical forms, and in its elemental form is "persistent" and is part of a "global [mercury] cycle," 70 Fed. Reg. 15,994, 16,011, 16,012 (Mar. 29, 2005); *see* 65 Fed. Reg. 79,825, 79,827 (2000) (estimating in

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[33] *See also* EPA, Climate Change Indicators: Ocean Acidity, available at: https://perma.cc/3RP7-V77K; NASEM 2025 Climate Report, *supra* note 1, at 29-30.

[34] *See also* EPA, EPA/600/R-20/012, Integrated Science Assessment for Ozone and Related Photochemical Oxidants at ES-3 ("Major contributors [U.S. background] ozone concentrations are stratospheric exchange, international transport, wildfires, lightning, global methane emissions, and natural biogenic and geogenic precursor emissions."), *available at*: https://perma.cc/T8SJ-8MTQ; Yangjun Wang, Sen Jiang, Ling Huang, Guibin Lu, Manomaiphiboon Kasemsan, Elly Arukulem Yaluk, Hanqing Liu, Jiaqiang Liao, Jinting Bian, Kun Zhang, Hui Chen, Li Li. *Differences between VOCs and NOx transport contributions, their impacts on O3, and implications for O3 pollution mitigation based on CMAQ simulation over the Yangtze River Delta, China*. Science of The Total Environment. Volume 872, 2023, 162118, https://doi.org/10.1016/j.scitotenv.2023.162118.

2000 that about 40 percent of mercury in the U.S. came from international emissions) and can travel hundreds of miles.[35]

Likewise, EPA suggests that greenhouse gases are distinct from other regulated pollutants because the associated harm originates from "elevated global concentrations in the upper atmosphere," 90 Fed. Reg. at 36,300, but that distinction is wrong on multiple counts. First, EPA is incorrect about the nature of greenhouse gas pollution, which primarily accumulates in the lower atmosphere (the troposphere).[36] Indeed, despite EPA's repeated claim that the Endangerment Finding "defined [the air pollution] as the combined elevated global concentrations in the upper atmosphere of six 'well-mixed GHGs,'" *see, e.g.*, 90 Fed. Reg. at 36,304, EPA never once in the 2009 Finding limits its finding to greenhouse gas concentrations in the "upper atmosphere" or defined the pollution in that manner. *See, e.g.*, Endangerment Finding, 74 Fed. Reg. 66,496, 66,497, 66,499 (defining the pollution).[37] Second, the attempt to limit regulated pollution to that accumulating closer to the earth's surface was specifically rejected in *Massachusetts*. In that case, the Court considered EPA's conclusion that greenhouse gases should fall outside Section 202 because they "permeate the world's atmosphere rather than a limited area near the earth's surface," but rejected that argument—and the Scalia dissent's suggestion that it deserved *Chevron* deference—because, among other things, the text of the Act "uses the phrase 'the ambient air' without distinguishing between atmospheric layers." *Massachusetts*, 549 U.S. at 529 n.26. Third, mercury transport in the stratosphere (not just the

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[35] *See also* EPA, Basic Information About Mercury, https://perma.cc/5UR4-KNAF (explaining that "mercury in the atmosphere can be transported over a range of distances—anywhere from a few feet from its source, to halfway around the globe").

[36] *See, e.g.*, NASA, Carbon Dioxide: Direct Measurements: 1958-Present, *available at*: https://perma.cc/5PZZ-YP5D (tracking the concentrations of greenhouse gas pollution in the "mid-troposphere, the layer of the Earth's atmosphere that is 8 to 12 kilometers (about 5 to 7 miles) above the ground"). EPA also appears to be misusing the term "upper atmosphere," which NOAA defines as the "thermosphere" lying between 53 miles and 375 miles above the earth's surface. Below the thermosphere lies the mesosphere, then the stratosphere, and then the troposphere, which is closest to earth. *See* NOAA, Layers of the Atmosphere, *available at*: https://www.noaa.gov/jetstream/atmosphere/layers-of-atmosphere.

[37] EPA also suggests in passing that greenhouse gases are "different in kind" because, in part, EPA "defined the relevant 'air pollutants' as six 'well-mixed GHGs,'" with the resulting "air pollution" reflecting all six together. As further discussed *infra*, proposing to exclude greenhouse gases from regulation on this basis is entirely unjustified. Numerous other pollutants EPA regulates (and affirms it has authority to regulate) are a pollutant-group defined by its similar qualities and effects rather than a single compound, including particulate matter ("PM"), volatile organic compounds ("VOCs"), and nitrogen oxides ("$NO_X$"). *See infra* Comment V.C; 90 Fed. Reg. at 36,301 ("As noted above, we historically utilized this authority to prescribe standards for pollutants identified in the CAA itself, including $NO_X$, PM, HC, and CO."); 42 U.S.C. § 7602(g) (defining "air pollutant" as "any air pollution agent *or combination of such agents*") (emphasis added).

troposphere), is "a major driver of mercury pollution,"[38] belying any suggestion that harms associated with accumulation in the upper atmosphere are disqualifying under Section 202 or would separate greenhouse gases from other pollutants over which EPA asserts authority.

As these facts show, applying general labels to pollutants based on their supposed scope is insufficient to demonstrate that those pollutants actually have distinct and relevant qualities that warrant including some and excluding others. EPA has failed to demonstrate that its labels "local," "regional," or "global" reflect any meaningful distinctions that would allow for line-drawing between those categories, serve to rationally group the pollutants, or actually bear on the scope of pollutants covered by Section 202. The proposal is thus arbitrary, capricious, and unreasonable.

*ii. Nothing in Section 202 limits its scope to pollutants that endanger through direct exposure.*

EPA's interpretation also relies on the assertion that Section 202 requires endangerment "through exposure," which it claims excludes greenhouse gases. 90 Fed. Reg. at 36,300. According to EPA, this incorporates pollutants that "harm health and the environment through exposure (*e.g.*, inhalation and dermal contact) or by causing or contributing to air pollution that harms health and the environment through exposure (*e.g.*, smog and acid rain)." *Id.*[39]

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[38] Sahana Ghosh, *Mercury pollution driven by stratospheric forces*, Nature India (Jan. 31, 2025), *available at*: https://perma.cc/76JM-CQBX (reporting on research showing that "[n]early 52% of the mercury transported from the Northern Hemisphere to the Southern Hemisphere occurs through the stratosphere" which "work[s] as a global conveyor belt through which large quantities of gaseous mercury are picked up from industrial regions in the northern hemisphere and dropped off in remote areas regions like such as the Arctic and Antarctic").

[39] It is not clear from the proposal where EPA derives two separate categories in the Act: one covering pollutants that harm through exposure and one covering pollutants that contribute to air pollution that harms through exposure. To the extent EPA believes the distinction reflects the statutory text's references to pollutants that "cause or contribute," that reading of the text ignores clear evidence that Congress did not intend "cause or contribute" to refer to different kinds of pollutants but to ensure instead that the Act addressed both sources solely responsible for particular air pollution problems and those who were responsible for only a share of those problems. H.R. Rep. 95-294 at 51 (describing Congress's intent that "cause or contribute" provisions "require the Administrator to consider all sources of the contaminant which contribute to air pollution"); *see also* Repeal of Greenhouse Gas Emissions Standards for Fossil Fuel-Fired Electric Generating Units, 90 Fed. Reg. 25,752, 25,763 n.91 (June 17, 2025) (confirming in the context of similar language under Section 111 that the present EPA believes "'causes' generally refers to emissions that are the sole part of the air pollution problem," while "[t]he use of the term 'contribute' clearly indicates a lower threshold than the sole or major cause"—a potential contradiction between EPA's simultaneous proposals that it arbitrarily ignores). But no matter the origin, both purported categories of pollutants EPA describes rely on the presumption that

Putting aside, for the moment, the (in)accuracy of EPA's presumption that greenhouse gases fall outside this interpretation, there is no question the interpretation departs from the plain text. As with EPA's arguments about local and regional pollutants, EPA attempts to magic into being terms that do not appear in the text. Nowhere in Section 202 does Congress refer to "exposure" (or, for that matter, "inhalation," "contact," "smog," or "acid rain"). Congress could have used a phrase like "harm through exposure" to expressly narrow the pollutants covered by Section 202 (assuming, *arguendo*, that demanding harm through exposure would in fact exclude greenhouse gases), but it did not. The omission of any terms to that effect must be presumed to be intentional—especially where the Act uses the term "exposure" dozens of times in numerous other provisions but not this one. *See Russello v. United States*, 464 U.S. 16, 23 (1983) ("Where Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion." (cleaned up)); *see also, e.g.*, 42 U.S.C. §§ 7403(d)(2)(B) ("The evaluation shall be based on reasonably anticipated toxicity to humans and exposure factors such as frequency of occurrence as an air pollutant and volume of emissions in populated areas."), 7403(d)(2)(C) (assessments shall include, "where appropriate, an identification of additional activities, including toxicological and inhalation testing, needed to identify the types or levels of exposure which may present significant risk of adverse health effects in humans"), 7412(b)(2) (EPA shall "where appropriate, revise such list by rule, adding pollutants which present, or may present, through inhalation or other routes of exposure, a threat of adverse human health effects"), 7412(m)(6) (requiring EPA to promulgate "such further emission standards or control measures as may be necessary and appropriate to prevent such effects, including effects due to bioaccumulation and indirect exposure pathways"). Moreover, the Clean Air Act's statutory definitions shut the door on EPA's argument. As noted above, Section 302(h) defines the "welfare" harms Section 202 was designed to address as including adverse effects on both "weather" and "climate." 42 U.S.C. § 7602(h); *see also id.* (capturing such effects "whether caused by transformation, conversion, or combination with other air pollutants"). Suggesting that Section 202(a) was intended to exclude consideration of climate harms where, in a definition applicable to Section 202(a), Congress *explicitly included* those harms is the height of arbitrariness and unreasonableness. EPA does not even address this portion of the "welfare" definition, let alone explain how interpreting Section 202 as impliedly limited to pollutants with "toxicological effects," 90 Fed. Reg. at 36,300 n.50, would accord with this text.[40] This obvious infirmity requires that EPA withdraw its proposal. Other positive indicia affirm this: the definition of welfare incorporates harms resulting from "transformation, conversion, or combination with other air pollutants"—yet more capacious language indicating that Congress was not focused only on limited pathways of harm like direct exposure, but intended "welfare" to cover a much wider array of impacts. 42 U.S.C. § 7602(h). So too with Congress's choice of the

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Congress believed "exposure" to be a key feature of Section 202 pollution, despite any text to that effect.

[40] Nor does EPA suggest the definition of "welfare" in Section 302(h) is inapplicable to Section 202(a). To the contrary, EPA relies on that definition in other parts of its proposal. *See, e.g.*, 90 Fed. Reg. at 36,300, 36,313.

term "endanger," which speaks to being in a state of risk or danger and is evidently more capacious than impacts from "inhalation or dermal contact."

EPA cannot rehabilitate this evident conflict by resorting to (contemporary) outside dictionary definitions. *See* 90 Fed. Reg. at 36,300 & n.53-55. The Agency claims that the concept of exposure is supported by "[t]he definition of 'air pollutant' in CAA Section 302(g) and the meaning of the undefined terms pollutant, pollution, and air pollution." *Id.* at 36,300. But Section 302(g) only "support[s]" the exclusion of greenhouse gases if one could ignore *Massachusetts*, which, even if it were somehow not determinative of the meaning of Section 202(a) (which it is), cannot be understood as anything but a decision on the meaning of Section 302(g). There is no world in which Section 302(g)'s inclusion of greenhouse gases, as determined by *Massachusetts*, "*support[s]*" greenhouse gases' exclusion from Section 202(a).

EPA's claim that it may seek out definitions of the other "undefined terms" like "pollutant" is equally baseless. The term "pollutant" is not used in Section 202(a)(1); the term "air pollutant" is. So the fact that the term "pollutant," standing alone, is undefined is irrelevant. EPA cannot, by looking in the dictionary for "pollutant" rather than "air pollutant," substitute definitions in those outside dictionaries for definitions provided in the Act itself.[41] "When Congress takes the trouble to define the terms it uses, a court must respect its definitions as 'virtually conclusive.'" *Kirtz*, 601 U.S. at 59-60 (quoting *Sturgeon*, 587 U.S. at 56); *Stenberg v. Carhart,* 530 U.S. 914, 942 (2000).

That contemporary lay dictionaries define pollutant and air pollution with some deviation from the Clean Air Act's definition is thus irrelevant here. The Supreme Court has explained that it "will not deviate from an express statutory definition merely because it varies from the term's ordinary meaning." *Kirtz*, 601 U.S. at 59 (cleaned up) (quoting *Digital Realty*, 583 U.S. at 160). Even where not defined, "statutory terms can carry meanings that depart from their ordinary ones," because "Congress may … define a word or phrase in a specialized way or employ a term of art with long-encrusted connotations in a given field." *Feliciano v. Dep't of Transp.*, 145 S. Ct. 1284, 1291 (2025). And in any event, there *is* no conflict between the "ordinary meaning" of

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[41] "Pollution" and "air pollution," while not individually defined in the Act, are variants of a defined term. It would overreach EPA's authority to suggest it can override Congress's specific definition of "air pollutant" by seeking out definitions of "air pollution" that it likes better. In any case, EPA does not explain how, if the statute includes greenhouse gases as "air pollutants," the meaning of air pollution should be understood to be something narrower. To the contrary, EPA's dictionary definitions—inapposite though they are—at least agree that air pollution is the "harmful addition" of pollutants into the environment and, thus, that the two definitions are linked as a matter of scope. According, while the terms "air pollutant" and "air pollution" have different functions in Section 202(a)(1), their obvious linguistic relationship means that, as a scientific matter, EPA could not define one to include an entire class of compounds or molecules that the other one excluded. On top of that, Congress has referred specifically to "greenhouse gas air pollution" elsewhere in the Act, yet more evidence that it had no qualms with suggesting the Act reached such pollution and not just such pollutants. *See, e.g.*, 42 U.S.C. § 7437 (titled "Greenhouse gas air pollution plans and implementation grants").

"air pollutant" and the statutory definition, even if EPA has located a dictionary that provides a specific definition that it believes supports its intended policy outcome in this rulemaking. No ordinary person would balk at referring to climate change as an air pollution problem—the most "ordinary" reflection of what that term means. At the same time, the suggestion that "pollutant" or "pollution" should be constrained by concepts of "dangerousness and contamination" ignores the mismatch between those concepts and other acknowledged air pollutants, like nitrogen oxides, that occur naturally in the environment.[42]

Lastly, it is not even evident that EPA's proffered interpretation would *include* the pollution EPA claims it may regulate and also *exclude* the regulation of greenhouse gases.[43] For example, greenhouse gases *do* contribute "to air pollution that harms health and the environment through exposure"—both through public exposure to ozone attributable to increased methane emissions[44]

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[42] Not to mention pollutants regulated in other contexts, like "heat" or "sand." 33 U.S.C. § 1362(6). Indeed, the Clean Water Act, which does define "pollution," is almost certainly a more useful indicator of how that term is used in pollution control contexts than lay definitions applicable to common speech; the Clean Water Act definition of "pollution" as the "man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water" would plainly encompass greenhouse gas pollution if applied to air instead. *Id.* § 1362(19). And it is a natural expression of EPA's purview: to address the "alteration" of the natural environment's "integrity."

[43] Both greenhouse gases and $NO_X$ may be dangerous to breathe in high enough concentrations, but EPA has not limited itself to regulating on that basis: it regulates both pollutants for the secondary effects these chemical agents have once dispersed over broader distances (where they trap heat or create smog, respectively). EPA's interpretation fails to draw a rational line between them. So too with VOCs, which EPA regulates for their smog-forming potential alone—not for their direct harms from inhalation, which, because they relate to indoor air quality, are beyond EPA's authority. EPA, *Volatile Organic Compounds' Impact on Indoor Air Quality* (July 24, 2025), *available at*: https://perma.cc/9TRE-W928; EPA*, Does EPA regulate volatile organic compounds (VOCs) in household products?* (Feb. 24, 2025), *available at*: https://perma.cc/9W6N-2EDR ("While we do regulate VOCs in outdoor air, from an indoor air perspective, EPA has no authority to regulate household products (or any other aspect of indoor air quality.").

[44] *See* 89 Fed. Reg. 16,820, 16,840 (March 8, 2024) ("The tropospheric ozone produced by the reaction of methane in the atmosphere has harmful effects for human health and plant growth in addition to its climate effects."); EPA, EPA/600/R-20/012, Integrated Science Assessment for Ozone and Related Photochemical Oxidants at ES-3 ("Major contributors [U.S. background] ozone concentrations" include "global methane emissions."), *available at*: https://perma.cc/T8SJ-8MTQ.

and through ocean exposure to elevated carbon dioxide levels that trigger ocean acidification.[45,46] And, of course, the definition of welfare requires EPA to consider harm to not just "health and the environment" in the abstract but specifically to climate. Even tacking on a requirement that it be the "pollution that *itself* endangers," 90 Fed. Reg. at 36,300 (emphasis added), greenhouse gases unequivocally contribute to air pollution that "itself endangers" the climate. Plus, EPA's chosen dictionary defines "exposure" as the "condition of being exposed," namely of being "la[id] open to danger or harm," which would easily encompass all public harms from climate change.[47] The lack of logic, and even minimum clarity, in the operation of EPA's own terms here renders its interpretation arbitrary and capricious. *See Motor Vehicle Mfs. Ass'n v. State Farm Mutual Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("*State Farm*") ("[T]he agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made."); *cf. Evergreen Shipping Agency (Am.) Corp. v. Fed. Mar. Comm'n*, 106 F.4th 1113, 1118 (D.C. Cir. 2024) ("Certainly, if the result reached is illogical on its own terms, the [agency's] order is arbitrary and capricious." (internal quotation omitted)).

*iii. EPA's resort to "proximate cause" principles is misplaced and cannot create limitations the text lacks.*

Recognizing the failure of its arguments from the text, EPA also claims that its interpretation is the best reading of the statute because Section 202 should be governed by "principles of causation and proximate cause" and vehicle emissions "do not have a sufficiently close connection to the adverse impacts identified in the Endangerment Finding." 90 Fed. Reg. at 36,301. EPA's argument is based on the premise that Congress meant to incorporate "background legal principles, including principles of causation and proximate cause," into the fabric of Section 202. In particular, the Agency appeals to prior Supreme Court cases discussing proximate cause in a tort law context, suggesting that the Court's analysis of proximate cause speaks to whether the emissions in question "have a sufficiently close connection" to the impacts identified in the Endangerment Finding. 90 Fed. Reg. at 36,301 & n.57 (citing *Bank of Am. Corp.*

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[45] EPA, Climate Change Indicators: Ocean Acidity, *available at*: https://perma.cc/LN9D-V3FL ("Ocean chemistry is not uniform around the world, so local conditions can cause pH or aragonite saturation measurements to differ from the global average. For example, carbon dioxide dissolves more readily in cold water than in warm water, so colder regions could experience greater impacts from acidity than warmer regions. Air and water pollution also lead to increased acidity in some areas."); 87 Fed. Reg. at 14,365-66 & n.317; NASEM 2025 Climate Report, *supra* note 1, at 29-30.

[46] Plus, greenhouse gases result in exposure of the public to excessive heat from climate pollution—a harm directly attributable to higher concentrations of greenhouse gases in the atmosphere even without considering impacts to the public from increased hurricanes, droughts, and so on.

[47] *See* "Exposed," "Exposure," Am. Heritage Dictionary (5th ed. 2022), available at: https://www.ahdictionary.com/word/search.html?q=exposed, https://www.ahdictionary.com/word/search.html?q=exposure.

*v. City of Miami*, 581 U.S. 189, 201 (2017)). According to EPA, the Endangerment Finding was improper because it asserted that greenhouse gas pollution "would *lead to* increases in global temperature and change to ocean pH that, in turn, would *lead to* environmental phenomena, in combination with an open-ended universe of additional factors, which would potentially have adverse public health and welfare impacts of varying severity in certain regions." 90 Fed. Reg. at 36,301 (emphasis original). From this, the Agency now claims that greenhouse gases lack a sufficient proximate cause to public harm, and so the Finding was improper. *Id.*[48]

Concepts associated with "proximate cause" have no place in Section 202's framework.

First of all, the D.C. Circuit has already rejected similar attempts to impose causation principles on contribution tests. *See Catawba Cnty. v. EPA*, 571 F.3d 20, 38-39 (D.C. Cir. 2009) (rejecting arguments under Clean Air Act Section 107 that "contribute" should mean "strictly cause" or "necessarily connotes a significant causal relationship" because "contribution may simply exacerbate a problem rather than cause it" and does not require that "corrective measures" on contributors' emissions actually "address the problem"[49]). The proposal does not grapple with that precedent, let alone successfully distinguish it and the failure to do so ignores an important aspect of the problem.

In any event, EPA does not explain why principles of proximate cause flowing from tort—and tort-like claims under statutes like the Fair Housing Act and the Lanham Act's false advertising

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[48] EPA asserts that the endangerment finding avoided these causation concerns by "severing" the endangerment and contribution portions of the finding. As we discuss in Comment V.B.1 below, EPA's attempt to collapse the grammar of Section 202(a) and evade its meaning is unsupported. By its plain terms, Section 202 asks whether a source category's emissions must "cause[], or contribute[] significantly to, *air pollution*." It is that air pollution, in turn, that must "reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1) (emphasis added); *see Ethyl Corp. v EPA*, 541 F.2d 1, 15 (D.C. Cir. 1976) (explaining that Section 202 distinguishes between the "causal relationship between air pollution and health, [and the] relationship between automobile emissions and air pollution"; while the language has since been amended, the distinction identified by that court remains). In any case, EPA's suggestion that greenhouse gases are not adequately linked to the dangers they cause is unfounded.

[49] As a factual matter, it is not at all true that regulations reducing greenhouse gases from vehicles do nothing to "address the problem" of climate change. Contrary to the proposal's claim that greenhouse gas standards for vehicles are or would be "futile," 90 Fed. Reg. at 36,312, the Supreme Court considered and discarded this logic in *Massachusetts,* rejecting the premise that petitioners' climate-related injuries could find no remedy through EPA's regulations of greenhouse gases merely because that such standards would be an "incremental" step toward rectifying the larger problem. 549 U.S. at 524. "Agencies, like legislatures, do not generally resolve massive problems in one fell regulatory swoop . . . They instead whittle away at them over time, refining their preferred approach as circumstances change and as they develop a more nuanced understanding of how best to proceed. . . . And reducing domestic automobile emissions is hardly a tentative step." *Id.* (cleaned up).

provisions, *see* 90 Fed. Reg. at 36,301 n.57—are appropriate "background principles" for interpreting the Clean Air Act. The three Supreme Court cases it cites in reference to proximate cause—*City of Miami*, 581 U.S. at 201; *Lexmark Int'l, Inc. v. Static Control Components, Inc.*, 572 U.S. 118, 132 (2014) and *Univ. of Tex. Southwestern Med. Ctr. v. Nassar*, 570 U.S. 338, 347 (2013)—involved federal statutes (the Fair Housing Act, the Lanham Act, and Title VII of the Civil Rights Act of 1964, respectively) that established a cause of action for plaintiffs to recover money damages in compensation for injuries to legally protected interests.[50] While these monetary recovery provisions were modeled on common law tort actions, Section 202 was not.

The difference is no accident. Environmental statutes were enacted *for the purpose of* overcoming problems with torts, including the difficulties of showing proximate or actual causation.[51] Accordingly, Section 202 sets its own causal standards: whether the emissions contribute to air pollution and whether the air pollution "may be reasonably anticipated to endanger." The statutory framework is not, therefore, a blank slate that EPA can fill with concepts of tort causation. It already articulates Congress's chosen view of the necessary relationship between the pollution and the harm—specific textual direction that EPA cannot override at will. *Montclair*, 107 U.S. at 152 ("It is the duty of the court to give effect, if possible, to every clause and word of a statute, avoiding, if it may be, any construction which implies that the legislature was ignorant of the meaning of the language it employed."). To be sure, EPA may and must assess whether the air pollution in question "may be reasonably anticipated" to harm public health and welfare. Some air pollution will fail that test because no chain of causation reasonably connects the air pollution to anticipated harm. But that is an assessment conducted under the terms of the Act, not common law legal constructs designed to fairly assign civil liability.

Even if Section 202 did incorporate principles of proximate cause, however, EPA still could not establish that such principles would serve to exclude regulation of so-called global pollutants while preserving regulation of supposedly local and regional pollutants. To the contrary, these causation principles would undercut EPA's interpretation because the fact that greenhouse gas emissions ultimately mix uniformly in the global atmosphere *simplifies* analysis of causation. Because greenhouse gas emissions mix evenly globally, the location from which they are emitted

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[50] EPA's fourth cited case, *City of Oakland v. Wells Fargo & Co.*, 14 F.4th 1030 (9th Cir. 2021) (en banc), likewise addressed claims under the Fair Housing Act.

[51] *See, e.g.*, Mark Latham, Victor E. Schwartz & Christopher E. Appel, The Intersection of Tort and Environmental Law: Where the Twains Should Meet and Depart, 80 Fordham L. Rev. 737, 754 (2011) (explaining the differences between torts and statutory environmental law, and explaining that "[t]he addition of statutory law allows for other policy objectives such as the precautionary principle to be included in the legal system."); *id.* at 759 ("[T]he CAA … sets forth required conduct with a specific environmental objective that does not involve the common law of torts.").

does not matter with respect to its primary harm.[52] They trap heat and drive climate change equally regardless where they were emitted. This stands in contrast to many other pollutants EPA admits it can regulate, such as $NO_X$, that disperse unevenly over sub-global distances. The complex modeling of upwind and downwind directionality and variable interaction with other pollutants and environmental conditions that is needed to address interstate transport of $NO_X$ is completely unnecessary for greenhouse gases. Thus, the global, well-mixed nature of greenhouse gas emissions shortens, rather than attenuates the causal chain.

Indeed, one can write an equally if not more complex causal chain for $NO_X$ as for greenhouse gases. The proposal claims that greenhouse gases should be excluded because:

> Emission of greenhouse gases → impacts on global temperature & ocean pH → environmental phenomena that, along with additional factors → variable harm in different regions

90 Fed. Reg. at 36,301. That formulation is wrong because methane-related ozone and ocean acidification directly harm public health and welfare even before accounting for the harms from increases in wildfires, hurricanes, flooding, infectious diseases, and so on. *See* Comment II.B.2.b.i & ii. But in any case, nitrogen oxides are regulated despite a chain of causation akin to the one EPA claims is unreasonable:

> Emission of nitrogen oxides → distributed across long distances → interaction with an adequate volume of VOCs, along with the presence of sunlight → variable and non-linear creation of ozone → variable harm in different regions

*See Wisconsin v. EPA*, 938 F.3d 303, 309 (D.C. Cir. 2019). EPA fails to explain how these two causal chains should be treated differently even under its own principles of proximate causation, so EPA's proposal is arbitrary and capricious.[53]

EPA is similarly incorrect that "intervening and confounding factors" prevent greenhouse gases from causing or contributing to harm. Pollution that increases global temperatures that in turn amplify public harms on a massive scale easily exhibits "some direct relation between the injury asserted and the injurious conduct alleged." *City of Miami*, 581 U.S. at 202–03 (internal quotation omitted). But in any case, EPA's logic, if adopted, would also exclude ozone regulation, which EPA maintains is lawful under Section 202. As shown above, by themselves, neither $NO_X$ emissions nor VOC emissions will form ozone; they require one another (as well as

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[52] Though, as noted above, certain effects from greenhouse gas pollution, such as ocean acidification, also occur locally or regionally.

[53] So too for particulate matter pollution:

> Natural and anthropogenic emissions of $NO_X$/$SO_X$/VOCs/NH3 → transport (of some pollutants) over long distances → interaction in the atmosphere in the presence of sunlight, humidity, etc. → secondary PM formation → contribution to total atmospheric PM (along with direct anthropogenic PM emissions and natural PM like dust)

energy from the sun), and are typically emitted from different source categories. As such, the creation of ozone and its attendant harms do not follow directly from a rise in the concentration of $NO_X$ only or VOCs only, but require both. Yet EPA has never suggested that the "multiple intervening actors" involved in ozone formation prohibit a source category's $NO_X$ or VOC emissions from qualifying as significant. Indeed, greenhouse gases have a *more* direct link to the harm they cause than do $NO_X$ or VOCs, since their main impact—radiative forcing—occurs without any chemical interactions in the atmosphere. *See Massachusetts*, 549 U.S. at 509-10 (explaining that emissions of greenhouse gases directly "increas[e] the atmospheric concentrations of … greenhouse gases [which] will enhance the greenhouse effect" that warms the earth's surface); *Sierra Club v. FERC*, 867 F.3d 1357, 1371 (D.C. Cir. 2017) ("[O]nce in the atmosphere, [emissions of] carbon dioxide will add to the greenhouse effect."); 74 Fed. Reg. at 66,517 (explaining that greenhouse gases are "directly emitted," rather than formed by precursor gases, and exert a warming effect "by trapping [] heat that would otherwise escape to space").

Furthermore, EPA ignores relevant precedent. The Supreme Court in *Massachusetts v. EPA* ruled that plaintiffs had established standing, rejecting similar arguments that the chain of causation between vehicle greenhouse gas emissions and the resulting harm was inadequate. *Massachusetts*, 549 U.S. at 524-25, 526. Relatedly, in *Ethyl Corp.*, the D.C. Circuit sitting en banc addressed the threshold for regulation under an earlier version of Section 202.[54] Explaining that Section 202 had distinct tests for whether vehicle emissions contribute to air pollution and whether that pollution (not the emissions themselves) endangers the public, the court explained that distinction "is important, for not all air pollutants contribute to dangerous air pollution and, more importantly, not all dangerous air pollution is caused by air pollutants that are, themselves, dangerous." Thus, "[Section] 202 allows for the regulation of such apparently innocent pollutants, which *indirectly* cause dangerous pollution." 541 F.2d at 16 n.27 (emphasis added).[55]

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[54] That version of Section 202 differed in two ways: covering air pollutants that cause or contribute "or [are] likely to cause or contribute" to air pollution, and requiring a finding that the air pollution is that "which endangers the public health or welfare." Since then, Section 202 has been amended to omit the phrase "likely to cause or contribute" and to allow a more obviously precautionary judgment as to endangerment—replacing a requirement that the air pollution endanger with a requirement that the air pollution "may reasonably be anticipated to endanger." But neither subsequent amendment affects the court's analysis. Congress in the 1977 Clean Air Act amendments described those amendments as, *inter alia*, "intended to support the views expressed in the majority opinion of the en banc panel … in the *Ethyl* case" by emphasizing the precautionary nature of the act, authorizing EPA to "weight risks and make reasonable projections of future trends," to assure consideration of cumulative impacts from all sources of a pollutant when setting standards (not just the regulated class of sources), and to "make the vehicle and fuel industries equally responsible for cleaning up vehicle exhaust emissions." H.R. Rep. 95-294 (1977).

[55] Moreover, the court in *Ethyl Corp.* was specifically considering the endangerment associated with lead in gasoline. Examining Section 211, which the court considered equally or more restrictive of EPA's authority than Section 202, the court held that EPA had rationally found endangerment associated with emissions from lead gasoline where airborne lead emitted from

Significantly, in the 1977 Clean Air Act amendments, Congress specifically ratified the holding in *Ethyl Corp*. H.R. Rep. 95-294 at 43-49, 1977 U.S.C.C.A.N. 1077, 1121-27 (1977).

* * *

In total, EPA looks to defeat the plain text of Section 202 and its defined terms—not to mention Supreme Court precedent—with inferences from four referenced pollutants, inapplicable dictionary definitions, and the presence of non-regulatory provisions concerning greenhouse gases. The Agency's support for its position ends there, demonstrating just how far afield these circumstances are from the facts in *UARG*. EPA's proposed primary interpretation is thus arbitrary, capricious, unreasonable, and contrary to law.

## III. The major questions doctrine provides no basis for repealing the endangerment finding.

The proposal also argues that the endangerment finding should be repealed because—notwithstanding more than 15 unbroken years of issuing and enforcing vehicle emissions standards for greenhouse gases under Section 202(a)—EPA now believes that it "lack[s] the 'clear congressional authorization' required under the major questions doctrine to decide the Nation's response to global climate change concerns." 90 Fed. Reg. at 36,305. EPA's major-questions arguments provide no basis for repeal.

The major questions doctrine is a "tool of statutory interpretation," *Save Jobs USA v. DHS*, 111 F.4th 76, 80 (D.C. Cir. 2024); *see also Biden v. Nebraska*, 143 S. Ct. 2355, 2376 (2023) (Barrett, J., concurring). The doctrine stems from the Supreme Court's admonishment in *FDA v. Brown & Williamson Corp.* that in "extraordinary cases . . . there may be reason to hesitate before concluding" that Congress intended to implicitly delegate sweeping, transformative power to an agency. 529 U.S. 120, 159 (2000); *see also id.* ("Congress is more likely to have focused upon, and answered, major questions, while leaving interstitial matters to answer themselves in the course of the statute's daily administration.") (quoting Stephen Breyer, Judicial Review of Questions of Law and Policy, 38 Admin. L. Rev. 363, 370 (1986)).

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vehicles then fell to the ground in particles where it mixed with dust, which could then be consumed by the group of children with pica (a condition that is relatively common among pre-school children involving the ingestion of non-food substances). The court acknowledged that lead paint, rather than atmospheric deposition, was the primary source of lead poisoning in children, but nevertheless found EPA's "reliance on the dustfall theory" consistent with the Act's "will endanger" standard. Per the court, "If the intermediate steps are supported by the evidence, the validity of the Administrator's conclusion as a reasonable hypothesis is unassailable." *Ethyl Corp.*, 541 F.2d at 44. EPA (at least in this primary proposal) makes no effort to disprove the causal links that connect greenhouse gases to enormous public harm. Nor does it recognize, let alone explain, how that causal chain diverges from the case law. As such, EPA's proposal fails to address a significant aspect of the problem and is arbitrary, capricious, and unreasonable.

The doctrine has been applied rarely and only in cases where the Supreme Court has found that an agency's assertion of newfound authority works a "transformative expansion" of the scope of its authority. *West Virginia*, 597 U.S. at 721. The Supreme Court determined nearly twenty years ago in *Massachusetts* that the doctrine provides no basis to depart from Section 202(a)'s unambiguous meaning that greenhouse gases are among the myriad air pollutants for which EPA may set vehicle emissions standards. EPA has no authority to second-guess that decision. EPA also has not provided a rational explanation for departing from its own prior position that regulating greenhouse gas emissions under Section 202(a) does not pose major-questions concerns—a position that was informed by the same Supreme Court decisions the proposal now cites for the opposite conclusion. Moreover, even if the issue were considered on a blank slate, the major questions doctrine does not undermine EPA's authority to set vehicle emissions standards for greenhouse gases. To the contrary, it is the current proposal's elevation of EPA's own policy preferences over Congress' that would work the kind of unprecedented agency power grab the doctrine is intended to prevent.

### A. *Massachusetts* precludes the proposal's reliance on the major questions doctrine.

The proposal's recourse to the major questions doctrine must be discarded at the threshold, because the proposed arguments conflict with binding Supreme Court precedent in *Massachusetts*.[56]

#### *1.* Massachusetts *squarely rejected EPA's previous attempt to avoid regulating greenhouse gases under Section 202(a) based on major-questions concerns.*

Whether the significance of regulating greenhouse gases under Section 202(a) provides "reason to hesitate" under *Brown & Williamson* was decided in *Massachusetts*. As discussed above, in 2003, EPA denied a petition to regulate motor vehicle emissions of greenhouse gases citing *Brown & Williamson*'s "caution[] . . . against using broadly worded statutory authority to regulate in areas raising unusually significant economic and political issues when Congress has specifically addressed those areas in other statutes." 68 Fed. Reg. 52,922, 52,925 (Sept. 8, 2003). The denial detailed what it viewed as the "economic and political significance" of regulating greenhouse gases, including the possibility that regulation would lead to a "widespread effort to switch away from fossil fuels in [the transportation or power] sector," and the prominence of arguments on how to address climate change in Presidential campaigns, international negotiations, and Congress. *Id.* at 52,928. From there, EPA asserted that it was "unreasonable to conclude that the [Clean Air Act] provides the Agency with such authority," and that it was "proper[]" to "await[] congressional direction before addressing a fundamental policy issue such as global climate change, instead of searching for authority in an existing statute that was not designed or enacted to deal with the issue." *Id.* In the Supreme Court, EPA likewise argued that, per *Brown & Williamson*, Section 202(a) did not provide a clear enough command that EPA may

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[56] This section answers the proposal's explicit request for "comment on whether *Massachusetts* applied the major questions doctrine in the first instance, [] and, if it did, whether that analysis informs the meaning of CAA section 202(a) on its own terms and in light of *UARG* and *West Virginia*." 90 Fed. Reg. at 36,307. The answer to both questions is yes.

regulate greenhouse gases. *See* U.S. Br. 20-21, S. Ct. No. 05-1120 (asserting that agencies should not use "broadly worded statutes to regulate in areas raising unusually significant political and economic issues"); *see also* Pet'r Br. 18, S. Ct. No. 05-1120 (arguing that this case is "worlds away" from the "extraordinary" circumstances requiring "more rigorous scrutiny to decide whether Congress really meant what it said").

The Supreme Court, in turn, expressly rejected EPA's argument. 549 U.S. at 530-31.[57] The Court concluded the Clean Air Act "unambiguously" authorized EPA to regulate greenhouse gas emissions upon a science-based endangerment finding. EPA's "reliance on *Brown & Williamson"* to avoid that result was "misplaced." *Id.* at 530. The Court explained that acknowledging EPA's jurisdiction over greenhouse gas emissions from vehicles "would lead to no such extreme measures" as the ban on tobacco products that would have necessarily resulted from reading the statute at issue in *Brown & Williamson* to cover tobacco. *Id.* at 531. Instead, "EPA would only *regulate* emissions," and in doing so would have to comply with limitations written into the statute. *Id.* (emphasis in original). In the context of the Clean Air Act, there is "nothing counterintuitive to the notion that EPA can curtail the emission of substances that are putting the global climate out of kilter." *Id.*

The Court further explained that, in contrast to the tobacco issue in *Brown & Williamson*, there were no other Clean Air Act provisions or other enactments conflicting with the Court's reading of Section 202. In *Brown & Williamson* there existed "an unbroken series of congressional enactments that made sense only if adopted 'against the backdrop of the FDA's consistent and repeated statements that it lacked authority . . . to regulate tobacco.'" *Id.* With regard to Section 202(a), by contrast, EPA "has not identified any congressional action that conflicts in any way with the regulation of greenhouse gases from new motor vehicles," notwithstanding the Agency's assertion that sections of the Clean Air Act specifically addressing funding for climate change research supplied such a conflict.[58] *Id.* And EPA itself "had never disavowed the authority to regulate greenhouse gases" prior to the decision under review, but had in fact "affirmed that it *had* such authority" nearly a decade prior. *Id.* The Court therefore found "no reason," let alone a "compelling" one, to hesitate before adopting the statute's "clear" meaning. *Id.*

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[57] As discussed above, the Supreme Court reached that conclusion regarding EPA's authority to regulate greenhouse gas emissions from mobile sources under 202(a) in particular—not just to include greenhouse gases in the general definition of "air pollutant" for unknown purposes, as the proposal now claims. *See* Comment II.A.1, *supra; see also* 549 U.S. at 531 (determining that regulating vehicle emissions under 202(a) would not result in "extreme" measures as in *Brown & Williamson,* and that no Congressional enactment "conflicts in any way with the regulation of greenhouse gases from new motor vehicles").

[58] The proposal renews those arguments, but the statute's research funding provision supports EPA's authority to regulate greenhouse gases under Section 202(a), as explained at Comment II.B.2.b.i, *supra*.

*Massachusetts'* rejection of EPA's *Brown & Williamson* arguments was a major-questions conclusion, notwithstanding that the name for that doctrine had not yet been coined. As the Supreme Court later explained in *West Virginia,* the major-questions "label[] . . . refers to an identifiable body of law developed over a series of significant cases all addressing a particular and recurring problem: agencies asserting highly consequential power beyond what Congress could reasonably be understood to have granted." 597 U.S. at 723-24. That body of law is expressly grounded in *Brown & Williamson. Id.* at 721, 723-24; *see also, e.g.*, *UARG*, 573 U.S. at 324; *cf. Brown & Williamson*, 549 U.S. at 159 (quoting Justice Breyer's recognition that Congress generally addresses "major questions" itself).[59]

To the extent that *West Virginia* and *UARG* (the two *Brown & Williamson* progeny cases relied on by the proposal) may have refined or expanded on the precise test for when major questions are implicated, the core inquiry remains the same: whether the novelty and breadth of an asserted regulatory power provides reason to doubt that Congress intended to implicitly delegate that authority, notwithstanding Congress' use of broad or general language that could literally encompass that authority. *See, e.g., West Virginia,* 597 U.S. at 721 ("Our precedent teaches that there are 'extraordinary cases' that call for a different approach—cases in which the 'history and the breadth of the authority that [the agency] has asserted, and the 'economic and political significance' of that assertion, provide a 'reason to hesitate before concluding that Congress' meant to confer such authority." (quoting *Brown & Williamson*)); *UARG*, 573 U.S. at 324 ("When an agency claims to discover in a long-extant statute an unheralded power to regulate 'a significant portion of the American economy,' . . . we typically greet its announcement with a measure of skepticism." (quoting *Brown & Williamson*)). That is the precise question that the parties posed and the Supreme Court answered in *Massachusetts* regarding regulating greenhouse gas emissions under Section 202(a). *See* 549 U.S. at 530-31. Moreover, as noted above, in answering that question, *Massachusetts* looked to factors that were also applied in those subsequent cases.[60] Massachusetts is therefore a major-questions case, notwithstanding that the label had not yet come into vogue.

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[59] *See also Nebraska v. Biden*, 600 U.S. 477, 500 (2023); *Alabama Ass'n of Realtors v. HHS*, 594 U.S. 758, 764 (2021); *King v. Burwell*, 576 U.S. 473, 485-86 (2015); *NFIB v. Dep't of Labor,* 595 U.S. 105, 122 (2022) (Gorsuch, J., concurring).

[60] For example, the Court in *Massachusetts* looked to the economic and political consequences of recognizing EPA's authority, including the extent to which doing so would transform the Agency's previously recognized regulatory powers. *See id.*; *compare West Virginia*, 597 U.S. at 713-15, 729; *UARG*, 573 U.S. at 321-23. It likewise considered the vintage of the posited authority. 549 U.S. at 531 (noting EPA memorandum asserting the authority nearly a decade prior); *compare West Virginia*, 597 U.S. at 724-28, 730; *UARG*, 573 U.S. at 324. The Court also considered whether Congress' past actions suggested that it had reserved the issue of how to regulate greenhouse gases for itself. 549 U.S. at 531 (rejecting EPA's assertion of conflict with other statutory provisions); *compare West Virginia*, 597 U.S. at 731-32; *UARG*, 573 U.S. 325-26. And as in *West Virginia* and *UARG*, the Court assessed those considerations against the clarity with which Congress spoke to EPA's authority to regulate greenhouse gases. 549 U.S. at 531

The proposal errs to the extent it suggests that the outcomes of *UARG* and *West Virginia* nevertheless show that those cases used a different mode of analysis than that applied in *Massachusetts*. To be sure, *UARG* and *West Virginia* found major questions in *how* EPA may regulate greenhouse gases. But neither one questioned *whether* EPA has that authority; both accepted *Massachusetts'* holding that, in fact, EPA has that authority. And critically, the Court's reasons for rejecting the 'how' in *UARG* and *West Virginia* are inapplicable to the 202(a) authority at issue in *Massachusetts*.

Beginning with *UARG*, that decision held that subjecting stationary sources to the Clean Air Act's Prevention of Significant Deterioration (PSD) and Title V provisions solely on the basis that they emit greenhouse gases would contravene Congress' intent by increasing the number of sources subject to those provisions by orders of magnitude. *Id.* at 327 ("Under the PSD program, annual permit applications would jump from about 800 to nearly 82,000; annual administrative costs would swell from $12 million to over $1.5 billion; and decade-long delays in issuing permits would become common, causing construction projects to grind to a halt nationwide . . . The number of sources required to have permits [under Title V] would jump from fewer than 15,000 to about 6.1 million; annual administrative costs would balloon from $62 million to $21 billion; and collectively the newly covered sources would face permitting costs of $147 billion."). Worse, contrary to evident Congressional design, "the great majority of additional sources brought into the PSD and title V programs would be small sources that Congress did not expect would need to undergo permitting" under those programs, which are administratively complex regimes aimed at "a relative handful of large sources capable of shouldering heavy substantive and procedural burdens." *Id.* at 323-24. Indeed, EPA agreed that it could not apply the actual text of those provisions to all sources that emit greenhouse gases and that it would instead need to rewrite the statutory thresholds to make the provisions functional. *Id.* at 324-25. By contrast, *UARG* held that it was lawful—*i.e.*, it posed no major-questions problem—for EPA to regulate greenhouse gas emissions from sources that were subject otherwise to the PSD and Title V programs, so long as those sources were not brought under the programs solely because they emitted greenhouse gases, but would have been subject to the programs anyway based on their emissions of other pollutants. 573 U.S. at 329.[61]

Regulating greenhouse gases under Section 202(a) clearly falls on the permissible side of the major-questions line drawn by *UARG*. Regulating greenhouse gases under Section 202(a) does not increase the universe of sources that are subject to that section—let alone at the outsize levels contemplated by subjecting all greenhouse-gas emitters to PSD and Title V permitting. *See*

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(concluding that *Brown* considerations provided no reason to depart from statute's "clear" meaning); *compare West Virginia*, 597 U.S. at 732; *UARG*, 573 U.S. at 324.

[61] *UARG*'s reliance on *Chevron* to uphold regulation of so-called "anyway" sources does not undermine *UARG*'s conclusion that such exercise of authority does not violate the major questions doctrine. As discussed above, the Supreme Court explicitly preserved prior precedents relying on *Chevron* when it overturned that doctrine. *See Loper Bright*, 603 U.S. at 412. And in any event, even under *Chevron* the Court would not defer to an interpretation that the major-questions doctrine ruled out, *see UARG*, 573 U.S. at 329.

Comment III.C.2.b.i, *infra*. Likewise, the economic consequences of regulating greenhouse gases under Section 202(a), while significant, are not different from those associated with regulating other pollutants, and in any event, do not radically transform the program Congress envisioned. *See* Comment III.C.2.c, *infra*. Nor does regulating greenhouse gases under that provision require any part of the statute to be rewritten. Instead, it subjects the same universe of sources already subject to various emission limitations to an additional limitation—just like setting greenhouse gas standards for "anyway" sources otherwise subject to PSD and Title V. *See* 573 U.S. at 329.

For that reason, and the reasons discussed at Comment III.C.2, *infra*, the proposal's assertion that "the PSD and Title V rules in *UARG* . . . are similar in scope, approach, and economic impact as the GHG emission standards for new motor vehicles and engines promulgated to fulfill the mandatory duty triggered by the Endangerment Finding" is only partly correct. 90 Fed. Reg. at 36,306. Section 202(a) standards for greenhouse gases are similar in relevant ways to the portions of the PSD and Title V regulations *upheld* by *UARG*. But they share none of the features that led *UARG* to strike down other parts of those regulations.

*West Virginia* likewise demonstrates that regulating greenhouse gases under Section 202(a) does not trigger the major questions doctrine. That decision relied on the major questions doctrine to hold that EPA erred in using a subsection of the Clean Air Act's stationary source provisions to set nationwide caps on how much energy could be generated from certain types of sources. 597 U.S. at 725-29. At a macro level (and as discussed in greater detail at Comment III.C.2.b, *infra*), the regulatory program at issue in *West Virginia* was unlike any emissions standards EPA has ever promulgated for vehicles under Section 202(a), because it mandated the wholesale shifting of a regulated industry toward some regulated parties and away from others, leaving some classes of regulated sources with no choice but to reduce operations (or subsidize their competitors) to comply with the statute. At a more granular level, the Supreme Court found in *West Virginia* that EPA had departed from its usual practice of basing emissions limits on "measures that improve efficiency at the power plants," in favor of a "broader, forward-thinking approach" that—instead of "focus[ing] on improving the performance of individual sources"—would "improve the *overall power system* . . . by forcing a shift throughout the power grid from one type of energy source to another." *Id.* at 727-28 (internal quotation marks omitted); *see also id.* at 728 (quoting EPA's admission that "the rule was not about pollution control"). In doing so, EPA necessarily had to consider "areas such as electricity transmission, distribution, and storage" involving "technical and policy expertise *not* traditionally needed in EPA regulatory development." *Id.* (internal quotation marks omitted). And the regulatory system it devised "conveniently" resembled "a program"—cap and trade—that, "long after the dangers posed by greenhouse gas emissions had become well known, Congress considered and rejected multiple times." *Id.* at 731 (internal quotation marks omitted).

*West Virginia*, like *UARG*, accordingly establishes that some exercises of regulatory authority under the Clean Air Act trigger the major questions doctrine. The decision contrasted the regulations it struck down with other greenhouse gas regulations that set technology-based standards. *Id.* at 527. For the reasons discussed further below, the proposal fails to demonstrate that regulating greenhouse gases under Section 202(a) would require EPA to go beyond the use of standards that require sources to operate more cleanly, or even that the regulations EPA has actually promulgated resemble the regulations struck down in *West Virginia*. *See* Comment

III.C.2.b.ii-iii, *infra*. Thus, *West Virginia*—like *UARG*—casts no doubt on *Massachusetts'* major-questions analysis.

### *2. EPA is bound by* Massachusetts' *major-questions analysis.*

For all the reasons discussed above, *Massachusetts* considered the principle now called the major questions doctrine and concluded that regulating greenhouse gases under Section 202(a) does not pose a major question. Thus, just as EPA remains bound by *Massachusetts'* bottom-line conclusion that Section 202(a) authorizes EPA to regulate greenhouse gases, *see* Comment II.A.1.b., *supra*, it remains bound by *Massachusetts'* holding that so reading Section 202(a) does not implicate the major-questions doctrine. Any final action predicated on a belief that *Massachusetts'* major-questions analysis is no longer good law would itself be unlawful. *See id.*[62]

### *3. Subsequent legislative and administrative developments have not undermined* Massachusetts' *major-questions analysis.*

Because *Massachusetts*' major-questions analysis remains binding on EPA, the proposal's invocation of subsequent congressional and administrative actions that allegedly undercut *Massachusetts* is irrelevant. *See* Comment II.A.1.b, *supra.* In any event, EPA is wrong that there has been any undercutting.

With regard to Congressional action, the proposal notes several asserted conflicts between *Massachusetts'* holding and subsequent legislation as a basis for arguing that because *Massachusetts* cited the lack of any conflict to distinguish the case before it from *Brown*, *Massachusetts'* analysis no longer holds together. But the proposal's assertion of a conflict with subsequent legislation is incorrect, for the reasons discussed above. *See* Comment II.A.1.b.ii, *supra*.

The proposal's remaining justification for departing from *Massachusetts* is that EPA has in practice belied *Massachusetts'* prediction that regulating greenhouse gases under Section 202(a) would not involve extreme measures—specifically, by imposing an "electric vehicle mandate." 90 Fed. Reg. at 36,307. The proposal is wrong several times over.[63]

As a factual matter, for reasons that will be discussed below, EPA has *not* adopted an electric vehicle mandate, and its methods of regulating greenhouse gas emissions from vehicles are

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[62] Moreover, as discussed above, to the extent EPA proposes that the Supreme Court would or should overrule *Massachusetts*, it fails to grapple with the *stare decisis* factors the Court considers when deciding whether to overrule precedent, and the strong presumption against overturning decisions of statutory interpretation. *See* Comment II.A.2, *supra*.

[63] For the same reasons that follow, the answer to the proposal's query "whether a new major questions doctrine analysis is required because the EPA's rulemakings in response to the Endangerment Finding have included electric vehicle mandates that require shifting the national vehicle fleet from one type of vehicle and vehicle fuel to another" is no. 90 Fed. Reg. at 36,307.

consistent with its long history of regulating other air pollutants emitted by vehicles. *See* Comment III.C.2.b.iii, *infra*. The proposal's contrary assumption is both erroneous and an unexplained departure from EPA's prior characterization of its regulations. *See, e.g.*, 89 Fed. Reg. at 27,896-901.

More fundamentally, even assuming that EPA had enacted some regulations that went beyond the ken of what *Massachusetts* anticipated, that action—whether lawful or not—would not support wholesale abandonment of EPA's authority to regulate greenhouse gases. *Massachusetts* did not purport to hold that every conceivable application of Section 202(a) would fall within Congress' delegation of authority to EPA. Nor was such a finding necessary to reject EPA's major-questions arguments. *See UARG*, 573 U.S. at 329; *see generally* Comment III.C.1, *infra*. Instead, *Massachusetts* contrasted Section 202(a) with the statute at issue in *Brown*, which "would have *required"* the agency to ban tobacco products, at odds with Congress' expectations. 549 U.S. at 530 (emphasis added). As discussed further below, EPA does not—and could not—show that every possible method of regulating greenhouse gases under Section 202(a) offends the major questions doctrine, such that regulating greenhouse gases under Section 202(a) *requires* the use of methods that exceed the authority delegated by Congress. For that reason, *Massachusetts'* reasoning is not compromised, even accepting the proposal's erroneous characterization of EPA's most recent vehicle emissions standards.[64]

### B. The proposal deviates without adequate explanation from EPA's prior view that regulating greenhouse gas emissions under Section 202(a) does not implicate the major questions doctrine.

Beyond the insuperable obstacle of *Massachusetts*, EPA's proposal to rely on the major questions doctrine to repeal the endangerment finding faces a separate, additional threshold problem: the proposal is irreconcilable with EPA's own prior analysis of the issue. Just last year, EPA issued its most recent set of multi-pollutant emissions standards for light- and medium-duty vehicles. EPA's Federal Register notice adopting those standards addressed and rebutted in detail arguments that regulating greenhouse gases under Section 202(a) violates the major questions doctrine. *See* 89 Fed. Reg. at 27,897-90. Those findings were accompanied by an additional 40

[64] For the same reasons, the proposal errs in suggesting that the endangerment finding is necessarily flawed because, according to EPA, adoption of the endangerment finding enabled EPA to later adopt the regulations deemed unlawful in *West Virginia*. *See* 90 Fed. Reg. at 36,306. As an initial matter, EPA has not established the requisite connection between the regulations at issue in those cases and the 2009 endangerment finding. Those regulations were issued under separate sections of the Clean Air Act and were supported by separate findings, as the proposal elsewhere seems to acknowledge. *Id.* at 36,298. But even assuming they relied in part on the 2009 endangerment finding, the fact that some exercises of regulatory authority premised in part on that finding are inconsistent with Congress' intent does not mean that *all* such exercises are, as *UARG* and *West Virginia* themselves recognize.

pages of analysis in an Agency document responding to public comments.[65] Comparable analysis accompanied EPA's 2024 emissions standards for heavy-duty vehicles. *See* 89 Fed. Reg. 29,440, 29,468-71 (Apr. 22, 2024).[66]

Together, those final rules and accompanying responses address all the major-questions factors and explain why the doctrine poses no barrier to EPA's authority to regulate greenhouse gases under Section 202(a) generally *or* its authority to issue the 2024 standards in particular. *See, e.g.,* 89 Fed. Reg. at 27,898 and Light/Medium Duty Response to Comments at 294-304 (explaining that the greenhouse gas emissions standards are not novel and are consistent with EPA's historical practice); 89 Fed. Reg. at 29,469 and Heavy Duty Response to Comments at 99-109 (same); 89 Fed. Reg. at 27,898-99 and Light/Medium Duty Response to Comments at 304-23 (rebutting premise that the greenhouse gas regulations involve "decisions of vast economic and political importance exceeding EPA's delegated authority"); 89 Fed. Reg. at 29,469-71 and Heavy Duty Response to Comments at 110-30 (same); 89 Fed. Reg. at 27,897-98 and Light/Medium Duty Response to Comments at 289-94 (demonstrating "clear Congressional authorization"); 89 Fed. Reg. at 29,468-69 and Heavy Duty Response to Comments at 96-99 (same).[67]

They also squarely rebut specific arguments that the Agency now proposes to adopt as its own, including by:

- Distinguishing *West Virginia* and *UARG*, 89 Fed. Reg. at 27,897; Light/Medium Duty Response to Comments at 309-10, 324; 89 Fed. Reg. at 29,468; Heavy Duty Response to Comments at 95-99, 100, 114-15;
- Demonstrating that the Inflation Reduction Act supports EPA's authority and that there is no inconsistency between that authority and various incentives enacted by Congress, Light/Medium Duty Response to Comments at 327-28; Heavy Duty Response to Comments at 133-34;
- Rebutting alleged inconsistency between regulating greenhouse gases under Section 202(a) and the Clean Air Act's separate renewable fuel standard program, Light/Medium Duty Response to Comments at 326; Heavy Duty Response to Comments at 132-33;

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[65] Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, Response to Comments ("Light/Medium Duty Response to Comments") at 289-329, EPA-420-R-24-005 (March 2024), *available at* https://perma.cc/6XNN-K95L.

[66] Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles: Phase 3, Response to Comments ("Heavy-Duty Response to Comments") at 94-136, EPA-420-R-24-007 (March 2024), *available at* https://perma.cc/5CZH-UQYD.

[67] The Agency affirmed these findings less than one year ago in litigation challenging the light- and medium-duty standards. *See* Resp. Br., *Commonwealth of Kentucky v. EPA*, No. 24-1087, ECF No. 2086969 at 61-82 (D.C. Cir. Nov. 26, 2024). Briefing over the heavy-duty standards was suspended following the change in administration. *See State of Nebraska v. EPA*, D.C. Cir. No. 24-1129.

- Explaining that the statute clearly authorizes EPA to consider electrification technologies when it sets technology-based standards under Section 202(a) and that consideration of those technologies is not a transformation of EPA's well-established authority, Light/Medium Duty Response to Comments at 293, 294-98; Heavy Duty Response to Comments at 99-109;
- Rebutting the false contention that the 2024 regulations impose an electric vehicle "mandate," 89 Fed. Reg. at 27,898-99; Light/Medium Duty Response to Comments at 309-16; 89 Fed. Reg. at 29,469; Heavy Duty Response to Comments at 114-22;
- Establishing that Congress "vested EPA with authority" to adopt regulations that would have indirect effects on the demand for oil and gas, Light/Medium Duty Response to Comments at 320-21; 89 Fed. Reg. at 27,899.

The present proposal fails to acknowledge, let alone rebut, the Agency's prior detailed analyses of the major-questions issue, notwithstanding that that analysis is barely a year old and postdates all the major-questions precedents which the proposal cites for support. Any final rule that fails to acknowledge and explain the many departures between EPA's new approach and its prior position would be arbitrary and capricious. *See Fox,* 556 U.S. at 515-16.

### C. Regulating greenhouse gas emissions under Section 202(a) does not offend the major questions doctrine.

Even if EPA were free to consider the major-questions issue on a blank slate, its conclusion is fatally flawed. As an initial matter, the proposal's major-questions analysis is infected by the Agency's mis-framing of the interpretive question it would use the doctrine to answer. In any event, however the interpretive question is framed, the major questions doctrine is not implicated by regulating greenhouse gas emissions under Section 202(a). Even if it was, the hesitation counseled by that doctrine would be overcome by the statute's plain text.

#### *1. The proposal asks the wrong question.*

The major questions doctrine is a tool of statutory interpretation. What interpretive question the tool is used to answer therefore matters as much as whether the tool is wielded correctly or incorrectly. The proposed rule gets its major-questions analysis wrong from the start by asking the wrong interpretive question.

As noted, the proposal repeatedly—and erroneously, *see* Comment III.C.2.b.iii, *infra*—asserts that the greenhouse gas emission standards EPA has enacted under Section 202(a) include an "electric vehicle mandate." *E.g.*, 90 Fed. Reg. at 36,307. The proposal's major-questions argument relies in whole or part on that premise. *See, e.g.*, *id.* at 36,306 (proposing that *West Virginia* controls because "mandat[ing] a shift in the national vehicle fleet from one type of vehicle to another is indistinguishable from the emission guidelines at issue in *West Virginia,* which were calculated to force a shift from one means of electricity generation to another"); *id.* (finding it "highly unlikely" that Congress would delegate to EPA authority to decide "how much gasoline should be used by vehicles and engines in the United States"); *id.* at 36,307 (proposing to distinguish *Massachusetts* on the ground that "EPA's course of rulemaking has not been limited to emission standards as anticipated in *Massachusetts*").

Even accepting EPA's new and flawed characterization of its existing regulations, asking whether the major questions doctrine prohibits EPA from issuing an electric vehicle mandate cannot by itself answer whether the major questions doctrine prohibits EPA from regulating greenhouse gases under Section 202(a) *at all*. And the latter question is the one that EPA must answer in the affirmative to support its proposed course of action. Recall: EPA is not proposing to find merely that the major questions doctrine bars it from issuing particular types of greenhouse gas regulations under Section 202(a). It is instead proposing that the major questions doctrine bars it from regulating greenhouse gases under Section 202(a), period.[68] To prove as much, EPA would need to show not just that certain means of regulating greenhouse gases under Section 202(a) offend the major questions doctrine, but that *every* available means does. That is true as a matter of logic. It is also true as a matter of Supreme Court precedent, which does not apply the major questions doctrine in gross, but instead recognizes that some exercises of authority to regulate greenhouse gases under a particular section of the Clean Air Act may be lawful, notwithstanding that a different application of authority under that same section may violate the major questions doctrine. *See UARG*, 573 U.S. at 329; *cf. West Virginia*, 597 U.S. at 727.

The proposal makes no effort to demonstrate that *every* application of Section 202(a) to regulate greenhouse gases would violate the major questions doctrine; nor could it clear that high threshold if it tried. *Cf.* 89 Fed. Reg. at 27,845-46 (listing available control technologies to limit greenhouse gas emissions, other than increased electrification); *see generally* Comment III.C.2.b, *infra*. Without such a showing, EPA's reliance on the doctrine is arbitrary and capricious and fails to consider an important aspect of the issue. *See State Farm*, 463 U.S. at 43.

#### *2. The major questions doctrine is not implicated.*

However the relevant interpretive question is framed, the major questions doctrine does not support EPA's cramped reading of Section 202(a) because the doctrine is not implicated by regulating greenhouse gases under Section 202(a) in the first place. That doctrine applies only to "extraordinary cases." *Brown & Williamson*, 529 U.S. at 160. In practice, such extraordinary cases occur where an agency's assertion of newfound authority is both "unheralded," *UARG*, 573 U.S. at 324, and a "transformative expansion" of the scope of its authority (especially under an ancillary or little-used provision of a statute). *West Virginia*, 597 U.S. at 721; *see also Nebraska*, 600 U.S. at 501. The authority in question must also have profound economic and political significance. *West Virginia*, 597 U.S. at 721. None of those factors are implicated by regulating greenhouse gases under Section 202(a), let alone all three. Nor does regulating greenhouse gases under Section 202(a) offend the constitutional principles that the major questions doctrine is

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[68] If EPA were to pivot and argue in a final rule only that the major questions doctrine precludes it from issuing standards that require manufacturers to increase electrification of their fleet, it would still be in error, for the reasons discussed below. *See* Comment III.C.2.b, *infra*. In any event, a narrower formulation of the major-questions bar would not support a blanket repeal of the 2009 endangerment finding and all vehicle greenhouse gas emissions standards, as EPA would be conceding that it has *some* authority to regulate greenhouse gases under Section 202(a) without offending the major questions doctrine.

designed to protect. To the contrary, EPA's novel attempt to rewrite Congress' statute to fit the Agency's policy preferences is the far greater threat to the separation of powers.

*a. Regulating greenhouse gases under Section 202(a) is not "unheralded."*

*i. EPA has consistently regulated greenhouse gas emissions under Section 202(a) for going on two decades.*

As an initial matter, the proposal's effort to demonstrate that regulating greenhouse gases under Section 202(a) is unheralded entirely misses an important aspect of the problem, *see State Farm*, 463 U.S. at 43, by focusing on whether regulating greenhouse gases was novel at the time EPA issued the endangerment finding in 2009, and failing to consider whether exercise of that authority is unheralded *today*. That myopia leads the proposal to arbitrarily ignore Congress, the federal judiciary, and EPA's own consistent recognition of that authority in the ensuing 15-plus years, all of which cut against any finding that regulating greenhouse gases under Section 202(a) is a new or obscure invention.

Beginning with EPA itself, prior to this proposal, the Agency has never proposed to withdraw the 2009 endangerment finding or disclaim all authority to regulate greenhouse gases under Section 202(a). To the contrary, every Presidential administration since the 2009 endangerment finding—including the first Trump Administration—has issued its own vehicle emission standards for greenhouse gases under Section 202(a). *See, e.g.*, Light/Medium Duty Response to Comments at 299 (listing and summarizing rules).

The legislative and judicial branches have not questioned EPA's open use of this authority. Congress' acquiescence to and affirmative recognition of EPA's authority to regulate greenhouse gases has been demonstrated elsewhere in this comment. *See, e.g.*, Comment II.A.1.b.ii, *supra*. As for the judiciary, the Supreme Court's consistent recognition of EPA's authority to regulate greenhouse gases has likewise been established. *See* Comment II.A.1.b.i, *supra*. So also, the federal judiciary's uniform rejection of challenges to the 2009 endangerment finding. *See id*.

The fact that EPA has consistently claimed and exercised the authority in question for more than 15 years—without rebuke from Congress or the judiciary—makes this situation sharply unlike cases in which the Supreme Court has held that the major questions doctrine applied. *See, e.g.*, *Biden*, 600 U.S. at 487 (authority first asserted one year before Supreme Court decision); *NFIB*, 595 U.S. at 114-15 (one year before); *UARG*, 573 U.S. at 312 (four years before); *West Virginia,* 597 U.S. at 711 (seven years before, but rule was stayed by the Supreme Court within four months of its issuance and repealed by Agency four years after issuance without ever having taken effect).

*ii. All three branches recognized EPA's authority to regulate greenhouse gases prior to the 2009 endangerment finding.*

Even looking solely at the state of play when EPA first issued the endangerment finding in 2009 and disregarding the nearly 20 years since, EPA's authority to regulate greenhouse gases under Section 202(a) was presaged by express recognition from all three branches.

Most obvious is the Supreme Court's explicit recognition of EPA's authority—and indeed, obligation—to regulate greenhouse gases under Section 202(a) in *Massachusetts,* if the science showed they contribute to climate change. That EPA subsequently made an endangerment finding and issued emissions standards follows directly from that decision. *See id.* at 534-35; *see also* Comment II.A.1.a, *supra*. Thus, the endangerment finding was hardly an instance of an agency taking it upon itself to discover new authority in a long-extant statute. *Contra West Virginia*, 597 U.S. at 724*; UARG*, 573 U.S. at 324. The proposal's repeated assertions that the Agency did something unprecedented in 2009 ignore this salient fact.

For its part, Congress understood and expected that the Clean Air Act would authorize EPA to regulate climate-altering emissions from its enactment. As has already been discussed, the plain text and legislative history both demonstrate that Congress intended to empower EPA to mitigate harms caused by changes to the climate. *See* Comment II.B, *supra*. Further, as the Supreme Court recognized, Congress was well aware when it enacted the Clean Air Act that it did not know all substances that were or would come to be recognized as air pollutants and drafted broadly "in an intentional effort to confer the flexibility needed to avoid . . . obsolescence." *Massachusetts*, 597 U.S. at 532. The proposal fails to acknowledge or gives insufficient weight to these foundational indicia of Congressional intent.

EPA's recognition of its authority to regulate greenhouse gases under the Clean Air Act likewise long predates the 2009 endangerment finding. See Comment II.B.1, *supra.*[69] When EPA publicly retreated from the Cannon Memo's assertion of authority, it was quickly corrected by the Supreme Court in *Massachusetts*. EPA's authority to regulate greenhouse gas emissions is also consistent with the Agency's long history of regulating pollutants like $NO_X$ and mercury that contribute to non-localized harms. *See* Comment II.B.2.b.i, *supra*.

*b. Regulating greenhouse gases does not transform EPA's authority under Section 202(a).*

*i. There is nothing inherently different in kind about setting vehicle emissions standards for greenhouse gases.*

Including greenhouse gases in the list of air pollutants subject to Section 202(a) also does not fundamentally transform EPA's authority under that provision. To start, there is nothing unusual about EPA issuing consequential regulations under Section 202(a). Far from a "little-used backwater" of the Clean Air Act, *West Virginia*, 597 U.S. at 730, Section 202(a) is a core provision that has been used to set emission standards since the statute's inception, beginning with limits for criteria pollutants in 1970. 89 Fed. Reg. at 27,897-98. The authority that provision

[69] EPA's lack of action on greenhouse gas pollution in the years prior to the Cannon Memo, and between the Cannon Memo and the 2009 Endangerment Finding, is best understood to reflect the Agency's developing understanding of the harms posed by climate change. *See* Cannon Memo, *supra* note 20, at 4 ("[w]hile $CO_2$, as an air pollutant, is within EPA's scope of authority to regulate, the Administrator has not yet determined that $CO_2$ meets the criteria for regulation"); *cf.* 74 Fed. Reg. at 66,510 (2009 endangerment finding's reliance on contemporaneous science).

bestows on EPA has always been understood to be significant. *See Motor & Equip. Mfrs. Ass'n, Inc.* v. *EPA*, 627 F.2d 1095, 1118 (D.C. Cir. 1979).

Nor does the nature of that authority change when applied to greenhouse gases. Regulating greenhouse gases does not increase the number or types of sources subject to Section 202(a) standards. *See* Light/Medium Duty Response to Comments at 307; *contra UARG*, 573 U.S. at 322. Instead, it simply subjects sources—motor vehicles—that already emit multiple pollutants regulated under Section 202(a) to an additional standard. *See, e.g.*, 89 Fed. Reg. at 27,858, 27,864-65 (listing multiple criteria pollutants and air toxics impacted by Section 202(a) standards). Subjecting already-regulated sources to an additional standard does not transform EPA's regulatory authority. *See UARG*, 573 U.S. at 329; *cf. Biden v. Missouri,* 595 U.S. 87 (2022) (upholding agency's authority to issue COVID-19 vaccine mandate to healthcare workers, where agency had historically issued other vaccine mandates to healthcare workers under the statutory provisions at issue). To conclude otherwise would functionally bar EPA from ever identifying additional pollutants that must be regulated under Section 202(a) because of their contribution to dangerous pollution, contrary to clear Congressional design. *See Massachusetts*, 549 U.S. at 532 ("The broad language of §202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall such obsolescence."); *cf.* 42 U.S.C. § 7521(e) (authorizing EPA to "postpone certification" of any "new power source or propulsion system" yet to be invented, to give EPA time to prescribe standards for pollutants emitted by those vehicles that were not previously subject to regulation).

Likewise, the way that EPA sets standards does not change when it designs standards for greenhouse gases. The same feasibility and cost considerations are relevant to setting standards for greenhouse gas emissions as for other emissions. *See* 42 U.S.C. § 7521(a); *see also Massachusetts*, 549 U.S. at 531; 89 Fed. Reg. at 27,897-98; *id.* at 28,085 (considering "technology effectiveness, its cost (including per vehicle, per manufacturer, and per purchaser), the lead time necessary to implement the technology, and, based on this, the feasibility of potential standards; the impacts of potential standards on emissions reductions; the impacts of standards on oil conservation and energy security; the impacts of standards on fuel savings by vehicle operators; the impacts of standards on the vehicle manufacturing industry; as well as other relevant factors such as impacts on safety"). And EPA follows the same process for setting greenhouse gas standards as for other Section 202(a) standards, utilizing the same expertise the Agency has cultivated over fifty years of crafting emissions standards: It considers available and feasible technologies and sets a standard that is achievable based on those technologies, leaving manufacturers to decide how they will meet the standards in practice (*i.e.*, by applying the technologies considered by EPA or using alternative means). As EPA explained last year with regard to the 2024 multipollutant standards for light- and medium- duty vehicles (and as the proposal fails to rebut):

> EPA has been regulating emissions from motor vehicles based upon the availability of feasible technologies to reduce vehicle emissions for over five decades. EPA has regulated GHG emissions since 2010 and criteria pollutant emissions since the 1970s. Our rules have consistently considered available technology to reduce or prevent emissions of the relevant pollutant, including technologies to reduce or completely prevent GHGs . . . That the industry will continue to apply the latest technologies to reduce pollution is

> no different than how the industry has responded to EPA's rules for half a century. The agency's factual findings and resulting determination of the degree of stringency do not represent the exercise of a newfound power. Iterative increases to the stringency of an existing program based on new factual developments hardly reflect an unprecedented expansion of agency authority.
>
> Not only does this rule not invoke any new authority, it also falls well within EPA's traditionally delegated powers. Through five decades of regulating vehicle emissions under the CAA, EPA has developed great expertise in the regulation of motor vehicle emissions. The agency's expertise is reflected in the comprehensive analyses present in the administrative record. The courts have recognized the agency's authority in this area.[] The agency's analysis includes our assessment of available pollution control technologies; the design and application of a quantitative model for assessing feasible rates of technology adoption; the economic costs of developing, applying, and using pollution control technologies; the context for deploying such technologies (*e.g.*, the supply of raw materials and components, and the availability of supporting charging and refueling infrastructure); the impacts of using pollution control technologies on emissions, and consequent impacts on public health, welfare, and the economy. While each rule necessarily deals with different facts, such as advances in new pollution control technologies at the time of that rule, the above factors are among the kinds of considerations that EPA regularly evaluates in its motor vehicle rules, including all our prior GHG rules.

89 Fed. Reg. at 27,898; Light/Medium Duty Response to Comments at 294-98; *see also* 89 Fed. Reg. at 29,469; Heavy Duty Response to Comments at 99-109.

The proposal does not establish any way in which regulating greenhouse gases necessarily transforms EPA's regulatory role under Section 202(a). The proposal points to the fact that, when determining the need for greenhouse gas standards, EPA looks at the "totality of adverse impacts from climate change," not just impacts from vehicles. 90 Fed. Reg. at 36,307. But as discussed further in the next section of this comment, the plain text of Section 202(a) requires EPA to consider a source's contribution to air pollution, and then to determine whether that air pollution—which can and does come from myriad sources—poses a danger to human health and welfare. *See* Comment V, *infra*. That is the same analysis the Agency performs for all pollutants regulated under Section 202(a), not just greenhouse gases. *See, e.g.*, 69 Fed. Reg. 2398 (Jan. 15, 2004) (setting revised standards for emissions of VOCs, NOx, and particulate matter from motorcycles, notwithstanding that motorcycle emissions contributed a tiny fraction of total pollution); 89 Fed. Reg. at 27,844 (justifying need for more stringent non-greenhouse gas standards on the ground that vehicle emissions "contribute to" ozone, particulate matter and air toxics, "which are linked with premature death and other serious health impacts, including respiratory illness, cardiovascular problems, and cancer"); *see generally* Dena Adler & Kate Welty, Inst. for Pol'y Integrity, *Exhaustive Precedent* (July 2025), https://perma.cc/SWL3-R2S9. To the extent the number of emitting sources and the scope of the danger may be greater for greenhouse gases than other pollutants, that is a difference in degree, not kind.

*ii. Setting standards based on increased electrification is not transformational.*

The bulk of the proposal's arguments for why regulating greenhouse gas standards nevertheless transforms EPA's authority turn on EPA's consideration of electrification technologies when setting those standards. But to no avail.

As an initial matter, even if considering increased electrification at the standard-setting stage constituted a transformative expansion of EPA's authority, that would not absolve EPA of the duty to consider whether any *other* available technologies exist, and would therefore provide no basis for concluding that EPA has no authority to regulate greenhouse gases under Section 202(a) whatsoever. *See* Comment III.C.1, *supra*. Nor would stripping EPA of its authority to regulate greenhouse gases under Section 202(a) prevent the adoption of future standards relying on electrification: as past rulemakings have demonstrated, increased electrification is an effective technology for reducing many regulated pollutants, not just greenhouse gases. *See, e.g.,* 89 Fed. Reg. at 28,099; Light/Medium Duty Response to Comments at 302-03.

Even setting aside this mismatch between the proposal's premise and conclusion, the proposal errs by repeatedly conflating EPA's consideration of increased electrification technologies when setting vehicle standards with the wholesale shifting of the energy sector that was at issue in *West Virginia*. As noted above, the regime struck down by *West Virginia* involved EPA deciding that certain players in the power-production sector—*i.e.*, coal-fired power plants—should be ramped down, in favor of their competitor renewable producers. There was no cost-reasonable technology identified by the standards that a coal-fired electricity producer could adopt at its plants to comply with the standards; the only options were to reduce production, or to offset its production by joining and/or subsidizing its competitors in the renewable industry. *See* 597 U.S. at 712-13. The Supreme Court held that such an approach departed from EPA's traditional approach of basing standards "on the application of measures that would reduce pollution by causing the regulated source to operate more cleanly," and instead rested on an expansive assertion of EPA authority to dictate the makeup of the nation's electric grid. *Id.*

Vehicle emissions standards based on the potential for increased electrification (among other technologies) are different. Certainly (and as discussed below), compliance with such standards may lead a manufacturer to change the technologies with which some of its models are equipped. For example, a manufacturer may choose to increase the percentage of battery or hybrid vehicles it produces—as many manufacturers have done not only to comply with regulatory standards but also to meet consumer demand. *See* 89 Fed. Reg. at 27,898. The standards, however, are performance-based and do not require manufacturers to sell any particular mix of vehicles. EPA has long taken similar approaches. For example, EPA set conventional pollutant standards that drove the adoption of catalytic converters in the 1980s. *See* Light/Medium Duty Response to Comments at 312-13. In neither case did the regulations force automobile manufacturers to stop being automobile manufacturers, or to continue manufacturing automobiles only if they offset their production with investments in competitor modes of transportation, like light rail or bicycles. *See* Light/Medium Duty Response to Comments at 310. As EPA previously explained of its 2024 light- and medium-duty standards:

> [They would] not require any manufacturer to reduce its production of motor vehicles; rather, as with all prior section 202(a) rules, manufacturers can produce as many vehicles as they want, so long as their fleet meets the emissions standards.[] The rule also does not require manufacturers to build, invest in, or otherwise support any other forms of transportation, or any strategies to reduce transportation-sector emissions, besides producing cleaner motor vehicles—for example, we do not require motor vehicle manufacturers to build or invest in railroads, public transportation, bicycles, or smart zoning. The rule does not decree that "it would be best if [cars] made up a much smaller share of national [transportation]," or prescribe that only X% of transportation can be accomplished by car, while Y% must occur via lower emitting modes such as rail, boat, or bicycle.[] Nor does the final rule even require manufacturers to shift production within the light and medium duty vehicle categories toward subcategories that can achieve greater emissions reductions. Rather, EPA recognizes the diverse needs of consumers, and, consistent with its past rulemakings, has maintained separate car and truck standards, with the continuation of existing attribute-based standards for light and medium duty vehicles. EPA's goal in keeping this approach was to avoid unduly influencing the market strategies of manufacturers (*e.g.*, by incentivizing upsizing or downsizing of vehicles, or the use of cars over light trucks for transportation of people) and instead to preserve the diversity of products in the market. The final rule thus enacts no "sector-wide shift" in transportation.[] The agency is not seeking to "improve the overall [transportation] system by lowering the carbon intensity of [transportation]."[] Rather, EPA is requiring manufacturers who make motor vehicles to produce vehicles that pollute less.

Light/Medium Duty Response to Comments at 310.

Another way to crystallize the distinction between vehicle standards based on increased electrification and the nationwide generation-shifting regime at issue in *West Virginia* is that the former are still run-of-the-mill technology-based standards. As EPA previously explained, batteries or other technologies that run in whole or part on electricity are an available technology that can be incorporated into an individual vehicle to make it run more cleanly. *See* 89 Fed. Reg. at 27,845-51. For that reason, considering, *e.g.*, the ability to build vehicles that use a rechargeable battery (instead of or in addition to an internal combustion engine) when determining what degree of emissions reduction is achievable and feasible is not different in kind than considering the ability to build vehicles that include a catalytic converter. In both instances, EPA derives a "technology-based standard . . . focused on improving the emissions performance of individual sources"—exactly the approach that *West Virginia* faulted EPA for *abandoning* in favor of setting (unlawful) generation-shifting requirements under Section 111. 597 U.S. at 727; *see also id.* at 708 (explaining that a "technology-based approach focuses upon the control technologies that are available" and can include "changes in the design and operation" of the source (internal quotation marks omitted)).

To the extent EPA proposes that technologies relying on electrification are inherently different in kind than other available control technologies, that conclusion would be arbitrary. All cars—

including internal combustion engine vehicles—incorporate some electrified technologies. *See* 89 Fed. Reg. at 27,892; Light/Medium Duty Response to Comments at 299. Many long-accepted emissions-control devices use electric technologies, "including catalytic converters, selective catalytic reduction, particulate filters, and engine and powertrain electrification." Light/Medium Duty Response to Comments at 299. Indeed, the internal combustion vehicles now favored by EPA actually have electric technologies that fully electric vehicles do not, not only in the form of aftertreatment systems, but also an alternator that generates electricity from the combustion engine when that engine is running, which can be used immediately to power parts like headlights, or stored in the car's battery for future use. *See* 89 Fed. Reg. at 27,892. EPA does not explain and there is no statutory distinction between cars that use electricity generated through a combustion engine's on-board burning of externally supplied fossil fuels versus cars that use electricity supplied through a charger.

Moreover, increasing electrification to reduce or even eliminate emissions caused by the burning of gasoline has been a part of EPA's toolkit since well before the 2009 endangerment finding. For example, EPA first established a voluntary National Low-Emission Vehicle Program in 1997 (voluntary because, at the time, Congress had put a temporary pause on increasing the stringency of vehicle emissions standards). *See generally* 62 Fed. Reg. 31,191 (June 6, 1997). The multipollutant emissions standards that followed in 2000 built on the voluntary program, requiring manufacturers to achieve an average emissions limit across their fleet by choosing to produce vehicles from a mix of emissions-level "bins"—with one bin reserved for zero-emission vehicles. *See* 65 Fed. Reg. 6698 (Feb. 10, 2000); *id.* at 6742 (hypothesizing that the bin system would provide incentive for manufacturers to produce more low-emission vehicles); *see also* Light/Medium Duty Response to Comments at 299-300. The 2000 standards also provided extra incentives in the form of credits for the manufacture of zero-emission vehicles. 65 Fed. Reg. at 6746. And following the endangerment finding, the availability of increased electrification has been incorporated into fifteen years' worth of greenhouse gas emissions standards, including standards set by the first Trump Administration. *See* 85 Fed. Reg. 24,174 (Apr. 30, 2020); *see also* Light/Medium Duty Response to Comments at 299-301.

Considering increased electrification is also consistent with EPA's historical practice of considering technologies that prevent pollution from being created, in addition to technologies that treat pollution after the fact. Standards for conventional pollutants have long incorporated such prevention technologies, including the use of exhaust gas recirculation and other changes to the combustion chamber that lead to a cleaner burn. *See* Light/Medium Duty Response to Comments at 303 n.65 (citing 66 Fed. Reg. 5002, 5035, 5055, 5092 (Jan. 18, 2001)).

The fact that promulgating standards incorporating electrification technologies may indirectly drive reduced demand for one fuel and increase demand for a different fuel is also nothing new. "[I]ndirect impacts are inherent" in setting vehicle emissions standards, "going back half a century." 89 Fed. Reg. at 27,899; *see also Motor & Equip. Mfrs. Ass'n, Inc.* v. *EPA*, 627 F.2d 1095, 1118 (D.C. Cir. 1979) ("[e]very effort at pollution control exacts social costs. Congress . . . made the decision to accept those costs."). And in practice, greenhouse gas standards are not the only ones that can result in reduced demand for petroleum-based fuel. *See* 65 Fed. Reg. at 6746; *see also* Light/Medium Duty Response to Comments at 302-03 (noting that increased electrification is an available method for reducing non-greenhouse gas pollutants). The proposal thus errs in treating EPA's authority to set vehicle emissions standards that indirectly affect

gasoline consumption as tantamount to letting EPA decide "how much gasoline should be used by vehicles and engines in the United States." 90 Fed. Reg. at 36,306. For all the reasons discussed, when EPA sets such standards, it does not derive them based on a particular quantum of gasoline to be used or avoided. To the contrary, as *Massachusetts* recognized, EPA's authority to set technology-based standards for avoiding emissions under Section 202(a) is separate from (and compatible with) the Department of Transportation's authority to set fuel-economy standards. *See* 549 U.S. at 531-32.[70]

Moreover, the possibility that more stringent vehicle emissions standards could lead to the greater use of electrification technology in vehicles (and potentially decreased use of internal combustion engines) was understood by Congress as early as the 1960s, including in the Senate report accompanying the 1970 Clean Air Act Amendments. *See* 89 Fed. Reg. at 27,894 (compiling legislative history); *see also Int'l Harvester Co.* v. *Ruckelshaus,* 478 F.2d 615, 634-35 (D.C. Cir. 1975). Since that time, as EPA recently explained, "Congress has continued to emphasize the importance of technology development to achieving the goals of the" Clean Air Act, including by relying on "evolving technologies" to support order-of-magnitude vehicle emissions reductions in the 1990 amendments to the Clean Air Act; instituting a clean fuel vehicles program; and supporting the phase-in of certain Section 202(a) standards, notwithstanding that the technologies capable of achieving them "would be difficult for the entire industry to adopt all at once." 89 Fed. Reg. at 27,894-95. By contrast, nothing in the Clean Air Act directs or even permits EPA to prioritize a desire to spur consumer demand for gasoline over the statute's express mission of reducing emissions from vehicles.

For all these reasons, EPA's consideration of increased electrification as an available technology when setting standards under Section 202(a) does not trigger the major questions doctrine. Moreover, EPA itself has already fully explained in past rulemakings both its statutory authority to consider increased electrification and why doing so does not transform its regulatory power. *See* 89 Fed. Reg. at 27,891-98; Light/Medium Duty Response to Comments at 299-304; 89 Fed. Reg. at 29,468-69; Heavy Duty Response to Comments at 104-09. Those explanations are correct, and the proposal fails to rebut the Agency's prior detailed analysis.

*iii. The proposal's invocation of an "electric vehicle mandate" is unavailing.*

[70] Nor is it material that increased electrification of the fleet may drive changes to fueling infrastructure. As EPA itself previously explained, "while ZEVs may require supporting infrastructure to operate, the same is true for ICE vehicles; indeed, supporting infrastructure for ICE vehicles has changed considerably over time in response to environmental regulation, for example, with the elimination of lead from gasoline, the provisioning of diesel exhaust fluid (DEF) at truck stops to support selective catalytic reduction (SCR) technologies, and the introduction of low sulfur diesel fuel to support diesel particulate filter (DPF) technologies." 89 Fed. Reg. at 29,470-71; Light/Medium Duty Response to Comments at 319; *see also* 89 Fed. Reg. at 27,900; Heavy Duty Response to Comments at 125.

The proposal's remaining argument for why regulating greenhouse gases under Section 202(a) transforms EPA's authority is that EPA has allegedly gone beyond *considering* increased electrification and instead adopted standards that *require* manufacturers to switch from using internal combustion engines to electrified technology—what the proposal calls the "electric vehicle mandate." But that is yet another argument criticizing a particular *type* of greenhouse gas regulation, and must therefore be rejected as unresponsive to the question at hand, for the reasons already discussed. *See* Comment III.C.1, *supra*.

In any event, the proposal's premise is incorrect. Section 202(a) empowers EPA to set emissions standards based on the availability of technologies to prevent or control emissions. *See* 42 U.S.C. § 7521(a). Increased electrification, as a technology that prevents (or controls) vehicular pollution, clearly falls within the statutory scope, for all the reasons discussed above. With regard to the 2024 emissions standards that the proposal criticizes, EPA made express findings that its light- and medium-duty standards could be achieved using "a wide array of technologies, including various ICE, HEV, PHEV, and BEV technologies." 89 Fed. Reg. at 27,898; *see also* Light/Medium Duty Response to Comments at 309-16. It further found that, even after those standards went into effect, manufacturers would "continue to produce gasoline engine vehicles." 89 Fed. Reg. at 27,898 (central case modeling showing that "over 84 percent of the on-road fleet will still use gasoline or diesel in 2032, and 58 percent will in 2055"). EPA also found that the standards could be met without increasing the number of battery electric vehicles beyond volumes that were already being sold, *id.* at 27,845, and that numerous factors other than the standards had driven and would continue to drive the increase in electric vehicles relative to internal combustion engines. *See id.* at 27,846-51. EPA made analogous findings with regard to its 2024 heavy-duty standards, explaining that manufacturers "can adopt a wide array of technologies" to comply and that EPA identified compliance pathways that would not require "producing additional ZEVs"—including "improvements in aerodynamics and tire rolling resistance in ICE tractors," "the use of lower carbon fuels," "hybrid powertrains," and hydrogen-internal combustion engines. 89 Fed. Reg. at 29,469; Heavy Duty Response to Comments at 114-22. The proposal does not dispute those findings or provide a rational explanation for the Agency's apparent change of view.

Moreover, even assuming that compliance with the 2024 standards did functionally require vehicle manufacturers to utilize increased electrification (which, as discussed above, is *not* required), the proposal still could not establish that this was a transformative expansion of EPA's power. As EPA has previously explained, the Clean Air Act does not require that vehicle emissions standards be achievable via multiple technological paths. 89 Fed. Reg. at 27,897 n.509. To the contrary, even during the statute's earliest days, the Agency has sometimes developed standards premised on the application of a single known technology, with the catalytic converter being the prime example. *Id.* That approach was upheld by the D.C. Circuit. *Int'l Harvester*, 478 F.2d at 625. And for the reasons discussed, such standards would still be a "prototypical example of the traditional technology-based approach" to standard-setting, notwithstanding that they may ultimately lead to reduced gas consumption. *See* Light/Medium Duty Response to Comments at 310.

*c. The economic and political consequences of regulating greenhouse gases under Section 202(a) do not implicate the major questions doctrine.*

The fact that regulating greenhouse gases under Section 202(a) is neither unheralded nor transformative sinks the proposal's recourse to the major questions doctrine, irrespective of the economic and political consequences of regulating. The major questions doctrine is limited to cases where *both* the "history and the breadth" of the authority asserted *and* the "economic and political significance" of the authority provide reason to hesitate before assuming Congress intended to bestow it. *West Virginia*, 597 U.S. at 721; *see also, e.g.*, *Biden*, 600 U.S. at 501. The Supreme Court has never applied the major questions doctrine based on the economic and political significance of a purported authority alone, but instead has reserved the doctrine to cases involving unprecedented and transformative exercises of power. *See West Virginia*, 597 U.S. at 721.; *cf. Missouri,* 595 U.S. at 92-95 (upholding agency's authority to issue highly consequential COVID vaccine mandate for healthcare workers, in light of historical precedent for vaccine mandates). A broader conception of the doctrine could lead to its application becoming the rule, rather than the "extraordinary" exception. *Brown & Williamson*, 529 U.S. at 159. To wit: a huge swath of the regulations promulgated by federal agencies are economically and politically significant.[71] Putting a thumb on the scale against finding a delegation of authority in all such cases risks systematic deviation from the standard rules of textual interpretation wherever the results are consequential—notwithstanding that in many cases, Congress made the delegation with full awareness that significant consequences would follow. *See, e.g.*, *Motor & Equip. Mfrs.*, 627 F.2d at 1118; *cf. Loper Bright,* 603 U.S. at 399 ("Presumptions have their place in statutory interpretation, but only to the extent that they approximate reality.").

In any event, the proposal does not demonstrate that the economic and political significance of regulating greenhouse gases under Section 202(a) is different in kind than that of regulating other pollutants. It is worth emphasizing once again the burden the Agency would need to carry in order to rely, even in part, on economic and political significance as a basis for concluding that it has no authority to regulate greenhouse gases under Section 202(a). The potential for significant costs—including incidental and indirect costs—is inherent in setting vehicle emissions standards, and Congress recognized and accepted as much when it enacted Section 202(a). *See Motor & Equip. Mfrs.,* 627 F.2d at 1118. In this context, significant consequences are not enough to trigger the doctrine: there would have to be vast economic and political consequences that are different in kind from the consequences of other types of emissions regulations. Moreover, because EPA is proposing that it has *no* authority whatsoever to regulate greenhouse gases under Section 202(a), it would not be enough to show that *some* exercises of Section 202(a) authority could have extreme political and economic significance. Instead, the Agency would need to show that *every* conceivable exercise of Section 202(a) authority to regulate greenhouse gases

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[71] *See generally* The George Washington University Regulatory Studies Center, Economically Significant Final Rules Published by Presidential Year, https://regulatorystudies.columbian.gwu.edu/regstats (data set as of Sept. 21, 2025 *available at*: https://perma.cc/YP4G-W752).

would have extreme consequences that are different in kind than issuing emissions standards for other pollutants under Section 202(a). The proposal does not begin to do so.

Looking first to political significance, the proposal's suggestion that the electoral, legislative, or other prominence of climate issues necessarily makes regulating greenhouse gases too politically consequential runs into the wall of Supreme Court precedent recognizing EPA's authority to regulate greenhouse gases. *See Massachusetts,* 549 U.S. at 530-31; *AEP,* 564 U.S. at 424; *UARG*, 573 U.S. at 329; *cf. West Virginia*, 597 U.S. at 727. It is also at odds with the best reading of Section 202(a) and a long chain of Congressional and administrative action, as discussed elsewhere in this comment.

Turning to economic significance, the proposal makes no effort to demonstrate that it is impossible to set vehicle emissions standards for greenhouse gases without imposing costs that are different in kind than those associated with other standards. Any attempt to do so would face the strong headwinds of 15 years of greenhouse gas vehicle emissions standards, all concluding that the costs of regulating were reasonable and justified in light of the countervailing benefits. *See, e.g.*, 89 Fed. Reg. at 27,899-901. Motor vehicle manufacturers have, in practice, adapted to those regulations. And in any event, standards designed to reduce greenhouse gas emissions are often based on technologies that simultaneously reduce other types of pollutants. EPA could in many cases establish criteria pollutant standards based on the same technologies, such as electric vehicles, regardless of whether the Agency may regulate greenhouse gases. *See* 89 Fed. Reg. at 28,099; Light/Medium Duty Response to Comments 302-03; *see also* 65 Fed. Reg. at 6746.

These points are sufficient to defeat any argument that the economic consequences of regulating greenhouse gases are inherently different in kind than regulating other pollutants emitted by vehicles. But because the proposal is so focused on the particulars of the greenhouse gas standards EPA has actually enacted, it bears noting that those specific standards do not impose the kinds of economic consequences that trigger major-questions concerns. Here again, the Agency can—and should—take its own word. Taking the 2024 multipollutant standards for light- and medium-duty vehicles as an example, EPA made extensive factual findings and explained at length why the standards' impacts are not so significant as to implicate the major-questions doctrine. 89 Fed. Reg. at 27,899-901; Light/Medium Duty Response to Comments at 304-23.[72] The proposal fails to acknowledge and explain any deviation from this view, and likewise fails to rebut its prior sound analysis, rendering arbitrary and capricious any reliance on the economic and political significance of the 2024 standards as a basis for invoking the major questions doctrine. *See Fox,* 556 U.S. at 515-16.

To name just a few examples, EPA found in 2024 that:

[72] EPA made similarly extensive findings with regard to the 2024 heavy-duty vehicle standards. *See* 89 Fed. Reg. at 24,469-71; Heavy Duty Response to Comments at 122-30. The proposal fails to acknowledge and rebut these findings, as well.

- "[T]he average costs per-vehicle in the final year of the phase-in ($2,100 in MY 2032) fall within the range of prior rules" and "are small relative to what Congress itself accepted in enacting section 202," 89 Fed. Reg. at 27,899;
- For consumers, the "lower operating costs for vehicles substantially outweigh the increased technology costs of meeting the standards over the life of the vehicles," 89 Fed. Reg. at 27,899; *see also* Light/Medium Duty Response to Comments at 308;
- While the standards were expected to cause indirect impacts, "there is nothing different in kind about the impacts of the final rule compared to the impacts of prior rules; the presence of such impacts merely reflects the ordinary nature of the global supply chain for motor vehicles. Even were the Agency to consider indirect regulatory impacts, the final rule causes no significant indirect harms of the kinds that commenters allege, has the potential for positive impacts, and on balance provides positive net benefits to society." Light/Medium Duty Response to Comments at 323. Moreover, many of the rule's indirect impacts are "close analogs" of "impacts Congress itself recognized and accepted," 89 Fed. Reg. at 27,900;
- Specifically, the standards "will not cause significant adverse impacts on electric grid reliability or resource adequacy, that there will be sufficient battery production and critical minerals available to support increasing electric vehicle production including due to large increases in domestic battery and critical mineral production, that there will be sufficient lead-time to develop charging infrastructure, and that the rule will have significant positive national security benefits," 89 Fed. Reg. at 27,900; *see also* Light/Medium Duty Response to Comments at 321-23;
- The standards were expected to create positive indirect impacts, including: "foremost, the significant benefits of mitigating air pollution including both criteria pollutants, which contribute to a range of adverse effects on human health including premature mortality, and GHGs, which contribute to climate change and pose catastrophic risks for human health and the environment, water supply and quality, storm surge and flooding, electricity infrastructure, agricultural disruptions and crop failures, human rights, international trade, and national security," as well as "reduced dependence on foreign oil and increased energy security and independence; increased regulatory certainty for domestic production of pollution control technologies and their components (including PEVs, batteries, battery components, and critical minerals) and for the development of electric charging infrastructure, with attendant benefits for employment and US global competitiveness in these sectors; and increased use of electric charging and potential for vehicle-to-grid technologies that can benefit electric grid reliability," *id.*; and
- The standards would have estimated "annualized net benefits of $110 billion through the year 2055 when assessed at a 2 percent discount rate (2022$)," 89 Fed. Reg. at 27,899; *see also* Light/Medium Duty Response to Comments at 316-19.

The proposal has no answer to these findings. Moreover, any analysis of past standards that the Agency does provide is infected by the arbitrary and capricious analysis of effects contained in the proposed rule, RIA, and other analyses. *See generally* Comment VI-IX, *infra*.

*d. Recourse to the major questions doctrine is not needed to avoid any constitutional infirmity.*

To the extent EPA proposes, in the teeth of the foregoing, that it must apply the major questions doctrine's clear-authorization requirement to avoid constitutional concerns, it is in error. While some jurists have characterized the major questions doctrine as not merely a tool of statutory interpretation but a presumption necessary to avoid nondelegation or other constitutional questions, that view of the doctrine is not universal. *Contrast West Virginia*, 597 U.S. at 740-41 (Gorsuch, J., concurring) *with Biden*, 600 U.S. at 507-08 (Barrett, J., concurring). Even assuming the doctrine is one of constitutional avoidance, there is no problem here to avoid.[73]

Regulating greenhouse gases under Section 202(a) does not create nondelegation issues. As discussed above, Congress provided EPA with specific direction about when and how to regulate under Section 202(a). *See* Comment II.B.2.a, *supra*. Those guardrails satisfy the intelligible principle requirement, without any need to invent an atextual bar on regulating greenhouse gases. *See Whitman*, 531 U.S. at 473-75.

Moreover, to the extent the major questions doctrine safeguards constitutional values, it does so through application of the factors that the Supreme Court has set forth. None of those factors are implicated by regulating greenhouse gases under Section 202(a), for the reasons already discussed. EPA has no authority to devise a different test than the Supreme Court itself has adopted, especially given that over-aggressive application of the doctrine may undermine rather than promote Congress' intent. *See* Comment III.C.2.c, *supra*.[74]

*e. To the extent the major questions doctrine is relevant at all, its underlying principles cut against the proposal's novel interpretation of Section 202(a).*

As a final point on the applicability of the major questions doctrine, it bears noting that—while regulating greenhouse gases under Section 202(a) does not bear any of the hallmarks of a major question—EPA's novel proposal to totally disclaim all authority to regulate greenhouse gases implicates all three.

*First,* EPA's new position that it lacks authority to regulate greenhouse gas emissions under Section 202(a) flies is not merely unheralded; it flies in the face of years of consistent acknowledgment of that authority by all three branches. *See* Comment II.A.1.b, III.C.2.a, *supra*. EPA itself recognized its authority nearly 30 years ago, in the Cannon Memo. The one time, prior to this proposal, that it publicly deviated from that view, its effort to second-guess Congress was struck down by the Supreme Court in *Massachusetts*. Since then, EPA has never suggested

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[73] To the extent the major questions doctrine is simply a tool for divining Congressional intent, the text and history all support EPA's authority, for the reasons already discussed.

[74] EPA has also not argued that a more aggressive test is needed to avoid nondelegation or other concerns, and so any final rule based on such a view would not be a logical outgrowth of the proposal.

that it lacks authority to regulate greenhouse gases under Section 202(a), even during the prior Trump Administration. *See* 85 Fed. Reg. 24,174.

*Second*, EPA's new position fundamentally expands and transforms its role at the expense of Congress. For all that the proposal characterizes EPA's new position as an exercise in regulatory humility, it is actually a blatant usurpation of authority that belongs only to Congress. When it enacted the Clean Air Act, Congress made a quintessentially legislative policy choice: EPA is to regulate air pollutants emitted by vehicles that contribute to dangerous air pollution—including pollution that damages the climate. EPA's proposal to substitute the command Congress gave in favor of different instructions that EPA believes would better serve the Administration's national policy goals aggrandizes agency power at the expense of Congress, notwithstanding that aggrandizement in this case takes the form of inaction. It also directly threatens the distinct roles of the executive and legislative branches that the major questions doctrine has been described as protecting.

*Third*, as discussed further below, the costs of EPA's abdication of responsibility are both enormous and not adequately acknowledged by the proposal. *See* Comment VI, IX-X, *infra*. While the consequences of EPA's course of action are not enough, standing alone, to trigger major-questions concerns, they amplify the stakes of EPA's transformative assertion of power to rewrite the Clean Air Act.

#### *3. Even assuming the major questions doctrine applied, Congress provided clear authorization.*

In light of the foregoing, EPA errs in proposing that the major questions doctrine is applicable to this rulemaking at all. But even assuming the doctrine did apply, it would still not provide a rational or lawful basis for EPA to repeal the endangerment finding and refuse to regulate greenhouse gas emissions from motor vehicles. The major questions doctrine does not provide that a statute may never be read to delegate unheralded, transformative, and economic and politically significant power to an agency. It simply provides that a court should not infer such a delegation absent "clear congressional authorization." *West Virginia*, 597 U.S. at 731.

The Clean Air Act provides that clear congressional authorization regarding EPA's authority to regulate greenhouse gas emissions under Section 202(a). To summarize without undue repetition of points made elsewhere in this comment, *Massachusetts* held that the Clean Air Act *unambiguously* authorizes EPA to regulate greenhouse gases under Section 202(a). *See* Comment II.A.1, *supra*. Under *Loper Bright*, that is the single, correct meaning of the statute and is not subject to revisiting by EPA—or even by the Supreme Court itself, absent the exceptional showing required to depart from statutory *stare decisis*. *See* 603 U.S. at 400. And even looking at the issue afresh, the statutory text, legislative history, and Congress' longstanding acquiescence to EPA's regulation of greenhouse gases under Section 202(a) provide the requisite clear showing. *See* Comment II.B, *supra*.

## IV. Excluding greenhouse gases from Section 202 would undo the basis for the Supreme Court's conclusion in *AEP*.

EPA's proposed interpretation that it lacks authority to regulate greenhouse gases under Section 202 would also mean that the Clean Air Act no longer displaces federal common law. In *American Electric Power Co. v. Connecticut*, the Supreme Court concluded that EPA's authority to regulate greenhouse gases under the Clean Air Act protected covered industries from certain federal common-law claims, including for tort damages. 564 U.S. at 424. If EPA were correct that Congress never granted the Agency that regulatory authority, there would be no basis for such displacement. The proposal is thus incorrect that "the CAA would continue to preempt Federal common-law claims for GHG emissions." 90 Fed. Reg. at 36,315.

The Court in *AEP* held that where a federal statute "speaks directly to the question" at issue, it "excludes the declaration of federal common law." 564 U.S. at 424 (internal quotation marks omitted). Because the Clean Air Act "provides a means to seek limits on emissions of carbon dioxide" from particular sources, the Court reasoned, there is "no room for a parallel track" to compel reductions from those sources under federal common law. *Id.* at 425. The Court's ruling thus tied together the authority granted as to particular sources (in the case of *AEP*, power plants) and the displacement of suits against those sources: "The critical point is that Congress delegated to EPA the decision whether and how to regulate carbon-dioxide emissions from powerplants; the delegation is what displaces federal common law." *Id.* at 426.

But EPA's proposal here now argues, among other things, "that CAA section 202(a) does not authorize the EPA to prescribe standards for GHG emissions based on global climate change concerns" and that regulating greenhouse gases "triggers the major questions doctrine" because "Congress did not clearly authorize the EPA to decide" whether "the Nation's response to global climate change … should include regulating GHG emissions from new motor vehicles and engines." 90 Fed. Reg. at 36,298-99. Under these arguments, EPA's purported flaw in the 2009 Endangerment Finding was not that it merely misjudged the facts concerning the magnitude of vehicles' contribution to dangerous air pollution (or whether the pollution causes danger, which is EPA's alternative proposed rationale, *id.* at 36,307). Rather, EPA's claimed flaw was that it presumed authority to consider the dangers of greenhouse gas pollution in the first place. *Id.* at 36,297 ("As explained in section IV.A.1 of this preamble, we now believe that regulating GHG emissions based on global climate change concerns exceeds our statutory authority under CAA section 202(a) and, as such, propose that reliance interests alone would not justify retaining the GHG emission standards that we lacked authority to prescribe."). This "primary" basis for repeal, *id.* at 36,298, asserts that Congress never intended Section 202 to apply to greenhouse gases *at all* and so EPA could not lawfully consider, let alone find, that greenhouse gas emissions from vehicles or their engines endanger the public.

It is thus patently incorrect for EPA to assert that even if it were to finalize its primary proposal, "the CAA would continue to preempt Federal common-law claims for GHG emissions because 'Congress delegated to EPA the decision whether and how to regulate' such emissions." *Id.* at 36,315 (quoting *AEP*). The entire thrust of EPA's argument is that Congress did *not* delegate that decision as to greenhouse gases, but rather wrote the text of Section 202 to apply only to local or regional pollutants that endanger the public "through exposure." Under the "best reading" advanced by EPA, it would thus have no authority to exercise concerning the question of

whether greenhouse gases endanger the public or how, if so, they should be regulated. Its Section 202 authority would not reach that question at all. *Cf.* Edison Elec. Inst., et al. Amicus Br., *West Virginia v. EPA*, No. 20-1530 (S. Ct. Jan. 25, 2022) (brief of utilities opposing arguments against EPA authority over greenhouse gases, including under the major questions doctrine, because they would undermine common-law displacement under *AEP*). For all of the reasons discussed throughout this submission, commenters strenuously object to EPA's premise that the Clean Air Act does not permit EPA to establish greenhouse gas standards for vehicles or engines under Section 202(a). But if the Agency nonetheless decides to finalize its proposal, it cannot have its cake and eat it too: if EPA's regulatory authority falls, so does the shield against federal common-law suits.[75]

Notably, advancing this repeal risks undermining *AEP*'s displacement altogether, including for stationary sources regulated under Section 111 or aircraft regulated under Section 231.[76] EPA was clear in this proposal that it was not taking any action in this proposal with respect to those distinct rulemakings and findings. 90 Fed. Reg. at 36,298. But were EPA to finalize its legal analysis here and later seek to apply it to other parts of the Clean Air Act, it could eliminate the Act's displacement effects entirely.

EPA's failure to acknowledge the true effect of its proposal on federal common-law suits against the vehicle and fuel industries, and the potential effect of its proposal on such suits against other industries, thus fails to address an important aspect of the problem. And it fails to engage with reliance interests that have accrued since *AEP* (both within industry that has been protected from

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[75] The Agency appears to suggest that displacement could survive because "[t]he bases for repeal proposed in this action would not foreclose us from regulating $CO_2$, methane, $NO_X$, HFCs, PFCs, or $SF_6$ emissions from new motor vehicles or engines if the Administrator determines that one or more of those gases meet the requirements for regulation under CAA section 202(a), as discussed herein." 90 Fed. Reg. at 36,315. But that is doublespeak. The rest of the proposal purports to foreclose exactly such a result by asserting that those pollutants do not harm through "local or regional exposure," *id.* at 36,299–301, and so are different in kind from those within the scope of Section 202(a). As illustrated in this comment, that claim is totally wrong, but it is wrong across the board: no part of EPA's legal theory concerning its authority over those pollutants depends on whether they are considered separately or together. In any case, if Section 202(a) were understood to reach only pollution that harms through "local or regional exposure," it would not displace common-law suits over climate damages because the "congressional legislation" in question plainly would not "speak[] directly to the question at issue." *AEP*, 564 U.S. at 424 (cleaned up).

[76] Some of these findings were made in the alternative in instances where commenters contested whether new endangerment findings were required. *See, e.g.*, 80 Fed. Reg. 64,510, 64,530 (Oct. 23, 2015). But EPA has advanced arguments in other proposed rulemaking that pollutant-specific endangerment findings, like those issued in the alternative for greenhouse gases, are mandatory. 90 Fed. Reg. at 25,763-65.

suit and among injured parties who have seen those suits dismissed) in EPA's ability to fairly address climate change harms through its authority to regulate greenhouses gases.

That failure should not be understated: the effect of finalizing this proposal would be to spur fresh waves of common-law suits across the country, with more numerous and vigorous plaintiffs, stronger legal pathways, and greater urgency than ever before. Companies which heretofore have been shielded by EPA authority would be open to substantial common-law judgments for damages, creating a chaotic business environment marked by competitive and regulatory uncertainty. EPA's claim otherwise does not make it true.

## V. EPA's arguments that the 2009 Endangerment Finding improperly "severed" certain factual determinations under Section 202(a) are meritless.

EPA attacks the 2009 Finding on two related grounds:

***First***, the proposal claims the 2009 Endangerment Finding erred by "severing" the threshold scientific question posed by Section 202(a)(1)—whether greenhouse gases from new vehicles cause or contribute to air pollution that endangers public health or welfare—from the regulatory remedy that follows that determination: the issuance of emission standards that reflects the lead-time needed for development and application of the requisite technology and the appropriate consideration of compliance costs. *See* 90 Fed. Reg. at 36,303 ("Severing the EPA's standards-setting authority from the findings that trigger a duty to exercise that authority shaped the analysis in the Endangerment Finding in a manner that we propose ran counter to the statute.").

***Second***, the proposal asserts that when addressing the Section 202(a)(1) threshold question itself, the 2009 Finding improperly "severed" its analysis of endangerment—whether the build-up of greenhouse gases in the atmosphere "endangers" health or welfare—from its analysis of contribution—whether vehicle emissions "contribute" to that dangerous air pollution. According to the proposal, these analyses must be part of a "single causal chain," *id.* at 36,299, such that EPA can only issue Section 202 standards if it finds that vehicles' emissions of that pollutant *by themselves* "cause or contribute to the danger posed by the air pollution to a sufficient extent to satisfy the standard for regulation." *Id.* at 36,304.

These arguments ignore the plain text of the statute, the governing case law, the fundamental science of air pollution, and the legislative history. As such, the proposal falls short and is arbitrary and capricious.

### A. The Agency did not err in undertaking the 2009 Finding—which entails a purely scientific inquiry—separately from its development and issuance of vehicle standards.

#### *1. The plain language of Section 202(a)(1) belies EPA's claim that it must make a threshold contribution/endangerment finding and issue vehicle standards concurrently.*

EPA asserts that the 2009 Finding was unlawful because the Agency did not issue it concurrently with the actual greenhouse gas vehicle standards that the Finding made mandatory. According to EPA, even when an air pollutant causes or contributes to air pollution that endangers the public

health or welfare, the Agency cannot make that judgment unless it is part of an "integrated" process that includes *both* the threshold contribution/endangerment determination *and* the issuance of standards. 90 Fed. Reg. at 36,296 ("[T]he statute neither authorizes the Administrator to issue standalone findings that trigger a duty to regulate nor prohibits the Administrator from rescinding such findings."). The agency connects this (alleged) procedural error with two substantive problems. First, it permitted EPA to evaluate the contribution/endangerment inquiry on the basis of *all* possible Section 202(a) vehicles, rather than on a class-by-class basis in the context of a specific standard-setting exercise. *See id.* at 36,302 (asserting the 2009 Finding allowed the agency to "issue a single endangerment finding in the abstract" without "addressing the danger posed by any *particular* source category or the causal role of that particular source category in any identified danger") (emphasis added). Second, EPA claims that the standalone 2009 Finding unlawfully permitted it to ignore policy factors relevant to standard-setting (such as regulatory costs) and others not even relevant to standard-setting (such as the opportunity for climate adaptation efforts) when determining whether vehicle emissions cause or contribute to dangerous air pollution.

These arguments fall flat. Consider the basic language of Section 202(a)(1), the key sentence of which reads as follows:

> The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.

42 U.S.C. § 7521(a)(1). The key question for any standard issued pursuant to this provision is whether it meets the *substantive* requirements Congress provided *i.e.*, is supported by a "judgment" that an "air pollutant from any class or classes of new motor vehicles or new motor vehicle engines . . . cause[s], or contribute[s] to, air pollution which may reasonably be anticipated to endanger public health or welfare." *Id*. By its plain text, Section 202(a) establishes no timing or process requirement for that judgment.[77] Common sense indicates that the Administrator's judgment may refer back to and rely on prior or pre-established findings, as EPA did in issuing the new motor vehicle standards in 2009, so long as the standard is supported by that finding. *See* 75 Fed. Reg. at 25,398-99 (summarizing endangerment finding as basis for adoption of standards). In other words, while the Agency cannot make the threshold inquiry *after*

[77] While the 2009 Finding took the position that Section 202(a)(1) was "silent" on "the timing of an endangerment finding" relative to standard-setting, 74 Fed. Reg. at 66,501, the Agency did not rely on *Chevron* deference. Rather, it interpreted the absence of such language in the statute as authorizing it *either* to issue a predicate contribution/endangerment finding before issuing standards or concurrent with such standards. *Id.* As discussed throughout this section, the text, case law, and regulatory history all indicate that EPA's interpretation in 2009 was the best reading of the statute. Thus, the proposal's reference to *Loper Bright* on this point, 603 U.S. at 411, are unavailing.

it issues standards, the statutory text is fully consistent with a situation in which the Administrator issues standards pursuant to an earlier determination that the vehicle emissions cause or contribute to dangerous air pollution.[78]

Indeed, precisely because an affirmative cause or contribute/endangerment finding is a legal predicate to the issuance of standards, EPA must, as a practical matter, complete the administrative work on that issue before it begins developing standards, lest it expend agency resources only to subsequently find that it lacks standard-setting authority. While the statute certainly permits the Agency to undertake both actions in a single rulemaking docket, it would be absurd to *require* that EPA sit on a completed contribution/endangerment finding and decline to make it public simply because it had not yet completed its development of vehicle standards for which that finding was a perquisite.

### *2. EPA's own regulatory history belies its newfound position that it must issue the threshold finding concurrently with standards.*

EPA next turns to history for support, maintaining that its new interpretation aligns with pre-2009 implementation processes, where standards and threshold findings were typically concurrent. But during that time frame, EPA never claimed that it was *required* to undertake these processes concurrently. In fact, before 2009, EPA *did* issue standards under Section 202(a)(2) that relied on preexisting findings relating to Section (a)(1) that the pollutant endangers the public health or welfare. For example, in establishing Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements, EPA briefly summarized the health impacts of ozone and then simply concluded that "ozone concentration patterns causing violations of the 1-hour [National Ambient Air Quality Standards] are well established to endanger public health or welfare." 65 Fed. Reg. at 6708.[79] Similarly, in describing air pollutants that cause or contribute to air pollution which endangers the public health or welfare in support of a 1994 light-duty truck emission regulation, EPA explained that "[h]ydrocarbons, as ozone precursors, have long been an essential object of emission control strategies (both vehicles and non-vehicles)." 59 Fed. Reg. 16,262, 16,263 (Apr. 6, 1994). Thus, for decades, EPA has relied on *prior* findings of health impacts to support *new* regulatory standards.

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[78] Ironically, EPA has very recently sought judicial vacatur of PFAS regulations promulgated in 2024 under the theory that the Safe Drinking Water Act *prohibits* the concurrent issuance of a threshold determination to regulate and the regulations themselves, since doing so would (EPA claims) deprive the public of an adequate opportunity to comment on the Agency's course of action. *See* Resps.' Mot. for Partial Vacatur, *Am. Water Works Assoc., et al., v. EPA*, No. 24-1188 and consolidated cases, No. 2134523 at 18-19 (D.C. Cir. Sept. 11, 2025). EPA raises no such concerns with regard to its newfound interpretation of Section 202(a)(1).

[79] *See also* 66 Fed. Reg. at 5014; 65 Fed. Reg. 59,896, 59,903 (Oct. 6, 2000) (including similar language).

### *3. EPA's references to other statutory provisions as counterexamples to Section 202(a) are unavailing.*

EPA also points to other statutory sections in an effort to demonstrate that Congress knows how to define a multi-step process when it wants to. Yet these counterexamples provide no support for its claim that Section 202 requires a single rulemaking for the threshold finding and standard-setting processes. For example, EPA cites Section 303(c)(4) and (c)(4)(B) of the Clean Water Act as provisions that expressly establish a multi-step regulatory structure. *See* 90 Fed. Reg. at 36,303 (citing 33 U.S.C. § 1313(c)(4), (c)(4)(B)). But the Clean Water Act provisions are completely unlike Section 202—they are applied when EPA disapproves a state's standards for failure to comply with the Clean Water Act, after which EPA must promulgate regulations to supersede the disapproved provisions. 33 U.S.C. § 1313(c)(4)–(c)(4)(B); *see, e.g.*, 59 Fed. Reg. 52,496 (Oct. 18, 1994) (proposing federal regulations that would supersede an EPA-disapproved provision in New Mexico's water quality standards). The language used in the Clean Water Act differs from the language used in Section 202(a), and therefore has no bearing on 202(a)'s interpretation.

Furthermore, Section 304(c)(4)(B) of the Clean Water Act provides that the "[t]he Administrator shall *promptly* prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved . . . in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this chapter," and then requires that EPA finalize those regulations "within ninety days" of the proposal's release. 33 U.S.C. § 1313(c)(4), (c)(4)(b) (emphasis added). The fact that the provisions demand a "prompt" proposal and then finalization within a mere 90 days—an extraordinarily rapid timeframe—indicate that Congress's main purpose here was to *expedite* the rulemaking process. The lack of similarly urgent language under Section 202 does not mean that the Agency can or should move slowly when issuing vehicle standards, but even less does it mean that the Agency *must* undertake the threshold and standard-setting processes at the same time, even while the statutory language *permits* it to do so.

EPA also references the NAAQS program as an example in which Congress expressly designed a program with two separate, temporally segregated elements: first, the establishment of ambient air quality standards by EPA; and second, the development of implementation plans by states and the Agency. *See* 90 Fed. Reg. at 36,303 (citing 42 U.S.C. §§ 7408-10). But it would be impossible for the NAAQS program to operate otherwise: states, not EPA, are given the first opportunity to develop implementation plans, which are extremely intensive regulatory endeavors requiring complex air modeling and several years of work to ensure the NAAQS are achieved in a given state. The fact that the NAAQS program *must* operate through temporally sequenced actions does not in any way suggest that Congress meant to *prohibit* a similarly sequential process under Section 202.

If anything, the NAAQS program proves the opposite of EPA's premise: when Congress wants to direct EPA to issue *concurrent* findings, it uses clear language to do so. Section 108 of the program directs EPA to issue air quality criteria for any newly listed pollutant within 12 months of making the list. 42 U.S.C. § 7408(a)(2). For any air quality criteria issued after 1970, Section 109(a)(2) then requires the Agency to "publish, *simultaneously with the issuance of* such [air quality] criteria and information, proposed national primary and secondary ambient air quality

standards for any such pollutant." *Id.* § 7409(a)(2) (emphasis added). Nowhere does the word "simultaneous" or even "concurrent" appear in Section 202. EPA's proposed reading of the statute requires adding those words to the text of Section 202, refashioning the plain meaning to suit EPA's preferred outcome.

Where the NAAQS program *does* illuminate Section 202(a)(1) is with respect to costs. Neither Section 109(b) nor Section 202(a)(1)'s endangerment finding language references costs or implementation; instead, both sections focus solely on public health and welfare. In addition, both programs allow for cost considerations later in the process. EPA must take costs into account when setting standards per Section 202(a)(2). *See id.* § 7521(a)(2). In the NAAQS program, EPA and implementing states are permitted to consider costs when promulgating regulatory programs to reduce emissions (the agencies have the discretion to select the most cost-effective approaches to meet the air standards). *See, e.g.*, *id.* § 7408(b)(l) (instructing EPA to provide states with information on air pollution control techniques, including information on costs); *see also Whitman*, 531 U.S. at 470 ("It is to the States that the CAA assigns initial and primary responsibility for deciding what emissions reductions will be required from which sources.").

The two programs thus have similar structures, and, contrary to EPA's new assertions, the 2009 Finding did not err by analogizing Section 202(a)(1) to the NAAQS program and the Supreme Court's decision in *Whitman*. *See* 90 Fed. Reg. at 36,303. *Whitman*'s observation that "[n]owhere are the costs of achieving such a standard made part of that initial calculation" applies equally to Section 202(a)(1). 531 U.S. at 465. In fact, *Whitman* specifically recognizes Section 202(a)(2)[80] as a separate provision that requires "economic costs to be taken into account in *implementing* the air quality standards," and specifically to the timeline for *when* "standards for automobiles could take effect"—not in establishing the underlying need for such standards. *Id.* at 467 (emphasis added). Because cost is "*both* so indirectly related to public health *and* so full of potential for canceling the conclusions drawn from direct health effects," that factor "would surely have been expressly mentioned" in Section 202(a)(1) "had Congress meant it to be considered." *Id.* at 469. The following section provides further discussion of the relevance (or rather lack thereof) of regulatory costs and other such factors to a threshold contribution/endangerment finding under Section 202(a)(1).

#### *4. Section 202(a)(1)'s cause-or-contribute and endangerment questions are purely scientific in nature, and do not permit consideration of regulatory costs or other factors relevant (or irrelevant) to standard-setting.*

EPA argues that, by undertaking the contribution/endangerment inquiry independent from standard-setting, the 2009 Finding disregarded various policy factors that it allegedly would otherwise have had to consider, citing regulatory costs, climate adaptation opportunities, ongoing

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[80] 42 U.S.C. § 7521(a)(2) ("Any regulation prescribed under paragraph (1) of this subsection (and any revision thereof) *shall take effect after* such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.") (emphasis added).

greenhouse gas mitigation efforts unrelated to vehicles, the overall benefits and drawbacks of issuing standards, and the "continued propriety of [EPA's] GHG regulatory program." 90 Fed. Reg. at 36,303. This ignores the plain meaning of the text. To consider the two[81] operative terms, contribute means "to give or supply (something, such as money or time) as a part or share,"[82] while "endanger" means "to bring into danger or peril."[83] Whether vehicle greenhouse gas emissions "supply . . . [a] share" of pollution that "brings into danger or peril" public health and welfare presents a purely scientific question, regardless of whether or not it is integrated with a standard-setting exercise under Section 202.

The Agency's new interpretation of Section 202(a)(1) would therefore effectively write the word "endanger" out of Section 202(a)(1) by pointing to external considerations—ostensibly, the economic consequences resulting from the issuance of vehicle greenhouse gas standards—that it would prefer to balance against the manifest harm caused by greenhouse gases in order to avoid issuing such standards. But the fact that there are constraints on EPA's standard-setting authority has no bearing on whether greenhouse gases bring public health or welfare "into danger or peril."

The Agency's efforts to import policy considerations into this inquiry "cannot overcome the statute's plain language, which is [courts'] primary guide to Congress' preferred policy." *N. Am. Butterfly Ass'n v. Wolf*, 977 F.3d 1244, 1261 (D.C. Cir. 2020) (cleaned up). This is particularly true with respect to policy questions, such as climate adaptation and mitigation opportunities, that are not even relevant to standard-setting.

The Court in *Massachusetts* left no doubt on this front, instructing that "policy judgments . . . have nothing to do with whether greenhouse gas emissions contribute to climate change." 549 U.S. at 533. *Coalition for Responsible Regulation* is even more on point: there, the D.C. Circuit considered and rejected the precise arguments against the 2009 Finding that EPA now asserts, holding that,

> The additional exercises State and Industry Petitioners would have EPA undertake—*e.g.*, performing a cost-benefit analysis for greenhouse gases, gauging the effectiveness of whatever emission standards EPA would enact to limit greenhouse gases, and predicting society's adaptive response to the dangers or harms caused by climate change—do not inform the "scientific judgment" that § 202(a)(1) requires of EPA. Instead of focusing on the question whether greenhouse gas emissions may reasonably be anticipated to endanger public health or welfare, the factors State and Industry

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[81] While "cause" is also a potentially operative term under Section 202(a)(1), the 2009 Finding relied primarily on the "contribut[ion]" of vehicle emissions to greenhouse gas pollution to make an affirmative determination.

[82] Merriam-Webster, *definition of "contribute,"* https://www.merriam-webster.com/dictionary/contribute (last visited Sept. 17, 2025).

[83] Merriam-Webster, *definition of "endanger,"* https://www.merriam-webster.com/dictionary/endanger (last visited Sept. 17, 2025).

> Petitioners put forth only address what might happen were EPA to answer that question in the affirmative. As EPA stated in the Endangerment Finding, such inquiries "muddle the rather straightforward scientific judgment about whether there may be endangerment by throwing the potential impact of responding to the danger into the initial question. . . . The statute speaks in terms of endangerment, not in terms of policy. . . . However "absurd" Petitioners consider [the] consequence [of regulating vehicle GHG emissions], though, it is still irrelevant to the endangerment inquiry.

634 F.3d at 118-19. Amazingly, as a sign of just how baseless EPA's proposal is, the rule preamble includes no reference whatsoever to *Coalition for Responsible Regulation*, even while that opinion directly forecloses the Agency's argument.

Nor does EPA point to any historical examples where it injected cost into a threshold finding under Section 202(a)(1), even when the Agency concurrently established standards alongside that determination. In those circumstances, EPA has discussed costs, but solely in the context of the standard-setting exercise itself—not the discussion of the health and welfare effects, or contributions to total emissions. For example, in its final action to control emissions of air pollution from 2004 and later model year heavy-duty highway engines and vehicles, and revision of light-duty on-board diagnostics requirements, EPA's preamble addressed the program's need pursuant to Section 202(a)(1) (including the pollutants' "Adverse Health and Welfare Effects," and engines' "Contribut[ion] to Total" emissions) in a completely separate section from the "Economic Impact and Cost-effectiveness" of the specific requirements. *See* 65 Fed. Reg. at 59,897. EPA took the same approach when it first issued regulations to address greenhouse gas emissions from motor vehicles: it considered costs when establishing standards, rather than when it established the standards' necessity under Section 202(a)(1). *See, e.g.*, 75 Fed. Reg. at 25,324 (establishing greenhouse gas standards for light-duty vehicles and discussing costs and economic impacts of the program).

EPA also turns to *Michigan v. EPA*, 576 U.S. 743 (2015) to support its cost argument. 90 Fed. Reg. at 36,303. But *Michigan* considered how to interpret the phrase "appropriate and necessary" as it appears in a different under a different Clean Air Act provision, Section 112(n)(1)(A). 76 U.S. at 752. The Court found that the word "appropriate" is a "classic broad and all-encompassing term that naturally and traditionally includes consideration of all the relevant factors." *Id.* The Court concluded that the determination of whether "regulation is 'appropriate and necessary' requires at least some attention to cost." *Id.* But neither the phrase "necessary and appropriate," nor anything remotely analogous to it, appears in Section 202(a)(1). Instead, the separate Section 202(a)(2) only directs EPA to give "appropriate consideration to the cost of compliance" specifically when determining the content and timing of for new standards, 42 U.S.C. § 7521(a)(2)—not when evaluating whether regulation is required in the first instance.

*Michigan* is therefore inapplicable to EPA's triggering judgments issued under Section 202(a)(1), and EPA cannot distort the plain text of the statute to insert cost considerations in Section 202(a)(1). EPA nevertheless attempts to do so by pointing to Section 202(a)(1)'s language requiring that new standards be issued "in accordance with the provision of this section," *id.* § 7521(a)(1)—provisions that include Section 202(a)(2). But again, Section 202(a)(2)'s cost considerations impact new standards' content, timing, and stringency, not the

Administrators' predicate findings concerning air pollution. As noted above, Section 202(a)(1) does not contain a "broad reference to appropriateness" found in Section 112(n)(1)(A). *Michigan*, 576 U.S. at 755. Instead, the factors for consideration in Section 202(a)(1) parallel those for the NAAQS program. Here, as there, "[r]ead naturally," the "discrete criterion" of 202(a)(1) "does not encompass cost; it encompasses health," as well as welfare. *Id*. (discussing *Whitman*, 531 U.S. at 457). The issue at hand concerns "the standard that governs the initial decision to regulate," *Michigan*, 576 U.S. at 756, and the standard expressly set forth in Section 202(a)(1) extends only to the scientific questions of contribution and endangerment, leaving no room for costs or any other policy factors.

To interpret Section 202(a)(1) in the way that EPA now does would do substantial damage to the text that actually appears in the statute, requiring the following modifications:

> The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment [*available and desirable means of regulating that category*] it may reasonably be anticipated to [*ameliorate the extent to which sources in that category endanger public health or welfare by*] cause[*ing*], or contribute[*ing*] to, air pollution ~~which may reasonably be anticipated to endanger public health or welfare~~.

This is, of course, untenable. It was not inevitable that Section 202(a)(1) reads the way that it does: Congress knows how to balance harm from a pollutant against other considerations when it wants to and could easily have directed EPA to assess economic or other non-scientific factors when selecting targets for regulation. For instance, it could have limited that EPA's standard-setting authority to vehicle emissions that contribute to air pollution that can be cost-effectively reduced or exceed some per-ton threshold. But it used no words to that effect, pegging the finding *only* to "air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1); *Lomax v. Ortiz-Marquez*, 590 U.S. ---, 140 S. Ct. 1721, 1725 (2020) ("Court[s] may not narrow a provision's reach by inserting words Congress chose to omit.").

Lastly, EPA's interpretation is incompatible with Section 202(a)(1)'s directive that the Agency "from time to time revise" its vehicle standards. 42 U.S.C. § 7521(a)(1). At the time of deciding the contribution/endangerment question, it would be impossible for the Agency to account for the economic impacts and other practical consequences of its standard-setting exercise when Congress intended those standards to change over time through periodic revisions rather than remain static. The only other possibility is that the Agency must *also* revise its predicate determination each time it revises a standard. Yet EPA has never suggested, and does not now assert, that such a thing is required under Section 202(a)(1), and so the proposal fails on this front as well.

#### *5. EPA wrongly asserts that the statute requires it to make separate threshold findings for each individual vehicle category subject to regulation under Section 202.*

The Agency further asserts that "[a]s a result of this new conception of authority, the EPA may issue a single endangerment finding in the abstract with respect to emissions from all sources potentially subject to CAA section 202(a) (and their existing source counterparts) without addressing the danger posed by any particular source category or the causal role of that particular source category in any identified danger." 90 Fed. Reg. at 36,302. Yet nowhere does Section 202 suggest that EPA must approach the threshold question at the level of individual vehicle categories. On the contrary, the "cause or contribute" condition refers back to the "emission of any air pollutant from any class *or classes* of new motor vehicles or new motor vehicle engines." 42 U.S.C. § 7521(a)(1) (emphasis added). Congress would not have included the plural "classes" alongside the singular "class" unless it meant to grant EPA authority to make a cause or contribute determination based on the combined emissions of more than one category of vehicles or vehicle engines—up to and including *all* classes subject regulation under Section 202.

### B. Section 202(a)(1)'s "cause or contribute" and "endangerment" prongs are distinct and merit separate consideration.

#### *1. The plain text of Section 202(a)(1) directly contradicts EPA's argument.*

The 2009 Endangerment Finding included two major components. The first was a finding that aggregate mix of six greenhouse gases—carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$)—endanger public health and welfare by driving climate change and ocean acidification. 74 Fed. Reg. at 66,516. Second, EPA found that new motor vehicles cause or contribute to that pollution. *Id.* at 66,536. Together, these findings triggered a requirement under Section 202(a)(1) that the Agency issue greenhouse gas standards for those sources.

EPA now contends that it erred in 2009 by "sever[ing] the analysis of endangerment from the analysis of contribution" by asking first whether vehicle emissions contribute to air pollution (the contribution prong) and then asking whether that air pollution endangers the public (the endangerment prong). 90 Fed. Reg. at 36,299. According to EPA, it must instead evaluate these factors as part of "a single causal chain," and may only proceed with standard-setting if it finds that "the emissions [subject to regulation] cause or contribute to the danger posed by the air pollution to a sufficient extent to satisfy the standard for regulation." *Id.* at 36,303-04. As part of this argument, EPA asserts that "endanger[ment]" as it appears in Section 202(a) "cannot mean merely any predicted negative impact to any public health or welfare," but must also account for the "constraint placed on the EPA's authority to prescribe standards," *id.* at 36,305. According to EPA, a sequential approach to the "contribution" and "endangerment" prongs allow it to evade these supposedly relevant factors, since it permitted the Agency to consider the danger posed by greenhouse gases in general rather than vehicle emissions in particular (which, EPA seems to think, would not be severe enough to justify regulation).

The plain text of the statute forecloses EPA's argument. On its face, Section 202(a)(1) does *not* ask EPA to determine the extent to which vehicles' "air pollutant" emissions *themselves* (and *by*

themselves) endanger health and welfare; instead, it asks whether those sources cause or contribute "to air pollution," then explains what kind of air pollution that must be. The provision's separate references to "any air *pollutant*" and "air *pollution*" in the same sentence would make little or no sense unless Congress meant to distinguish between what is actually emitted by vehicles *(i.e.*, "any air pollutant") and an accumulated mass in the atmosphere that is endangering health and welfare (*i.e.*, "air pollution").

In grammatical terms, the restrictive clause ("which may be reasonably anticipated …") modifies "air pollution," not "class or classes," "new motor vehicles or new motor vehicle engines," or "any air pollutant." Under the rule of the last antecedent, "a limiting clause or phrase … should ordinarily be read as modifying only the noun or phrase that it immediately follows." *Barnhart v. Thomas*, 540 U.S. 20, 26 (2003) (citing 2A N. Singer, Sutherland on Statutory Construction § 47.33, p. 369 (6th rev. ed. 2000)); *Lopez v. Gonzales*, 549 U.S. 47, 56 (2006) ("[T]he last thing [our interpretive regime] would do is divorce a noun from the modifier next to it without some extraordinary reason."). EPA's reading violates this canon of construction—and normal grammatical presumption—without "extraordinary reason," so it cannot be the best reading of the statute.

In faulting the 2009 Finding for having failed to "consider the extent to which emissions from CAA section 202(a) sources have a more than *de minimis* effect on the *danger* identified with respect to elevated concentrations of GHGs in the upper atmosphere," 90 Fed. Reg. at 36,304 (emphasis in original), EPA thus identifies a non-existent flaw. The Agency's newly discovered theory of Section 202(a)—that EPA must demonstrate danger specifically from vehicle emissions, rather than their "contribution" to a larger mass of pollution that EPA has found to endanger health or welfare—would require the statute to read as follows:

> The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment [*may reasonably be anticipated to endanger public health or welfare by*] cause[*ing*], or contribute[*ing*] to, air pollution ~~which may reasonably be anticipated to endanger public health or welfare~~.

This, of course, is not the statute Congress wrote. If EPA's aim can only be accomplished by deleting an entire clause, moving it to a different part of the sentence, nominalizing the two verbs, and adding a preposition, then its construction serves to rewrite, not best read, the statutory text. As courts have consistently held, "EPA's discretion cannot include the power to rewrite a statute and reshape a policy judgment Congress itself has made." *Nat. Res. Def. Council, Inc. v. EPA*, 902 F.2d 962, 977 (D.C. Cir. 1990), *vacated on other grounds*, 921 F.2d 326 (D.C. Cir. 1991); *Louisiana Pub. Serv. Comm'n v. F.C.C.*, 476 U.S. 355, 357 (1986) ("[O]nly Congress can rewrite [a] statute.").

Additional evidence of Congress's intent is apparent in Section 202(a)(1)'s reference to "cause *or contribute.*" Unless "contribute" exists as mere surplusage, it must play some textual role distinct from "cause." *See United States v. Philip Morris USA, Inc.,* 396 F.3d 1190, 1198 (D.C. Cir. 2005) (explaining that courts should "strive to give meaning to every word"). By its very

nature, "contribute" assumes there is more than one source of the atmospheric contaminants in question apart from vehicles. Therefore, what is endangering health and welfare—in this case, all greenhouse gases—must be conceptually distinct from the specific vehicle emissions that cause or contribute to that pollution. Indeed, the legislative history leaves no doubt about this. In its Report on the 1977 Clean Air Act Amendments, the House Committee on Interstate and Foreign Commerce explained that "[b]y its use of the words 'cause or contribute to air pollution,' the committee intends to require the Administrator to consider *all sources of the contaminant which contribute to air pollution*,[84] not just those covered under the resulting standards.

Moreover, Congress chose to include "contribute" as an unmodified verb in Section 202(a), indicating that any quantity of emissions above de minimis levels would satisfy this requirement. As the D.C. Circuit has held with respect to the analogous Section 213, which governs emission standards for non-road vehicles, "contribute" by itself requires only a "nontrivial" quantity of emissions. *Bluewater Network v. EPA*, 370 F.3d 1, 13; *see also id.* at 14 (D.C. Cir. 2004) (distinguishing between "contribution" and "significant contribution" under Section 213). Thus, EPA seeks to engraft a condition onto the statute that does not exist when it asserts that "the emission [subject to regulation] must cause or contribute to the danger posed by the air pollution *to a sufficient extent* to satisfy the standard for regulation." 90 Fed. Reg. at 36,304 (emphasis added). Section 202(a)(1) includes no quantitative threshold for "contribution" in question, so long as it is "nontrivial" or more than de minimis. The 2009 Finding expressly satisfied this requirement. *See* 74 Fed. Reg. at 66,541-43; *see also Massachusetts*, 549 U.S. at 525 ("Judged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations.").

#### *2. The relevant case law supports a clear distinction between Section 202(a)(1)'s contribution and endangerment prongs.*

In *Coalition for Responsible Regulation*, the D.C. Circuit made clear not only that the contribution and endangerment prongs of Section 202(a)(1) are two separate inquiries rather than one undifferentiated whole, but that these questions are purely scientific in nature, permitting no consideration of any policy factors or judgments as to whether the resulting regulations would be wise or not. As the court explained, "[a]t bottom, § 202(a)(1) requires EPA to answer only *two questions:* whether particular 'air pollution'—here, greenhouse gases—'may reasonably be anticipated to endanger public health or welfare,' *and* whether motor-vehicle emissions 'cause, or contribute to' that endangerment. These questions require a 'scientific judgment' about the potential risks greenhouse gas emissions pose to public health or welfare—not policy discussions." 684 F.3d at 117-18 (emphasis added) (citing *Massachusetts*, 549 U.S. at 534). *See also Coalition for Responsible Regulation,* 684 F.3d at 119 ("However 'absurd' Petitioners consider [the] consequence [of regulating vehicle greenhouse gas emissions], though, it is still irrelevant to the endangerment inquiry.").

In fact, the D.C. Circuit has understood this for decades. In *Ethyl Corp*, a case centered primarily on the regulation of fuel and fuel additives under Section 211(C)(1)(A) of the Clean Air Act, the

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[84] H.R. Rep. No. 95-294, at 51 (1977).

court had occasion to interpret Section 202(a)(1) in response to arguments raised by petitioners. 541 F.2d at 7. The court held that the "causes or contributes"[85] language under Section 202(a)(1) "refers not to the causal relationship between air pollution and health, but to the relationship between automobile emissions and air pollution," with EPA's task being to "determin[e] whether the emitted air pollutant, which would be regulated, contributes to the air pollution which is found dangerous." *Id.* at 15-16. The court contrasted this provision with Section 211(c)(1)(A), which, at that time, required the Agency to "control or prohibit . . . any fuel or fuel additive . . . if any emission products of such fuel or fuel additive will endanger the public health or welfare." 42 U.S.C. § 1857f-6c(c)(1)(A) (1970). Whereas Section 202(a)(1) "allow[ed] for a somewhat attenuated chain of causation," Section 211 "simply skips this chain of causation and requires instead that the emission products [directly] . . . endanger the public health" in order to be subject to regulation, rather than "contribute to air pollution that in turn endangers the public health, as required by 202." *Ethyl Corp.*, 541 F.2d at 16, n.25.

Responding to petitioners' claim that this understanding of Section 202 would be "tautological," the court explained that Congress's distinction between "air pollutant" and "air pollution" actually makes perfect sense, because "not all air pollutants contribute to dangerous air pollution and, more importantly, not all dangerous air pollution is caused by air pollutants that are, themselves, dangerous." *Id.* at 16, n.27. Providing a specific example, the court noted that "hydrocarbons, whose emission is regulated by 202, are not themselves always dangerous, but are properly regulated because they react in sunlight to form smog, which is dangerous. Thus, far from stating a tautology, 202 allows for the regulation of such apparently innocent pollutants, which indirectly cause dangerous pollution." *Id.* (internal citations omitted).

Congress's decision to separate "air pollutants" from "air pollution" makes practical sense for another reason: when multiple sources are responsible for emissions that together form, or add to, an accumulated mass of dangerous pollution in the atmosphere, it is impossible to say what resulting harms were caused by what sources. But so long as one knows that a source is adding—that is, "contributing"—to that accumulated mass, one knows that the source is causing harm and thus merits regulation, so long as the mass itself is determined to "endanger public health or welfare." 42 U.S.C. § 7521(a)(1). This leads naturally to two separate (but sequential) inquiries: if a source is determined to contribute to pollution, and the pollution is shown to cause danger, emission standards for that source are required.

Further undermining EPA's interpretation of Section 202(a) is *Massachusetts*, which made perfectly clear that the relevant question under that provision with respect to endangerment is not whether vehicles' greenhouse gas emissions endanger health and welfare by causing climate change, but whether greenhouse gases *as a class* do so. For example, the opinion states that "[u]nder the clear terms of the Clean Air Act, EPA can avoid taking further action only if it determines that greenhouse gases do not contribute to climate change or if it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do." *Massachusetts*, 549 U.S. at 533. It further states that, "[i]n short, EPA has

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[85] *See supra* n.54, regarding the slight difference in language between the original and current versions of Section 202(a)(1).

offered no reasoned explanation for its refusal to decide whether greenhouse gases cause or contribute to climate change." *Id*. at 534. This language leaves no doubt: an endangerment determination under Section 202(a) has nothing to do with greenhouse gases emitted by vehicles *in particular*, but rather with greenhouse gases *in general*.

### *3. EPA's assertion that separate contribution and endangerment findings would ultimately permit the Agency to regulate vehicle emissions of water vapor is fanciful and factually wrong.*

EPA asserts that by separating Section 202(a)(1)'s contribution and endangerment prongs, the 2009 Finding's would allow for no limiting principle, and would permit "absurd" outcomes like EPA's regulation of water vapor emissions from vehicles. 90 Fed. Reg. at 36,304. This contention rests on a basic misunderstanding of the science of atmospheric hydrology: in fact, emissions of water vapor from vehicles, or from *any* human activity, do *not* meaningfully increase the volume or concentration of water vapor in the atmosphere in any meaningful way, because water vapor has a very short lifetime in the atmosphere of mere days, and anthropogenic water vapor emissions are many magnitudes smaller than natural evaporation. Thus, even if elevated levels of atmospheric water vapor relative to a natural baseline could be classified as pollution that endangers public health or welfare, vehicle emissions do not "contribute" to that pollution, and so EPA's concern on this point is misplaced.

Setting aside the fact that EPA has never even remotely considered regulating water vapor in the decade-and-a-half since issuing the 2009 Finding, the proposal betrays a deep ignorance as to how the hydrologic cycle works. Water enters the atmosphere through evaporation from the oceans, seas, lakes, and other water bodies, and leaves the atmosphere through precipitation after a period of a few days.[86] At any given global average temperature, the amount of water vapor the atmosphere can hold is subject to a fixed limit that is determined by what is known as the Clausius–Clapeyron relation.[87] Once that threshold is reached, condensation occurs, and the water returns to Earth. Therefore, while combustion in vehicles puts water into the atmosphere, due to its short atmospheric lifetime, anthropogenic water vapor does not continue accumulating in the atmosphere in a way that discernably or measurably alters the climate or weather relative to baseline levels.[88]

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[86] Sodemann, H., "Beyond Turnover Time: Constraining the Lifetime Distribution of Water Vapor from Simple and Complex Approaches," *J. of Atmospheric Sci.*, 77(2), 430-31(Feb. 1, 2020).

[87] The Bodner Group, Purdue University, *The Clausius-Clapeyron Equation*; Adam, David, "What a 190-year-old equation says about rainstorms in a changing climate," *PNAS*, 120(14), 2 (March 30, 2023).

[88] *See generally* MIT Climate Portal, *Why do we blame climate change on carbon dioxide, when water vapor is a much more common greenhouse gas?*, (Nov. 3, 2023), https://climate.mit.edu/ask-mit/why-do-we-blame-climate-change-carbon-dioxide-when-water-vapor-much-more-common-greenhouse; Science Feedback, *Water vapor is a greenhouse gas, but*

In this regard, water vapor is categorically different from $CO_2$ and the other greenhouse gases covered in the 2009 Finding, which can and do accumulate in the atmosphere above naturally occurring baseline levels as a result of anthropogenic emissions. Given EPA's proposed rescission of that finding, then, it is ironic that, unlike water vapor, emissions of these six pollutants very significantly *do* affect the total quantity of water vapor in the atmosphere. Because these greenhouse gases increase global average temperatures due to their large anthropogenic emissions and long (years to centuries) atmospheric lifetimes, they increase the atmosphere's capacity to hold water via the Clausius–Clapeyron relation. More water in the atmosphere traps more heat than would baseline levels of atmospheric water vapor, creating a feedback-amplification effect, and research indicates that the total amount of water in the atmosphere has been growing by approximately 1 percent per decade as a result of increasing temperatures.[89] In other words, as NASA has explained, "[i]ncreased water vapor doesn't *cause* global warming. Instead, it's a consequence of it."[90] Yet vehicle emissions of water vapor from vehicles and other human activities are not the drivers of this phenomenon; emissions of the six greenhouse gases addressed in the 2009 Finding are.[91]

The quantity of vehicle water vapor emissions is simply far too small and remains in the atmosphere for far too short a time to meaningfully contribute to atmospheric concentrations, and is therefore truly de minimis in light of the total amount of water cycling through the atmosphere from natural sources, which is many orders of magnitude greater than water emitted by vehicles. Based on information from EIA and other sources, we calculate that the total amount of water vapor produced from U.S. gasoline- and diesel-fueled motor vehicles to be roughly 6.5x10^11 kilograms per year.[92] This is approximately 0.005 percent of the total water vapor in the

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*it is not a major driver of global warming* (Dec. 8, 2023), https://science.feedback.org/review/water-vapor-greenhouse-gas-not-major-driver-global-warming/.

[89] Adeliyi, T.E. and Akinsanola, A.A., "Recent trends and variability of temperature and atmospheric water vapor over South Asia," *Atmospheric Research*, (309) 107556, 2 (Oct. 15, 2024), https://www.sciencedirect.com/science/article/pii/S0169809524003387/pdfft?md5=37099778ca0d665bcf55aa74fdb8c0b3&pid=1-s2.0-S0169809524003387-main.pdf.

[90] NASA, *Steamy Relationships: How Atmospheric Water Vapor Amplifies Earth's Greenhouse Effect* (Feb. 8, 2022), https://science.nasa.gov/earth/climate-change/steamy-relationships-how-atmospheric-water-vapor-amplifies-earths-greenhouse-effect/

[91] Indeed, EPA considered and rejected regulating water vapor for many of these same reasons in 2009, and the Proposal fails to acknowledge or explain its divergence from its prior reasoning. 74 Fed. Reg. at 66,520.

[92] This result reflects the following assumptions: 376 million gallons of gasoline (EIA, *Frequently Asked Questions (FAQ): How much gasoline does the United States consume?,* https://www.eia.gov/tools/faqs/faq.php?id=23&t=10 (last visited Sept. 16, 2025)) and 125 million gallons of diesel (EIA, *Diesel fuel explained: Use of diesel*, https://www.eia.gov/energyexplained/diesel-fuel/use-of-diesel.php (last visited Sept. 16, 2025))

atmosphere at any given moment,[93] 0.0001 percent of the total water cycling through the Earth's atmosphere in any given year,[94] and 0.0000000005 percent of the total water in the Earth's hydrologic system (which constitutes the stock from which the atmosphere can draw water).[95] Under any conceivable metric, this is a truly de minimis amount and would disqualify vehicles from an affirmative "contribution" determination.

EPA also suggests that "slip-and-fall injuries, drownings, and damage to crops, livestock, and property" resulting from rainfall could require or authorize the regulation of water vapor emission from vehicles if the 2009 Endangerment Finding were to stand. 90 Fed. Reg. at 36,304. To be sure, climate change is causing increased death, illness, property loss, and other harms due to greater rainfall and flooding in some places (along with greater drought in others). But vehicle water vapor emissions are not contributing to those harms because, as we have explained, they are many orders of magnitude lower than natural evaporation. Instead, vehicle emissions of $CO_2$ and other listed greenhouse gases *are* contributing to those harms by increasing the Earth's temperature and thus the amount of moisture that can exist in and precipitate out of the atmosphere.

### C. The 2009 Finding properly considered the relevant "air pollutant" and "air pollution" to be the six well-mixed greenhouse gases.

EPA also contends that by severing Section 202(a)(1)'s contribution and endangerment prongs, the 2009 Finding "compare[d] apples and oranges in a manner the statute does not authorize," 90 Fed. Reg. at 36,304, since it determined endangerment based on an aggregation of *six* greenhouse gases—$CO_2$, $CH_4$, $N_2O$, HFCS, PFCs, and $SF_6$—whereas only *four* of these

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consumed in U.S. vehicles per day; 365 days per year; 2.84 kg/gallon for gasoline (CoolConversion, *1 gallon of gasoline in kg*, https://coolconversion.com/density-volume-mass/--1--gallon--of--gasoline--in--kg (last visited Sept. 16, 2025))

and 3.35 kg/gallon for diesel (CoolConversion, *1 gallon of diesel fuel oil 20 to 60 in kg,* https://coolconversion.com/density-volume-mass/--1--gallon--of--diesel-fuel-oil-20-to-60--in--kg (last visited Sept. 16, 2025)); 1.22 kg water/kg gasoline and 1.5 kg water/kg diesel, both from Belmont, EL, et al., "Accounting for water formation from hydrocarbon fuel

combustion in life cycle analyses," *Environmental Research Letters*, (12) 094019, 4 (2017), https://iopscience.iop.org/article/10.1088/1748-9326/aa8390/pdf; and one trillion kg water/cubic km.

[93] NASA Earth Observatory, *The Water Cycle: A Multi-Phased Journey*, https://earthobservatory.nasa.gov/features/Water/page2.php (last visited Sept. 16, 2025) (12,900 cubic km is the current maximum amount of water in the Earth's atmosphere at a given moment).

[94] *Id.* (495,000 cubic km of water cycle through Earth's atmosphere in a given year).

[95] U.S. Geological Survey, *How Much Water is There on Earth?* (Nov. 13, 2019), https://www.usgs.gov/water-science-school/science/how-much-water-there-earth.

pollutants—$CO_2$, $CH_4$, $N_2O$, and HFCs—are emitted by vehicles.[96] Again, this argument cannot withstand the actual statutory language of Section 202(a)(1) discussed above, nor does it even reflect basic mathematical logic: four elements very obviously "contribute" to a larger set of six elements that includes those four plus two others. This is not comparing apples and oranges: rather, it is like asking whether someone has "contributed" to a collection or apples when they add a clutch of Macintosh, Granny Smith, Honeycrisp, and Golden Delicious apples to a basket that also includes Fuji and Gala varieties. The answer is undoubtedly yes, and EPA's arguments on this front fail to impugn the 2009 Finding.

EPA's argument on this point relates to another one the agency suggests elsewhere in the proposal: that the 2009 Finding erred by having "consider[ed] together all six 'well-mixed' GHGs rather than analyzing the properties and impacts of each on an individual basis," given that "each of the collectively treated GHGs demonstrates different chemical properties, exhibits different interactions with the natural environment, and present different emissions profiles" and so "could be addressed separately." 90 Fed. Reg. at 36,310. Yet it is undisputed that the six substances addressed in the 2009 Finding all share relevant common characteristics: they each persist in the atmosphere for multiple years, long enough to become evenly distributed (well-mixed) in the global atmosphere, and they each warm the atmosphere by absorbing outgoing infrared radiation that otherwise would escape to space. The Agency was therefore fully justified in considering them as part of a collective group, something that is clearly authorized under the Clean Air Act's definition of air pollutant as "any air pollution agent *or combination of such agents*." 42 U.S.C. § 7602(g) (emphasis added).

Indeed, EPA has frequently set standards for groups of compounds that differ in molecular composition but share common characteristics. Three examples are enough to prove the point. Pursuant to Section 202(b), EPA has for over 50 years issued standards for vehicle emissions of hydrocarbons. *See, e.g.*, 36 Fed. Reg. 12,664 (July 2, 1971) (first set of vehicle hydrocarbon standards issued under Section 202(b)); 42 U.S.C. § 7521(b)(1)(A). Hydrocarbons are a diverse group of chemicals emitted by motor vehicles that share the common characteristic of contributing to the formation of ozone. Not every vehicle or engine emits the same set of hydrocarbons in the same proportions, yet EPA nonetheless regulates them as a single group, based on the total grams per mile of hydrocarbons emitted.

More broadly, numerous provisions in Title I of the Act direct EPA to regulate volatile organic compounds (VOCs) as a single pollutant. *See, e.g.*, 40 C.F.R. §§ 60.312 (VOC standards for surface coating of metal furniture), 60.432 (VOC standards for publication rotogravure printing),

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[96] Those four greenhouse gases emitted by vehicles—$CO_2$, $CH_4$, $N_2O$, and HFCs—account for 99.8 percent of U.S. greenhouse gas emissions on a $CO_2$-equivalent basis—that is, *even when fully accounting for the different global warming potentials of the different pollutants*. *See* EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2023*, Table 2-1 (2025), https://library.edf.org/AssetLink/670sd82p0ok42r7e5ei5ler727crxv32.pdf?_gl=1. EPA is thus wildly off base in asserting that there the absence of PFCs and SF6 from the emissions profile of vehicles makes a "material … difference," 90 Fed. Reg. at 36,304, due to their higher global warming potentials.

60.482-1 through 60.482-10 (synthetic organic chemicals manufacturing industry), 60.542 (rubber tire manufacturing industry), 60.562-2 (polymer manufacturing industry), 60.592 (refineries). VOCs include hundreds of specific compounds (including hydrocarbons) that also are necessary ingredients of ozone. Many industries and products emit VOCs. As with vehicles, every VOC-emitting industry or product emits different chemicals in different combinations, yet EPA regulates their total VOC emissions collectively.

A third example is particulate matter, PM, which consists of dozens, if not hundreds, of different chemicals. They share the common property of small size, enabling them to penetrate deeply into the lungs and beyond, and they are regulated for their contribution to human mortality and morbidity. PM is emitted by a wide variety of stationary and mobile sources, and the Agency has regulated it for decades as a single, consolidated pollutant. *See, e.g.*, 36 Fed. Reg. 24,876 (Dec. 23, 1971) (setting PM standards for fossil fuel-fired steam generators, incinerators, and portland cement plants); 45 Fed. Reg. 14,496 (Mar. 5, 1980) (setting PM standards for diesel-fueled light-duty vehicles and light-duty trucks). In exactly the same manner, the 2009 Finding evaluated the six greenhouse gases as a single pollutant (and the Agency's standards since that time have regulated them as such) because of their common characteristics and their common contribution to climate change. The proposal offers no persuasive reason why this course of action has been incorrect.

### D. The Agency's hodgepodge of other reasons for insisting that Section 202(a)(1) requires it to mash together the contribution and endangerment inquiries fall short.

EPA cites various alleged flaws that result from the 2009 Finding's decision to treat the Section 202(a)(1)'s contribution and endangerment findings separately. None of these claims are persuasive. First, it asserts that the 2009 Finding erred by evaluating contribution based on "the total greenhouse gas emissions coming from all of these various distinct sources within the United States, as well as from all international sources" rather than only those attributable to "mobile sources regulated under CAA section 202(a)." 90 Fed. Reg. at 36,304. Had Congress intended for EPA to limit the endangerment inquiry to vehicle emissions alone, rather than all greenhouse gases, it would not have included the word "contribute" in Section 202(a)(1) without further qualification, nor would it have included separate references to "air pollution" and "air pollutant." This exact same logic also dispatches EPA's assertion that the 2009 Finding should have considered endangerment only from "*new* motor vehicles or *new* motor vehicle engines," as opposed to new and existing vehicles together, both foreign and domestic, which were "necessarily included" in the Finding's consideration of "all sources" of greenhouse gases. *Id.* (emphasis in original). Again, Congress chose deliberate language that required EPA consider *all* sources of the subject pollution to determine endangerment.

EPA further maligns the 2009 Finding for having considered the whole U.S. vehicle fleet in evaluating the specific "contribution" question, rather than projecting future emissions of new vehicles only. *See id*. Yet as the 2009 Finding explained, emissions data from the existing vehicle fleet reflected a reasonable proxy for new vehicle emissions compared to modeled projections, since "[n]ew motor vehicles are produced year in and year out, and over time the fleet changes over to a fleet composed of such vehicles. This occurs in a relatively short time frame, compared to the time period at issue for endangerment." 74 Fed. Reg. at 66,543. This

comparatively short period of turnover means that, for the purposes of the "contribution" factor, the emissions of the existing 2009 vehicle fleet would close enough to—and thus an appropriate surrogate for—the emissions of new vehicles that would be subject to the greenhouse gas standards. In any event, this question is wholly irrelevant: Section 202(a) simply asks whether new vehicles *contribute* to dangerous pollution, not whether their emissions meet some quantitative threshold that the Agency decides is appropriate. EPA has not and cannot show that the 2009 Finding erred in finding that new vehicles contribute to greenhouse gas pollution, regardless of its particular analytic choices in making that determination. *See also id.* (explain that for contribution determinations, "[t]here is not a specific numerical bright line that must be achieved, and the numerical percentages are not treated and do not need to be treated as precise values").

EPA also asserts that by considering existing vehicle data rather than projecting emissions from new vehicles, the 2009 Finding "increased the absolute contribution figure by orders of magnitude, including because newer vehicles and engines tend to be more efficient and emit less." 90 Fed. Reg. at 36,304. Had EPA bothered to look at actual data, it would have found its claim to be grossly inaccurate. In 2010, the year immediately after the 2009 Finding, total $CO_2$ emissions from gasoline- and diesel-fueled motor vehicles were 1.515 billion metric tons.[97] In 2024, this figure was 1.479 billion metric tons,[98] a difference of just 2 percent. While it is certainly true that vehicles are now substantially less polluting than they were 15 years ago—an improvement that is largely due to the very greenhouse gas standards EPA now proposes to eliminate—it is also true that the total number of vehicles on U.S. roads has increased significantly, growing from 250 million registered vehicles in 2010[99] to 284 million in 2023.[100] Given that the average total lifespan of vehicles is approximately 16.6 years,[101] the 2024 emissions data cited above was based almost entirely on Section 202(a) vehicles. The existing fleet data that the 2009 Finding relied on was thus not just a "reasonable" surrogate for new vehicle emissions, but an extremely accurate one.

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[97] EIA, *Monthly Energy Review: August 2025*, Table 11.5- Carbon Dioxide Emissions from Energy Consumption: Transportation Sector (Aug. 26, 2025), https://www.eia.gov/totalenergy/data/monthly/pdf/sec11_8.pdf.

[98] *Id.*

[99] Fed. Highway Admin., Off. of Highway Policy Info., *Highway Statistics 2010*, Table VM-1 (revised May 2018), https://www.fhwa.dot.gov/policyinformation/statistics/2010/vm1.cfm (last visited Sept. 17, 2025).

[100] Fed. Highway Admin., Off. of Highway Policy Info., *Highway Statistics 2023*, Table VM-1 (updated March 2025), https://www.fhwa.dot.gov/policyinformation/statistics/2023/vm1.cfm (last visited Sept. 17, 2025).

[101] Auto Recycling World, *What is the lifespan of a vehicle in the USA?*

https://autorecyclingworld.com/what-is-the-lifespan-of-a-vehicle-in-the-usa/ (last visited Sept. 17, 2025).

The Agency then argues that the supposed "futility" of greenhouse gas regulation under Section 202(a)(1) means no authority exists to either make the endangerment finding or set the standards. *Id.* at 36,312; *see also id.* at 36,305. According to EPA, it was "foreseeable at the time that issuing the Endangerment Finding would trigger a duty to regulate, and that extraordinarily stringent measures would be necessary under all of EPA's separate statutory authorities, and not just Section 202(a), to have any potentially measurable impact on the identified harm." *Id.* at 36,605 (emphases omitted). But EPA advances no legal authority for its argument, citing no caselaw, statutory text, or legislative history. As explained above, the statutory text plainly gives EPA authority to address pollution problems by establishing standards that reduce emissions and does not require that such standards be set at the level "necessary" to ameliorate the harm, regardless of the cost or feasibility of doing so. Nor does the Act limit EPA to setting standards that impact climate change risks by some particular amount. Moreover, reducing vehicle emissions has already created and continues to create massive public health and welfare benefits and is hardly "futile."[102] That is especially true when considering the cumulative and long-lived nature of greenhouse gas pollution: every additional ton of future emissions will only add to the already dangerous levels of greenhouse gases in the atmosphere and the resulting damage done to human health, property, the economy, and the natural environment.

At best, EPA's argument boils down to an absurd policy assertion. The Agency essentially claims that, because climate change is a large problem involving many sectors and countries, and because U.S. vehicles are just one sector from one country, regulating them at the current moment would be futile in the absence of emission reductions from other sectors and countries. EPA's assertion ignores, first, that U.S. vehicle emissions are not a marginal part the problem: "Greenhouse gas (GHG) emissions from transportation account for about 28 percent of total U.S. greenhouse gas emissions, making it the largest contributor of U.S. GHG emissions."[103] And motor vehicle emissions are the lion's share of that pollution.[104] Considered on their own, U.S. motor vehicle emissions are greater than the emissions of nearly every other country on earth.[105]

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[102] *See infra* Comment VI.A.1, VI.D

[103] https://www.epa.gov/transportation-air-pollution-and-climate-change/carbon-pollution-transportation; *see* 89 Fed. Reg. at 27,844 ("The transportation sector is the largest U.S. source of GHG emissions, representing 29 percent of total GHG emissions. Within the transportation sector, light-duty vehicles are the largest contributor, at 58 percent, and thus comprise 16.5 percent of total U.S. GHG emissions.").

[104] EPA, Fast Facts on Transportation Greenhouse Gas Emissions, available at https://perma.cc/7WHU-K7BA (showing that, in 2022, motor vehicles alone emitted 80 percent of greenhouse gases from the U.S. transportation sector).

[105] *See* 74 Fed. Reg. at 66,539-40 ("If CAA section 202(a) source categories' emissions of well-mixed greenhouse gas were ranked against total well-mixed greenhouse gas emissions for entire countries, CAA section 202(a) source category emissions would rank behind only China, the United States as a whole, Russia, and India, and would rank ahead of Japan, Brazil, Germany and every other country in the world."); *see also* Climate Watch, Historical GHG Emissions,

More importantly, the Agency ignores the basic lesson from *Massachusetts* that "[a] reduction in domestic emissions would slow the pace of global emission increases, *no matter what happens elsewhere*." 549 U.S. at 526 (emphasis added). EPA itself acknowledges that reductions available from this sector reflect only one of the agency's "statutory authorities" to address the pollution problem as a whole—exactly the kind of incremental action *Massachusetts* had in mind. And the Agency omits that other countries are in fact regulating greenhouse gas emissions from motor vehicles (often at more aggressive rates than the U.S.) and from other sources,[106] and that U.S. emission reductions support global efforts to reduce emissions.[107] Plus, complaints about the stringency of measures that might prevent further harm misses the point: whether such levels of stringency are feasible and cost-effective (or will be in the future as technology improves) is a question answered by *engaging* in the regulatory process, not by assuming it will be futile and blocking the regulatory process entirely.

EPA also fails to confront the outcome of its position if other countries were to adopt it: under the Agency's logic, no country in the world would mitigate vehicle greenhouse gas emissions, since the contribution of vehicles from any particular country is too small a portion of the whole problem. EPA cannot claim to engage in either sound logic or sound policy where the effect of its proposal is to conclude that the larger the problem is, the less it should do about it. Instead of using regulation to address the market's failure to internalize the costs and harms of greenhouse gas emissions, EPA erects excuses that would perpetuate a tragedy of the commons.

In the Agency's view, so long as a pollution problem can be divided into sufficiently small pieces where no single piece would make a meaningful difference, then the right approach is to

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available at: https://www.climatewatchdata.org/ghg-emissions?end_year=2022&start_year=1990.

[106] *See, e.g.*, ICCT, *Passenger Vehicle Greenhouse Gas Emissions and Fuel Consumption*, https://theicct.org/pv-fuel-economy/ (last visited Sept. 17, 2025) ("Thirteen countries worldwide have established or proposed fuel efficiency or greenhouse-gas emission standards for passenger vehicles and light commercial vehicles and trucks. The regulations in these markets, covering more than 85 percent of global passenger vehicle sales, influence the business decisions of major vehicle manufacturers around the world, and are among the most effective climate-change mitigation measures to have been implemented over the past decade.").

[107] *See* Peter H. Howard, Jason A. Schwartz, & Mythili Vinnakota, Inst. for Policy Integrity, *The Scale of Contribution*, 3 n.19 (July 2025), https://policyintegrity.org/files/publications/Vehicle_Sector_GHG_Contribution_Issue_Brief_v2.pdf ("Through a combination of technological spillovers, policy diffusion, and tit-for-tat dynamics, every ton of U.S. emissions could be tied to 2.4-10.8 tons of foreign emissions."); Peter H. Howard & Jason A. Schwartz, Inst. for Policy Integrity, *The Scale of Significance: Power Plants* 5–6 (2025), https://policyintegrity.org/files/publications/Power_Sector_GHG_Contribution_Issue_Brief_vF.pdf. (collecting authorities).

throw up one's hands and do nothing. Put differently, EPA might have authority to tackle large issues caused by a single source—but lacks authority to do anything in the face of complex air pollution problems caused by many sources across political boundaries. Such a policy position is irrational and contradicts the purpose and text of the Act, through which Congress intended to "to protect and enhance the quality of the Nation's air resources" in the face of the increasing "amount and complexity of air pollution brought about by" a multitude of social and technological changes across political boundaries. 42 U.S.C. §§ 7401(a)(2), (b)(1); *see Solar Energy Indus. Ass'n v. FERC,* --- F.4th ---, 2025 U.S. App. LEXIS 23183, at *13-14 (D.C. Cir. 2025) (confirming best reading of statute by looking to the legislative history and statutory purpose). If broadly adopted, this policy would eviscerate the entire Act's scheme of air pollution control, including for criteria pollution. The Act often addresses regional air pollution (such as secondary ozone and particular matter (PM) formation induced by long-range transport of pollutants) by imposing requirements on large numbers of diverse sources, where controlling any single source would not significantly redress the pollution problem. *See, e.g.*, 42 U.S.C. §§ 7410(a)(2)(D) (transport), 7491-92 (regional haze). This cannot be, and is not, the best reading of the Congress's intent. *See also Bluewater Network*, 370 F.3d at 14 ("[U]nlike bologna, which remains bologna no matter how thin you slice it, significant contribution may disappear if emissions activity is sliced too thinly.").

Lastly, EPA asserts that the 2009 Endangerment Finding did not consider "carbon leakage," where action to reduce emissions in the United States could lead to businesses "transfer[ring] production to other countries with laxer emission constraints." 90 Fed. Reg. at 36,305. But that consideration is beyond the scope of the statutorily mandated questions of (a) whether air pollution may reasonably be anticipated to endanger public health and welfare, and (b) whether new vehicles emit pollutants that contribute to that dangerous air pollution. The question of carbon leakage has absolutely no bearing on the transportation sector, where EPA sets standards for emissions caused by using all new vehicles sold in the United States. Leakage concerns simply do not apply because limits to emissions of vehicles driven in the U.S. cannot encourage the transfer of miles driven to other countries.

In fact, the only source that EPA cites to in support of its carbon leakage theory—the European Commission—has published a list of sectors deemed to be exposed to a significant risk of carbon leakage.[108] That list does not include motor vehicles.[109] Regardless of the location of production, EPA's standards would reduce emissions from the millions of new cars sold in the U.S. each year. EPA's claim is further undermined by the last decade of data, which underscores the

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[108] European Comm'n, *Annex to the Commission Delegated Decision supplementing Directive 2003/87/EC of the European Parliament and of the Council concerning the determination of sectors and subsectors deemed at risk of carbon leakage for the period 2021 to 2030* (Feb. 15, 2019), https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1146-Carbon-Leakage-List-2021-2030_en (download "Annex - C(2019)930).

[109] *Id.*

substantial impact of stricter greenhouse gas emission standards on new vehicle efficiency and does not offer evidence of carbon leakage in this sector.[110]

## VI. Scientific evidence unequivocally establishes that greenhouse gas pollution endangers public health and welfare.

As part of its alternative basis for rescinding the Endangerment Finding, the proposal claims that the Administrator would not now find that greenhouse gases emissions from new motor vehicles endanger public health and welfare, and that the Administrator "no longer has the degree of confidence previously expressed in the analyses relied upon in the Endangerment Finding, the attribution decisions made in the Endangerment Finding, and the balance of projected adverse impacts and beneficial impacts of climate change struck in the Endangerment Finding." 90 Fed. Reg. at 36,310. The proposal bases these conclusions on alleged uncertainties in the scientific record and new developments since 2009, relying heavily on an illegally conducted and substantively flawed draft report by the Department of Energy's Climate Working Group (the "Draft CWG Report").[111] EPA seeks comment on whether "there is a strong enough scientific record to support an affirmative finding that GHG emissions from Section 202(a) sources cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare." 90 Fed. Reg. at 36,310.

Section A, below, describes why the answer is unquestionably "yes": current scientific information overwhelmingly supports the conclusion that greenhouse gas emissions endanger public health and welfare. Section B describes the deep and pervasive flaws in the Draft CWG Report, rendering the Administrator's reliance on the Report to question the validity of EPA's 2009 Finding arbitrary and unlawful. Section C and D describe the numerous ways EPA has failed to consider its own prior conclusions and record evidence on endangerment and why those failures provide additional reasons that the proposal is arbitrary and capricious. Section C examines extensive EPA findings between 2009 and 2024 reaffirming and strengthening the conclusions in the 2009 Finding—determinations the proposal entirely and arbitrarily ignores in

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[110] *See, e.g.*, EPA, *50 Years of EPA's Automotive Trends Report*, https://www.epa.gov/greenvehicles/50-years-epas-automotive-trends-report (last visited Sept. 17, 2025) (showing approximately a 24 percent improvement in the efficiency of new vehicles in terms of miles per gallon in 2024 compared to 2010).

[111] Climate Working Grp., U.S. Dep't of Energy, Impacts of Carbon Dioxide Emissions on the U.S. Climate (May 27, 2025), https://www.regulations.gov/document/EPA-HQ-OAR-2025-0194-0060 ("Draft CWG Report"). In EPA's proposal, the Agency states that it relied on the May 27, 2025 version of the Draft CWG Report and not the July version of the report that was updated and subsequently released at the same time as the proposal. 90 Fed. Reg. at 36,292 n.10; *see* Climate Working Grp., U.S. Dep't of Energy, A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate (July 23, 2025), https://perma.cc/Y6QJ-QYQR ("July Draft CWG Report"). Our critiques of the Draft CWG Report apply equally to the May and July versions, and for the reasons set forth in these comments, it would be arbitrary and unlawful for EPA to rely on either version.

its purported assessment of developments since 2009. Section D likewise identifies prior instances where EPA considered and rejected the same uncertainties the Administrator now credits. In addition to being wrong on the merits, the Administrator's failure to acknowledge and explain his departure from these prior EPA determinations is arbitrary and capricious.

### A. Current scientific evidence overwhelmingly supports EPA's endangerment finding.

There is overwhelming evidence that greenhouse gases released by human activity cause global average temperature increases and a host of impacts on the climate system that result in destructive and harmful consequences for people and their health, food and infrastructure, including impacts on sea level rise, extreme heat, water supply, and conditions for agriculture and fish harvests, as well as to ecosystems, biodiversity, and the environment. Over time, scientific advances and longer observational records have served to further confirm the impact of greenhouse gases released by human activities on the systems that support public health and welfare. We are now able to observe and document with an even greater degree of certainty that greenhouse gases released by the burning of fossil fuels have caused record high temperatures in the ocean and on land; have enhanced conditions for wildfires and stronger hurricanes; have caused marine heatwaves that have damaged coral reefs and fisheries; have caused more severe droughts and flooding in many areas, increasing human hazards and harms to trees and crops; and have expanded the range of diseases that adversely affect human, wildlife, and plant health.

We draw from the peer-reviewed, published scientific literature and the over 35-year history of peer-reviewed scientific assessments such as the Intergovernmental Panel on Climate Change assessment reports, the U.S. National Climate Assessment, and the U.S. National Academies of Science, Engineering, and Medicine publications that have summarized the state of climate science and impacts, which reflect the work of thousands of scientists. In fact, as we discuss more fully in Comment IX.D.2, *infra*, on September 17, 2025, the National Academies of Sciences, Engineering, and Medicine released its latest report, titled *Effects of Human-Caused Greenhouse Gas Emissions on U.S. Climate, Health, and Welfare*.[112] Consistent with the evidence we examine here, the National Academies report concludes that "the evidence for current and future harm to human health and welfare created by human-caused GHGs is beyond scientific dispute" and that "EPA's 2009 finding that the human-caused emissions of greenhouse gases threaten human health and welfare was accurate, has stood the test of time, and is now reinforced by even stronger evidence."[113]

#### *1. Overview.*

It is now an "established fact" that carbon dioxide and other greenhouse gases released through the use of fossil fuels, industrial processes, and other activities are influencing the climate

[112] NASEM 2025 Climate Report, *supra* note 1.

[113] *Id.* at 1, 2.

system.[114] Levels of carbon dioxide are higher now than they have been for at least 800,000 years.[115] The United States, since the pre-industrial era, has contributed more climate pollution to the atmosphere than any other country.[116] The observational record as of 2020 shows an increase of approximately 1ºC in global average temperature since the period 1850-1900 (when industrial activity started)[117]—and since 1970, the continental U.S. has warmed 60% faster than the global average.[118]

Increased concentrations of greenhouse gases in the atmosphere caused by human activity have led to increases in average temperatures and heatwaves on land and in the ocean, to the melting of glaciers and Arctic sea ice, to increases in sea level and coastal flooding, to the drying of parts of the land surface and enhanced conditions for wildfire, to more intense, heavy rainfall events that can lead to flooding, to shifts in weather patterns that can lead to lower crop yields and nutritional value, and to worsening air quality and an increase in the spread of pests and diseases.[119] Climate change has already affected the severity of many extreme weather events—like making the 2021 Pacific Northwest heatwave eight times more likely[120] and fostering more dangerous conditions for wildfires across the western United States exposing millions of

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[114] Arias, P.A., et al. (2021). Technical Summary. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 41. doi:10.1017/9781009157896.002; Fischer, E. M., & Knutti, R. (2015). Anthropogenic contribution to global occurrence of heavy-precipitation and high-temperature extremes. *Nature climate change*, *5*(6), 560-564.

[115] Lüthi, D., M. Le Floch, B. Bereiter, T. Blunier, J.-M. Barnola, U. Siegenthaler, D. Raynaud, J. Jouzel, H. Fischer, K. Kawamura, & T.F. Stocker. (2008). High-Resolution Carbon Dioxide Concentration Record 650,000-800,000 Years Before Present. *Nature*, *453*, pp. 379-382. doi: 10.1038/nature06949.

[116] U.S. EPA. (2025). Inventory of U.S. Greenhouse Gas Emissions & Sinks, 1990-2023, EPA 430-R-25-003, https://library.edf.org/AssetLink/145ky510ew61fk1tq5c2klp5kq5yp33j.pdf.

[117] Pörtner, H.-O., D.C. Roberts, H. Adams, I. Adelekan, C. Adler, R. Adrian, ... & Z. Zaiton Ibrahim, (2022) Technical Summary. [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, ... & A. Okem (eds.)]. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, ... & B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, p. 58, doi:10.1017/9781009325844.002.

[118] U.S. EPA (EPA 2025b). Climate Change Indicators: U.S. and Global Temperature. Available at: https://www.epa.gov/climate-indicators/climate-change-indicators-us-and-global-temperature.

[119] Pörtner, et al. (2021), *supra* n.117, pp. 37-118.

[120] Leach, N.J., C.D. Roberts, M. Aengenheyster, et al. (2024). Heatwave Attribution Based on Reliable Operational Weather Forecasts. *Nat. Commun.*, *15*, 4530. https://doi.org/10.1038/s41467-024-48280-7.

Americans to unhealthy air associated with heart and lung disease deaths.[121] According to a forthcoming study in *Nature*, climate-induced wildfire smoke particulate matter "will cause an additional 26,500 to 30,040 annual excess deaths by mid-century."[122] Extreme heat exposure now causes thousands of deaths,[123] over 100,000 emergency room visits,[124] and approximately $100 billion annually in lost labor productivity across the U.S.[125]

Climate change also endangers the natural systems we depend on. Warmer winters reduce snowpack, posing an unprecedented threat to the water supply for millions throughout the western United States.[126] That means less water to drink, grow crops, create electricity, and provide recreation. Higher temperatures also kill coral reefs and trees and threaten water quality by enhancing the growth of pathogens and harmful algal blooms, posing health and economic risks to people in places like Florida and elsewhere who are subjected to reoccurring blooms.[127] Sea level rise is worsening flooding, causing some U.S. coastal communities to have to relocate

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[121] Abatzoglou, J.T. & A.P. Williams. (2016). Impact of Anthropogenic Climate Change on Wildfire Across Western US Forests. *Proc. Natl. Acad. Sci. U.S.A.*, *113*(42), 11770-1775. https://doi.org/10.1073/pnas.1607171113.

[122] Qiu, M., et al. (forthcoming 2025). Wildfire smoke exposure and mortality burden in the US under climate change. *Nature*. https://doi.org/10.1038/s41586-025-09611-w.

[123] Howard, J.T., N. Androne, K.C. Alcover & A.R. Santos-Lozada. (2024). Trends of Heat-Related Deaths in the US, 1999-2023. *JAMA*, *332*(14), 1203–1204. doi:10.1001/jama.2024.16386.

[124] Vaidyanathan, A., A. Gates, C. Brown, E. Prezzato & A. Bernstein. (2024). Heat-Related Emergency Department Visits - United States, May-September 2023. *Morb Mortal Wkly Rep*, *73*(15), 324-329. doi: 10.15585/mmwr.mm7315a1. PMID: 38635484; PMCID: PMC11037437.

[125] Adrienne Arsht-Rockefeller Foundation Resilience Center (AA-RFRC). (2021). Extreme Heat: The Economic and Social Consequences for the United States. Available at: https://www.atlanticcouncil.org/wp-content/uploads/2021/08/Extreme-Heat-Report-2021.pdf.

[126] Gergel, D.R., B. Nijssen, J.T. Abatzoglou, et al. (2017). Effects of Climate Change on Snowpack and Fire Potential in the Western USA. *Climatic Change*, *141*, 287–299. https://doi.org/10.1007/s10584-017-1899-y; Wheeler, K.G. et al. (2022). What Will it Take to Stabilize the Colorado River?. *Science*, *377*, 373-375. doi:10.1126/science.abo4452.; Xiao, M., B. Udall & D.P. Lettenmaier. (2018). On the Causes of Declining Colorado River Streamflows. *Water Resources Research*, *54*, 6739-6756. https://doi.org/10.1029/2018WR023153.

[127] van Vliet, M.T.H., J. Thorslund, M. Strokal, et al. (2023). Global River Water Quality Under Climate Change and Hydroclimatic Extremes. *Nat Rev Earth Environ*, *4*, 687–702. https://doi.org/10.1038/s43017-023-00472-3; Heil, C.A. & A.L. Muni-Morgan. (2021). Florida's Harmful Algal Bloom (HAB) Problem: Escalating Risks to Human, Environmental and Economic Health with Climate Change. *Front. Ecol. Evol.*, 9:646080. doi: 10.3389/fevo.2021.646080.

and others to spend billions of dollars to remain in place.[128] Increased disaster costs are disrupting insurance markets, raising costs for Americans and, in some areas, making it difficult to obtain coverage.[129]

Vulnerable populations are experiencing higher mortality rates due to the impacts of floods, droughts, and storms, with observed mortality rates 15 times higher for countries ranked as highly vulnerable compared to less vulnerable countries.[130] Individual studies of risks to vulnerable populations indicate that, globally, 35-132 million people will be pushed to extreme poverty by 2030, and 330-396 million people will be exposed to lower crop yields and associated impacts to their livelihood, with Arctic subsistence populations facing severe livelihood, cultural, and economic risks.[131]

Contrary to what the proposal asserts, the evidence base for conclusions about the influence of human activity on the climate system and subsequent warming of the atmosphere, oceans, and land surface has only become stronger in recent years.[132] The evidence rests on longer

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[128] Shrestha A, et al. (2023). A Review of Climate Change-Induced Flood Impacts and Adaptation of Coastal Infrastructure Systems in the United States. *Environ. Res.: Infrastruct. Sustain.*, *3*, 042001. doi:10.1088/2634-4505/ad097b; Oppenheimer, M., B.C. Glavovic , J. Hinkel, R. van de Wal, A.K. Magnan, A. Abd-Elgawad, ... & Z. Sebesvari. (2019). Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities. In: *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, & N.M. Weyer (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 321-445. https://doi.org/10.1017/9781009157964.006.

[129] Kousky, C., G. Treuer, & K.J. Mach. (2024). Insurance and Climate Risks: Policy Lessons from Three Bounding Scenarios. *Proc. Natl. Acad. Sci. U.S.A.*, *121*(48), e2317875121. https://doi.org/10.1073/pnas.2317875121.

[130] Pörtner et al. 2022, *supra* n.117 at p. 50.

[131] *Id.* at p. 166 Fig. TS.AII.2; Byers, E. et al., 2018: Global exposure and vulnerability to multi-sector development and climate change hotspots. *Environmental Research Letters*, 13(5), 055012, doi:10.1088/1748-9326/aabf45; Ford, J.D., Pearce, T., Canosa, I.V. and Harper, S., 2021. The rapidly changing Arctic and its societal implications. *Wiley Interdisciplinary Reviews: Climate Change*, *12*(6), p.e735

[132] Arias, P.A., et al. (2021) Technical Summary. *In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 52. doi:10.1017/9781009157896.002; Duffy, P.B., C.B. Field, N.S. Diffenbaugh, S.C. Doney, Z. Dutton, S. Goodman, L. Heinzerling, et al. (2018). Strengthened Scientific Support for the Endangerment Finding for Atmospheric Greenhouse Gases. *Science*, *363*(6427). https://doi.org/10.1126/science.aat5982; National Academies of Sciences, Engineering, and Medicine. (2025). Effects of Human-Caused Greenhouse Gas Emissions on U.S. Climate, Health, and Welfare. Washington, DC: National

observational datasets including satellite records, improved understanding of climate impacts, and refinement and testing of climate models. New analyses and evidence have been able to discern the role of natural variability in longer term patterns of temperature. It is "virtually certain" that reducing greenhouse gas emissions will limit future temperature increases and associated changes.[133]

For instance, since EPA issued the 2009 Endangerment Finding that greenhouse gas pollution endangers human health and welfare: atmospheric $CO_2$ levels are up 10.5 percent; sea level rise, globally (compared to 1993-2008 average), is up 2.13 inches (more than twice as much as it was in 2009); billion-dollar disasters in the U.S. have increased 200 percent, with exponential increases in deaths and associated costs; eight of the top ten hottest years on record have occurred; and the frequency and duration of heatwaves in the U.S. have increased 34 percent and 17 percent, respectively.[134] In the face of these intensifying harms, the Endangerment Finding and the greenhouse gas pollution standards it supports have delivered (and will continue to deliver) vital pollution reductions that are needed to address these harms and protect communities. For instance, EPA's MY 2027 and later standards for light- and medium- duty vehicles—one of the standards the Administrator now proposes to repeal—will deliver approximately 7 billion tons of climate pollution reductions and over $2 trillion in monetized benefits. 89 Fed. Reg. at 28,093.

### *2. Impacts of greenhouse gas pollution on climate system and public health and welfare.*

Human-caused greenhouse gas pollution is a driver of many changes in the atmosphere, ocean, cryosphere, and biosphere that are in turn causing harmful impacts to public health and welfare. The following paragraphs briefly summarize current science on impacts in key areas that the proposal largely (and arbitrarily) ignores.

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Academies Press. https://doi.org/10.17226/29239; Gillett, N.P., Kirchmeier-Young, M., Ribes, A., Shiogama, H., Hegerl, G.C., Knutti, R., Gastineau, G., John, J.G., Li, L., Nazarenko, L. and Rosenbloom, N., 2021. Constraining human contributions to observed warming since the pre-industrial period. *Nature Climate Change*, *11*(3), pp.207-212.

[133] Arias, P.A., et al. (2021). Technical Summary. *In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 63. doi:10.1017/9781009157896.002.; Tebaldi, C., Debeire, K., Eyring, V., Fischer, E., Fyfe, J., Friedlingstein, P., Knutti, R., Lowe, J., O'Neill, B., Sanderson, B. and Van Vuuren, D., 2021. Climate model projections from the scenario model intercomparison project (ScenarioMIP) of CMIP6. *Earth System Dynamics*, *12*(1), pp.253-293.

[134] *See* EDF, *Dangers of Planet-Heating Pollution: The Science and Evidence Are Clear* (2025), p. 2, https://library.edf.org/AssetLink/l4obr783jyswtwyj41b1583cx64ksgt8.docx (citing data from NOAA and EPA).

*Human Health.* Globally, increasing temperatures and heatwaves have increased mortality and morbidity,[135] with those working in non-air-conditioned settings, especially doing manual labor (*e.g.*, construction, farming), at particularly heightened risk of suffering health impacts from heat. Hours of work lost due to heat have increased in the last two decades.[136] In the United States, higher temperatures not only affect direct mortality[137] but also negatively affect pregnancy and birth outcomes and mental health, and lead to increased hospitalizations related to cardiovascular disease, diabetes, respiratory outcomes and other increases in morbidity.[138] Higher temperatures also worsen air quality, including exposure to ground-level ozone and airborne particulate matter, and increase the spread of diseases like Lyme and West Nile.[139]

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[135] Pörtner et al 2022, *supra* n.117, at p. 51; Vicedo-Cabrera, A. M., Scovronick, N., Sera, F., Royé, D., Schneider, R., Tobias, A., Astrom, C., Guo, Y., Honda, Y., Hondula, D. M., Abrutzky, R., Tong, S., Coelho, M. D. S. Z. S., Saldiva, P. H. N., Lavigne, E., Correa, P. M., Ortega, N. V., Kan, H., Osorio, S., … Gasparrini, A. (2021). The burden of heat-related mortality attributable to recent human-induced climate change. *Nature Climate Change*, *11*(6), 492–500.

[136] Pörtner et al. 2022, *supra* n.117, at p. 51; Watts, N., et al., 2019: The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. Lancet , 394 (10211), 1836–1878, doi:10.1016/s0140-6736(19)32596-6.

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Exposure to wildfire smoke has also increased,[140] with climate change greatly increasing the area susceptible to and conditions for large forest fires in the western U.S.[141] Wildfire smoke exposes millions to unhealthy air, resulting in heart and lung disease deaths.[142]

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*Ocean.* Greenhouse gases in the atmosphere have led to warmer ocean temperatures,[143] increased stratification,[144] and more frequent marine heatwaves.[145] In addition, warmer temperatures in the ocean lead to decreases in oxygen availability.[146] Addition of carbon dioxide to the ocean is reducing the pH (*i.e.*, making it more acidic), reversing trends of increasing pH that have been in

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[143] Bilbao, R.A.F., J.M. Gregory, N. Bouttes, et al. (2019). Attribution of Ocean Temperature Change to Anthropogenic and Natural Forcings Using the Temporal, Vertical and Geographical Structure. *Clim Dyn*, *53*, pp. 5389–5413. (2019). https://doi.org/10.1007/s00382-019-04910-1; Eyring, V., N.P. Gillett, K.M. Achuta Rao, R. Barimalala, M. Barreiro Parrillo, N. Bellouin, C. Cassou, ... & Y. Sun. (2021). Human Influence on the Climate System. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Pean, S. Berger, ... & B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 478. doi:10.1017/9781009157896.005.

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place over the last 50 million years.[147] These trends in temperature, oxygen, and pH cause displacement and disruption to ocean ecosystems and to the food webs that people depend on.[148]

*Ice and Permafrost.* Greenhouse gases in the atmosphere have led to reduction in land glaciers and Arctic sea ice.[149] Continued greenhouse gas emissions "greatly increase the likelihood of potentially irreversible changes in the climate system," including ice sheet loss causing global sea level rise.[150] In addition, permafrost is thawing, compromising the structural integrity of pipelines, roads, and buildings that have been built assuming frozen ground.[151] Ice cover in the Arctic is changing and shrinking in the winter season, which now lasts for less time, making it difficult for Indigenous people to conduct their livelihoods in the far north, *e.g.*, fishing and hunting, on ice.[152] Transportation is also adversely impacted, with fewer days available for travel

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[147] Gulev, S.K., P.W. Thorne, J. Ahn, F.J. Dentener, C.M. Domingues, S. Gerland, D. Gong, ... & R.S. Vose. (2021). Changing State of the Climate System. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, ... & B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 287–422. doi:10.1017/9781009157896.004.; Jiang, L.Q., Carter, B.R., Feely, R.A., Lauvset, S.K. and Olsen, A., 2019. Surface ocean pH and buffer capacity: past, present and future.; Halevy, I. and Bachan, A., 2017. The geologic history of seawater pH. *Science*, *355*(6329), pp.1069-1071.

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on ice roads.[153] Furthermore, greening in the Arctic can exacerbate warming both through changes to albedo and water vapor, which may accelerate feedback to the climate system through accelerated permafrost thaw and increased plant respiration resulting in additional greenhouse gas emissions.[154]

*Carbon Cycle.* In the past decade, about 54% of the global emissions of carbon dioxide have been removed from the atmosphere and stored in the ocean and on land.[155] In other words, the amount of carbon dioxide in the atmosphere would be approximately twice as large if those natural processes on land and ocean were not taking it up. These natural sources of carbon removals will become less efficient over time with additional climate change, and therefore potentially proportionately more of the anthropogenic emissions will stay in the atmosphere and contribute to climate change.[156] $CO_2$ fertilization effects (*i.e.*, effects on plant growth from

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Available at: https://repository.library.noaa.gov/view/noaa/61592; Pörtner et al 2022, *supra* n.117, p. 116 Fig. TS.AII.2.

[153] Hicke, J.A., S. Lucatello, L.D., Mortsch, J. Dawson, M. Domínguez Aguilar, C.A.F. Enquist, ... & KA. Miller. (2022). North America. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, ... & B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 1975, 1977. doi:10.1017/9781009325844.016.

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[155] Arias, P.A., et al. (2021). Technical Summary. *In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 80. doi:10.1017/9781009157896.002.; Friedlingstein, P. et al., 2020: Global Carbon Budget 2020. Earth System Science Data, 12(4), 3269–3340, doi: 10.5194/essd-12-3269-2020.

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increased $CO_2$ levels) in terrestrial ecosystems, which are not categorically positive or occurring at the same rate in different areas or for all plant types, are increasingly limited by drought and warming.[157]

*Land.* Land surface temperatures are rising faster than the global average temperature.[158] Heatwaves and hot extremes have been more common and more intense and are attributable to greenhouse gas emissions.[159] The combination of heatwaves and droughts is also becoming more common.[160] The IPCC has "high confidence" that the five years of 2016-2020 were the hottest

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Press, Cambridge, United Kingdom and New York, NY, USA, p. 677. doi:10.1017/9781009157896.007; Green, J.K. et al., 2019: Large influence of soil moisture on long-term terrestrial carbon uptake. Nature, 565(7740), 476–479, doi: 10.1038/s41586-018-0848-x.

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[158] Arias, P.A., et al. (2021). Technical Summary. *In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 82. doi:10.1017/9781009157896.002.

[159] Seneviratne, S.I., X. Zhang, M. Adnan, W. Badi, C. Dereczynski, A. Di Luca, ... & B. Zhou. (2021). Weather and Climate Extreme Events in a Changing Climate. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Pean, S. Berger, ... & B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 1552. doi:10.1017/9781009157896.013.; Bartusek, S., Kornhuber, K., & Ting, M. (2022). 2021 North American heatwave amplified by climate change-driven nonlinear interactions. *Nature Climate Change*, *12*(12), 1143–1150. https://doi.org/10.1038/s41558-022-01520-4.

[160] Mukherjee, S. & A. K. Mishra. (2021). Increase in Compound Drought and Heatwaves in a Warming World. *Geophysical Research Letters*, *48*(1), e2020GL090617.; Jarvis, A., & Forster, P. M. (2024). Estimated human-induced warming from a linear temperature and atmospheric $CO_2$ relationship. *Nature Geoscience*, *17*(12), 1222–1224. https://doi.org/10.1038/s41561-024-01580-5 ; Sherwood, S. C., Webb, M. J., Annan, J. D., Armour, K. C., Forster, P. M., Hargreaves, J. C., Hegerl, G., Klein, S. A., Marvel, K. D., Rohling, E. J., Watanabe, M., Andrews, T., Braconnot, P., Bretherton, C. S., Foster, G. L., Hausfather, Z., Von Der Heydt, A. S., Knutti, R., Mauritsen, T., … Zelinka, M. D. (2020). An Assessment of Earth's Climate Sensitivity Using Multiple Lines of Evidence. *Reviews of Geophysics*, *58*(4), e2019RG000678. https://doi.org/10.1029/2019RG000678. .; Sun, Q., et al., 2020: A global, continental and regional analysis of changes in extreme precipitation. *J. Climate*, **34** (1), 243-258, doi:10.1175/JCLI-D-19-0892.1.

five years in the instrumental record.[161] Observations show that the number of heavy precipitation events has increased, and those events are also more intense.[162]

*Ecosystems.* There is "very high confidence" that climate change caused by greenhouse gas emissions is leading to changes for marine, freshwater and ocean ecosystems around the world, and for all three biomes in North America.[163] Biological changes in physiology, range, seasonal timing, growth, and abundance of both plants and animals have been observed in response to climate change. Where these shifts are adaptive, they have often not been sufficient to stave off species losses, susceptibility to disease and mass mortality of plants and animals.[164] Along with increasing temperatures there has been a shift in terrestrial and marine species distribution, with half to two-thirds of species shifting to higher latitudes and two-thirds shifting toward earlier spring life events.[165] Many terrestrial and marine species are moving toward the poles, in response to climate change, along with shifts in timing of flowering and insect emergence.[166] These species shifts have impacted biodiversity by, *e.g.*, reducing diversity in warm regions and homogenizing species types when new species have moved into an area.[167] For instance, the differential response of plants to the carbon dioxide fertilization effect can interrupt the biodiversity in natural ecosystems where nuisance species gain an advantage.[168] These shifts have further resulted in loss of biodiversity in warm areas as local populations exceed adaptation limits (*e.g.*, where species temperature range maximums have been exceeded).[169] The contraction of polar ecosystems has resulted in the decline of ice-dependent species—such as the polar bear—in the Arctic, and declining ranges of krill and emperor penguins in the Antarctic.[170] Coral

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[161] Arias, P.A., et al. (2021). Technical Summary. *In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 41. doi:10.1017/9781009157896.002.

[162] *Id.* at p. 84; Pörtner et al 2022, *supra* n.117, at p. 49.

[163] Pörtner et al 2022, *supra* n.117, at p. 46 Fig. TS-3.

[164] *Id.* at p.45.

[165] *Id.*

[166] *Id.*

[167] *Id.* at p. 47.

[168] Phillips, O., Vásquez Martínez, R., Arroyo, L. et al., 2002. Increasing Dominance of Large Lianas in Amazonian Forests. *Nature*, *418*, pp. 770–774. https://doi.org/10.1038/nature00926; Mohan, J. E., L. H. Ziska, W. H. Schlesinger, R. B. Thomas, R. C. Sicher, K. George & J. S. Clark. (2006). Biomass and Toxicity Responses of Poison Ivy (Toxicodendron Radicans) to Elevated Atmospheric $CO_2$. *Proc. Nat'l Acad. Scis.*, *103*(24), pp. 9086–9089. https://doi.org/10.1073/pnas.0602392103.

[169] Pörtner et al 2022, *supra* n.117, at p. 45.

[170] *Id.* at pp. 45, 47.

reefs are experiencing global declines.[171] Changes in plant species composition fueled by $CO_2$ fertilization have led to woody shrub invasion and reduced grazing land, and invasive grasses fueled by increasing $CO_2$ have led to increased fire risk.[172] For instance, the differential response of plants to the carbon dioxide fertilization effect can interrupt the biodiversity in natural ecosystems where nuisance species gain an advantage.[173] Climate related extreme events like droughts, floods, wildfires, and marine heatwaves have driven changes to ecosystems that have caused economic damage and losses to livelihoods, such as to forest and agricultural productivity and the collapse of fisheries.[174]

*Agriculture and Food.* Climate change has affected the productivity of the agriculture,[175] forestry, and fishery sectors of the economy, with droughts, wildfires, floods, and land and marine heatwaves contributing to food insecurity and increased food prices.[176] For example, marine heatwaves have led to the collapse of local fisheries along the west coast of North America and east coast of Australia,[177] and higher temperatures increase the occurrence of toxigenic fungi on food crops.[178] Climate-related food safety risks have increased globally, including fungal mycotoxin infection of crops (associated with cancer and stunting in children) and seafood contamination from marine toxins and pathogens.[179] Impacts related to increased atmospheric carbon dioxide and climate change, like heat stress, high vapor pressure deficit, and drought, can exacerbate nutrient dilution and diminish yield. Elevated carbon-dioxide-induced nutrient dilution (and the potential subsequent significant human nutrient deficiencies) represents

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[171] Eddy, T. D., V. W. Lam, G. Reygondeau, A. M. Cisneros-Montemayor, K. Greer, M. L. D. Palomares, ... & W. W. Cheung. (2021). Global Decline in Capacity of Coral Reefs to Provide Ecosystem Services. *One Earth*, *4*(9), pp. 1278-1285.

[172] Pörtner et al. 2022, *supra* n.117, p. 47.

[173] Phillips, O., R. Vásquez Martínez, L. Arroyo, et al. (2002). Increasing Dominance of Large Lianas in Amazonian Forests. *Nature*, *418*, pp. 770–774. https://doi.org/10.1038/nature00926; Mohan, J. E., L. H. Ziska, W. H. Schlesinger, R. B. Thomas, R. C. Sicher, K. George & J. S. Clark. (2006). Biomass and Toxicity Responses of Poison Ivy (Toxicodendron Radicans) to Elevated Atmospheric $CO_2$. *Proc. Nat'l Acad. Scis.*, *103*(24), pp. 9086–9089. https://doi.org/10.1073/pnas.0602392103.

[174] Pörtner et al 2022, *supra* n.117, at p. 48.

[175] Ortiz-Bobea, A., T. R. Ault, C. M. Carrillo, R. G. Chambers & D. B. Lobell. (2021). Anthropogenic Climate Change Has Slowed Global Agricultural Productivity Growth. *Nature Climate Change*, *11*(4), pp. 306-312.

[176] Pörtner et al 2022, *supra* n.116, at p. 48.

[177] Frölicher, T.L. & C. Laufkötter. (2018). Emerging Risks from Marine Heat Waves. *Nat Commun*, *9*, p. 650. https://doi.org/10.1038/s41467-018-03163-6.

[178] Avery, S. V., I. Singleton, N. Magan, & G. H. Goldman. (2019). The Fungal Threat to Global Food Security. *Fungal Biology*, *123*(8), pp. 555-557.

[179] *Id*.

a real and ongoing risk to public health. For example, Smith and Myers (2014) estimated that reduced zinc, protein, and iron levels in certain crops under anticipated 2050 carbon dioxide levels could cause zinc deficiencies in 175 million people, with 122 million more deficient in protein, with 1.4 billion women of childbearing age and children at-risk of losing dietary iron in countries with high anemia prevalence.[180] Furthermore, carbon dioxide emissions are often accompanied by ozone precursors (carbon monoxide, volatile organic compounds, and oxides of nitrogen), and ground-level ozone formation can also increase under high temperatures. Many studies show adverse effects of ozone on crop yield at the global scale and in the Northern Hemisphere. For example, increased tropospheric ozone levels decreased estimates of global yield for soybean (8.5 to 14 percent), wheat (3.9 to 15 percent), and maize (2.2 to 5.5 percent) in 2000 with estimated economic losses in the billions of dollars. The adverse impacts of ozone on tree species are also well documented in the scientific literature.[181]

*Water.* Climate change has intensified the extremes of the water cycle, leading to more droughts, water scarcity, and floods.[182] Extreme precipitation events and extended droughts are increasing

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[180] Zhu et al. (2023). Rising Temperatures Can Negate $CO_2$ Fertilization Effects on Global Staple Crop Yields: A Meta-Regression Analysis. *Agricultural and Forest Meteorology*. https://doi.org/10.1016/j.agrformet.2023.109737; Zhang et al. (2024). VPD Modifies $CO_2$ Fertilization Effect on Tomato Plants via Abscisic Acid and Jasmonic Acid Signaling Pathways. *Horticultural Plant Journal*. https://doi.org/10.1016/j.hpj.2023.07.005. Smith, M.R. & S. S. Myers. (2018). Impact of Anthropogenic $CO_2$ Emissions on Global Human Nutrition. *Nature Clim. Change*, *8*, pp. 834–839. https://doi.org/10.1038/s41558-018-0253-3.

[181] Porter & Xie et al. (2014). Food Security and Food Production Systems. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel of Climate Change*, C. B. Field et al., Eds. (Cambridge Univ. Press, 2014) pp. 485–583. https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap7_FINAL.pdf; Avnery et al. (2011). Global Crop Yield Reductions Due to Surface Ozone Exposure: Crop Production Losses and Economic Damage in 2000 and 2030 under Two Futures Scenarios of O3 Pollution. https://www.researchgate.net/publication/258459316_Global_Crop_Yield_Reductions_due_to_Surface_Ozone_Exposure_Crop_Production_Losses_and_Economic_Damage_in_2000_and_2030_under_Two_Future_Scenarios_of_O3_Pollution; Pavlovic et al. (2025). Quantification of Ozone Exposure Impacts and their Uncertainties on Growth and Survival of 88 Tree Species Across the United States. *Journal of Geophysical Research: Atmospheres*, 130 (e2024JD042063). https://doi.org/10.1029/.

[182] Arias, P.A., et al. (2021). Technical Summary. *In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V. et al. eds.]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 85. doi:10.1017/9781009157896.002; Swain, D. L., Prein, A. F., Abatzoglou, J. T., Albano, C. M., Brunner, M., Diffenbaugh, N. S., Singh, D., Skinner, C. B., & Touma, D. (2025). Hydroclimate volatility on a warming Earth. *Nature Reviews Earth & Environment*, *6*(1), 35–50. https://doi.org/10.1038/s43017-024-00624-z.

in the United States.[183] The intensity of precipitation has increased in many areas since the 1950s, with more people living in "unfamiliar" precipitation patterns (*e.g.*, dry spells, extreme precipitation).[184] Many communities across the U.S. have had to adapt their stormwater management systems to address impacts from climate-related increases in storm frequency and/or intensity, from Massachusetts to Washington State.[185] Droughts have reduced hydropower production, impacting energy supplies and increasing competition for scarce water resources.[186]

Glacier melting and snowpack declines are occurring at unprecedented rates, with populations that depend on those water resources for drinking and irrigation facing loss of critical resource.[187] Snowpack is declining across the western U.S., where 40 million people rely on the Colorado River, a snowpack-driven watershed that serves municipal, agricultural, and ecosystem demands of the Colorado River Basin.[188] Increased temperatures lead to less snowpack, which means less runoff from melting snow and less water available overall. Higher temperatures are

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[183] Payton, E.A., A.O. Pinson, T. Asefa, L.E. Condon, L.-A.L. Dupigny-Giroux, B.L. Harding, ... & D.B. Wright. (2023). Ch. 4. Water. In: *Fifth National Climate Assessment*. [Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, & T.K. Maycock, Eds.]. U.S. Global Change Research Program, Washington, DC, USA. https://repository.library.noaa.gov/view/noaa/61592.

[184] Pörtner et al 2022, *supra* n.117, at p. 49.

[185] Horsley-Witten Group. (2015). Assessment of Climate Change Impacts on Stormwater BMPs and Recommended BMP Design Considerations in Coastal Communities. Available at: https://www.mass.gov/files/documents/2016/08/oj/climate-change-sw-bmps-report-no-appendix.pdf; Washington State. (2025). Five-Year Implementation Update Olympia Sea Level Rise Response Plan. https://www.olympiawa.gov/Document_center/Community/Climate%20Change%20Response/SLR/SLR-5yr-Update-031925.pdf.

[186] Wasti, A., P. Ray, S. Wi, C. Folch, M. Ubierna & P. Karki. (2022). Climate Change and the Hydropower Sector: A Global Review. *Wiley Interdisciplinary Reviews: Climate Change*, *13*(2), e757.

[187] Caretta, M.A., A. Mukherji, M. Arfanuzzaman, R.A. Betts, A. Gelfan, Y. Hirabayashi, ... & S. Supratid (2022): Water. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Portner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Loschke, V. Moller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, p. 570. doi:10.1017/9781009325844.006.

[188] Musselman, K.N., N. Addor, J.A. Vano et al. (2021). Winter Melt Trends Portend Widespread Declines in Snow Water Resources. *Nat. Clim. Chang.*, *11*, pp. 418–424. https://doi.org/10.1038/s41558-021-01014-9.

also causing spring runoff to occur earlier in the year, resulting in even less water availability through the dry summer season.[189]

*Coastal Communities.* Coastal communities are already experiencing compounding hazards from sea level rise and climate variability. About a tenth of the world's population lives in a low elevation coastal zone (defined as less than 10 m/30 feet above sea level).[190] Approximately 130 million people live in coastal counties in the U.S.,[191] and 20 million coastal U.S. residents could be at risk of inundation due to sea level rise and/or storm surge by 2030.[192] Coastal communities are often experiencing climate change impacts that compound other non-climate impacts, like land subsidence. By 2030, 108-116 million people will be exposed to sea level rise in Africa.[193] There is evidence of acceleration of sea level rise, driven especially by contributions from the Greenland ice sheet; this highlights the importance and urgency of mitigating climate change and formulating coastal adaptation plans to mitigate the impacts of ongoing sea level rise.[194]

*Infrastructure.* Key infrastructure and services, such as energy supply and distribution, transportation, communication, and water and waste systems are increasingly vulnerable to compounding climate impacts like sea level rise, droughts, heatwaves, floods, wildfires, and more, with the most vulnerable populations often located where adaptive capacity is limited.[195] In the United States, there are numerous examples of infrastructure system stresses—*e.g.*, when more frequent and/or extreme rainfall and drought stress the existing capacity of municipal water

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[189] Bolinger, R.A., J.J. Lukas, R.S. Schumacher, & P.E. Goble. (2024). Climate Change in Colorado, 3rd edition. Colorado State University, Available at: https://doi.org/10.25675/10217/237323.

[190] Pörtner et al 2022, *supra* n.117, at p. 54.

[191] Office for Coastal Management, NOAA, *Economics and Demographics*, https://coast.noaa.gov/states/fast-facts/economics-and-demographics.html

[192] Best, K., Q. He, A. C. Reilly, D. A. Niemeier, M. Anderson & T. Logan. (2023). Demographics and Risk of Isolation Due to Sea Level Rise in the United States. *Nat* Commun, *14*(1), p. 7904. doi:10.1038/s41467-023-43835-6. Erratum in: *Nat Commun.*, *14*(1), p. 8305. doi:10.1038/s41467-023-44170-6. PMID: 38036553; PMCID: PMC10689761.

[193] Pörtner et al 2022, *supra* n.117, at p. 62.

[194] Chen, X., X. Zhang, J. Church, et al. (2017). The Increasing Rate of Global Mean Sea-Level Rise During 1993–2014. *Nature Clim Change*, *7*, pp. 492–495 (2017). https://doi.org/10.1038/nclimate3325.

[195] Pörtner et al 2022, *supra* n.117, at p. 53.

systems[196] and natural gas infrastructure,[197] or when electricity access is lost due to one risk, such as wildfire, which can then lead to compounding impacts from resulting losses such as cooling during a heatwave[198] or other lifesaving infrastructure.[199]

The science is clear that greenhouse gas pollution is driving changes in the atmosphere, ocean, cryosphere, and biosphere that are already causing and will increasingly cause significant harm to public health and welfare.

### B. The proposal's scientific claims are inaccurate, misleading, and incomplete.

#### *1. The proposal relies heavily on the deeply flawed Department of Energy Climate Working Group Report for its scientific claims.*

Notwithstanding this overwhelming body of scientific evidence, the proposal nonetheless claims the science is too uncertain to support a finding that greenhouse gases endanger human health and welfare. The proposal does so in an exceptionally cursory discussion, spanning roughly three and one-half Federal Register pages, which purports to evaluate and find wanting thousands of pages of scientific evidence. *See* 90 Fed. Reg. at 36,307-11 ("Alternative Rationale for Proposed Rescission"). The Administrator's discussion comes nowhere close to the more detailed justification required when a new policy rests on factual determinations that contradict those supporting its prior policy. *Fox*, 556 U.S. at 515 (more detailed justification required when a "new policy rests upon factual findings that contradict those which underlay [an agency's] prior policy").

The proposal's discussion is notably barren of any of the Administrator's own reasoning but instead uncritically cites dozens of times to the May 2025 version of the Draft CWG Report. The Draft CWG Report is deeply flawed, both in substance, as described in this section, and in process, as described in Comment VIII, *infra.* The Administrator's reliance on this report is arbitrary and illegal. And based on the report, EPA's proposal paints a picture of the scientific evidence that is deeply inaccurate, misleading, and incomplete. Moreover, even if any of the criticisms of climate science in EPA's proposal or the Draft CWG Report were valid (they are

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[196] Neumann, J. E., J. Price, P. Chinowsky, L. Wright, L. Ludwig, R. Streeter, ... & J. Martinich. (2015). Climate Change Risks to US Infrastructure: Impacts on Roads, Bridges, Coastal Development, and Urban Drainage. *Climatic Change*, *131*(1), pp. 97-109.

[197] Moftakhari, H., & A. AghaKouchak. (2019). Increasing Exposure of Energy Infrastructure to Compound Hazards: Cascading Wildfires and Extreme Rainfall. *Environmental Research Letters*, *14*(10), p. 104018.

[198] Stone Jr, B., E. Mallen, M. Rajput, C. J. Gronlund, A. M. Broadbent, E. S. Krayenhoff, ... & M. Georgescu. (2021). Compound Climate and Infrastructure Events: How Electrical Grid Failure Alters Heat Wave Risk. *Environmental Science & Technology*, *55*(10), pp. 6957-6964.

[199] Wong-Parodi, G. (2020). When Climate Change Adaptation Becomes a "Looming Threat" to Society: Exploring Views and Responses to California Wildfires and Public Safety Power Shutoffs. *Energy Research & Social Science*, *70*, p. 101757.

not), they are the sort of "residual uncertaint[ies]" that *Massachusetts* concluded EPA could not use as a basis for declining to make an Endangerment Finding and so are insufficient to support EPA's proposed rescission of that finding as a matter of law. *Massachusetts v. EPA*, 549 U.S. 497, 534 (2007). Indeed, some are entirely disconnected from the question about whether greenhouse gases endanger human health and welfare.

The following sections focus on some of the pervasive substantive problems with the Draft CWG Report and EPA's reliance on it in the proposal, which are summarized here. The Draft CWG Report does not accurately reflect the overwhelming scientific evidence concerning the grave harms associated with climate change and the role of burning fossil fuels in causing those harms. There are systematic and pervasive errors across multiple chapters in the report. Foremost, the report is a grossly incomplete assessment of the available scientific literature. By the authors' own admission, it is not a comprehensive review of climate science, and as a result, it completely ignores many important areas of independent evidence documenting the harms associated with climate change and the role that climate pollution has in accelerating those harms.[200] For instance, the Report fails entirely to consider several important lines of evidence, including already observed negative impacts on crops, marine food sources, species and ecosystems, wildfire risk, disease patterns, water supply, and human health. In other areas where the Report includes some discussion, it fails to address or acknowledge substantial additional scientific evidence that contradicts its conclusions. Some examples include omissions on ocean warming, ocean deoxygenation, species range shifts, the impacts of elevated atmospheric carbon dioxide on plants, and phenology shifts, among others (*see, e.g.*, Chapter 3).[201]

For the topics that the report does address, it frequently either misrepresents key findings or presents them in a manner that seems designed to mislead or obfuscate. Examples include unjustified claims regarding the misuse of Representative Concentration Pathway (RCP) 8.5 as a claimed business as usual scenario (*see, e.g.*, Chapter 3), ocean pH in Chapter 3 (*e.g.*, misrepresenting Rae et al. 2018 by comparing pH in unrelated parts of the ocean at different times to claim a wider variability than exists on such timescales), the significance of differences between observations and model representations (*see, e.g.*, Chapter 8), and the uncertainty of climate sensitivity and its significance for climate projections (*see, e.g.*, Chapter 4), and using selectively chosen geographies to obfuscate trends in Atlantic hurricanes (*see, e.g.*, Chapter 6) and selectively chosen metrics to inaccurately claim a lack of trends (*e.g.*, extreme precipitation and heatwaves in Chapter 6).

In places the Draft CWG Report wrongly claims that evidence and arguments are new or overlooked, even though those very claims have in fact been fully considered and either rejected (*see, e.g.*, alternative Total Solar Irradiance records in Chapter 3; RCP 8.5 discussion in Chapter 3), or already taken into account by climate models and projections (*see, e.g.*, discussion of $CO_2$

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[200] Draft CWG Report at ix ("The short timeline and the technical nature of the material meant that we could not comprehensively review all topics.")

[201] Unless otherwise indicated, throughout this section, "Chapter" refers to the referenced chapter of the Draft CWG Report.

fertilization in Chapters 2 and 9; discussion of Urban Heat Island effect in Chapter 3; discussion of variability in local sea level rise and its drivers in Chapter 7).

The Report also seeks to obfuscate by presenting information that is not relevant to a discussion on the causes or impacts of climate change. For example, the authors point to known uncertainties within the physical climate system (*e.g.*, unresolved driver of the decrease in atmospheric $CO_2$ after the Mt. Pinatubo eruption in Chapter 3; model representation of hemispheric albedo in Chapter 5) and variability (*e.g.*, representation of land response to $CO_2$ in different models in Chapter 3; sea level at specific locations in Chapter 7) in an attempt to sow doubt about the overwhelming scientific evidence that climate change is happening and is primarily caused by fossil fuel emissions. But the Report does not draw explicit conclusions from this information, presumably because it has no bearing upon the existence or impacts of climate change on human health and welfare.

Ultimately, the Report does not fundamentally engage with, let alone call into question, the mountain of scientific evidence that climate pollution harms human health and welfare. None of the information presented changes the established understanding of the key areas of greenhouse gas and climate change science, as outlined in EPA's 2022 denial of petitions for reconsideration of the Endangerment Finding, that:

> (1) current and historic anthropogenic emissions of greenhouse gases are causing concentrations of greenhouse gases in our atmosphere to rise to elevated levels essentially unprecedented in human history;
>
> (2) the accumulation of greenhouse gases in our atmosphere is exerting a warming effect on the global climate;
>
> (3) warming of the climate system is unequivocal, as is evident from multiple types of observations, including increasing average global surface temperatures, rising ocean temperatures and sea levels, and shrinking Arctic sea ice, and that the observed rate of climate change stands out as significant compared to recent historical rates of climate change;
>
> (4) there is compelling evidence that anthropogenic emissions of greenhouse gases are the primary driver of recent observed increases in average global temperature;
>
> (5) without substantial efforts to reduce emissions, greenhouse gas concentrations are expected to continue to climb, leading to greater rates of future climate change relative to historic rates; and

(6) the threat to public health will likely mount over time as greenhouse gases continue to accumulate in the atmosphere and result in ever greater rates of climate change.[202]

### *2. EPA makes deeply flawed claims on a number of areas of climate science in Proposal Section IV.B.1.*

#### *a. Increases in greenhouse gas concentrations and global temperatures.*

The broad scientific consensus is that human influences are causing dangerous and rapid increases in $CO_2$ and other greenhouse gases, resulting in climate change. Other factors in the forcing of Earth's climate such as Total Solar Irradiance and in measurements such as the Urban Heat Island effect are comparatively minimal and already accounted for in studies documenting the magnitude of climate change. Regardless, these are separate from and do not change the scientific evidence that anthropogenic fossil fuel-burning is causing climate change. The proposal's suggestion to the contrary is wrong. 90 Fed. Reg. at 36,309 (citing, without discussion, the Draft CWG Report discussion of urbanization and other factors).

Global climate exhibits variability across all timescales. The scientific understanding of these sources of variability and their resulting temperature changes supports rather than challenges the scientific conclusion that radiative forcing is the key climate variable. Other variables are aerosols, total solar irradiance, energy distribution, and continental configuration.[203]

Climate change over time can occur at different rates, with rapid changes in the past resulting in multiple mass extinctions.[204] Species can survive climatic shifts if the climate remains within their tolerances, if their geographic ranges can adjust as needed, or if they have the capacity to adapt quickly enough.[205] However, the rapid rate of increase in today's $CO_2$ levels presents

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[202] EPA's 2022 Denial of Petitions Relating to the Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act (Apr. 29, 2022) ("EPA 2022 Denial of Petitions Decision Document") at 4, *available at*: https://perma.cc/F762-6QCY.

[203] Forster, P., T. Storelvmo, K. Armour, W. Collins, J.-L. Dufresne, D. Frame, … & H. Zhang, 2021: The Earth's Energy Budget, Climate Feedbacks, and Climate Sensitivity. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 923–1054. doi: 10.1017/9781009157896.009.

[204] Song, H., D. B. Kemp, L. Tian, D. Chu, H. Song, & X. Dai. (2021). Thresholds of Temperature Change for Mass Extinctions. *Nature Communications*, *12*(1), p. 4694.

[205] Nogués-Bravo, D., Rodríguez-Sánchez, F., Orsini, L., de Boer, E., Jansson, R., Morlon, H., ... & Jackson, S. T. (2018). Cracking the code of biodiversity responses to past climate change. *Trends in ecology & evolution*, *33*(10), 765-776.

significant challenges with differential impacts on biota and ecosystems on Earth today.[206] In fact, anthropogenic emissions are causing changes in atmospheric concentrations of $CO_2$ at up to 9-10 times higher than those at the onset of the Paleocene-Eocene Thermal Maximum, which corresponded to rapid rates of species loss.[207] The present rapid rate of $CO_2$ increase and accompanying impacts of climate change create threats due to decreases in ecosystem, water, and nutrient stability.[208]

The proposal expresses concern that "the Endangerment Finding did not adequately balance the projected adverse impacts . . . with the potential benefits to the United States of increased GHG concentrations, and increased $CO_2$ concentrations in particular," emphasizing impacts on plant growth and citing to the Draft CWG Report. 90 Fed. Reg. at 36,309. The Draft CWG Report erroneously suggests that $CO_2$ levels could fall to something too low for plant survival but provides no supporting evidence that this is likely or even possible. In fact, atmospheric $CO_2$ levels during glacial minima and interglacial maxima have been quite stable through the Pleistocene[209] due to known orbital changes and earth system feedbacks.[210]

*Total Solar Irradiance and Urban Heat Island Effect.* The proposal briefly and without explanation suggests that effects such as urbanization may play a more significant role than previously thought in contributing to climate change. 90 Fed. Reg. at 36,309. The proposal does not analyze, discuss, or suggest what that role may be, and the discussion of this issue in the Draft CWG Report, which the proposal cites, mischaracterizes the magnitude of other impacts on the Earth's climate, overestimating their influence. First, the magnitude of observed warming

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[206] Catullo, R. A., J. Llewelyn, B. L. Phillips & C. C. Moritz. (2019). The Potential for Rapid Evolution Under Anthropogenic Climate Change. *Current Biology*, *29*(19), pp. R996-R1007.

[207] Gingerich, P. D. (2019). Temporal Scaling of Carbon Emission and Accumulation Rates: Modern Anthropogenic Emissions Compared to Estimates of PETM Onset Accumulation. *Paleoceanography and Paleoclimatology*, *34*(3), pp. 329-335.

[208] E.g., Canteri, E., S. C. Brown, E. Post, N. M. Schmidt, D. Nogues-Bravo & D. A. Fordham. (2025). Mismatch in Reindeer Resilience to Past and Future Warming Signals Ongoing Declines. *Science Advances*, *11*(33), eadu0175; Warren, R., J. Price, E. Graham, N. Forstenhaeusler, & J. VanDerWal. (2018). The Projected Effect on Insects, Vertebrates, and Plants of Limiting Global Warming to 1.5 C Rather than 2 C. *Science*, *360*(6390), pp. 791-795.

[209] Petit, J. R., J. Jouzel, D. Raynaud, N. I. Barkov, J. M. Barnola, I. Basile, ... & M. Stiévenard. (1999). Climate and Atmospheric History of the Past 420,000 Years from the Vostok Ice Core, Antarctica. *Nature*, *399*(6735), pp. 429-436; Brovkin, V., T. Brücher,, T. Kleinen, S. Zaehle, F. Joos, R. Roth, ... & D. D. Jensen. (2016). Comparative Carbon Cycle Dynamics of the Present and Last Interglacial. *Quaternary Science Reviews*, *137*, pp. 15-32; Da, J., Y. G. Zhang, G. Li, X. Meng & J. Ji. (2019). Low $CO_2$ Levels of the Entire Pleistocene Epoch. *Nature Communications*, *10*(1), p. 4342.

[210] Van Nes, E. H., M. Scheffer, V. Brovkin, T. M. Lenton, H. Ye, E. Deyle, & G. Sugihara. (2015). Causal Feedbacks in Climate Change. *Nature Climate Change*, *5*(5), pp. 445-448.

cannot be reproduced based only on the role of Total Solar Irradiance ("TSI") without accounting for the dominant factor, anthropogenic greenhouse gas forcing.[211] The alternative TSI record[212] that the report's authors claim has been overlooked was in fact examined in scientific literature and not found plausible.[213] Regardless, the choice of TSI record does not change the overall weight of scientific evidence that anthropogenic fossil fuel-burning is causing climate change. It is impossible to explain those changes absent anthropogenic greenhouse gas emissions.

Similarly, the Urban Heat Island ("UHI") effect has a relatively small global impact, especially when compared to anthropogenic greenhouse gas forcing, with greater relevance on a localized scale. The scientific community has accounted for the UHI effect when studying temperature trends by isolating and mitigating its influence on their conclusions, such as by using statistical models to produce specialized datasets that exclude or adjust urban data to account for outliers as compared to rural data or for weather conditions when the UHI effect is less pronounced.[214] Moreover, the fastest warming areas of the world are remote, not urban (*i.e.*, the Arctic and Antarctic),[215] where the UHI effect has no role. Additionally, the majority of the Earth's surface area is ocean—where UHI is similarly irrelevant—and satellite records of sea surface

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[211] Ziskin, S., & N. J. Shaviv. (2012). Quantifying the Role of Solar Radiative Forcing Over the 20th Century. *Advances in Space Research*, 50(6), pp. 762-776; Meehl, G. A., W. M. Washington, C. M. Ammann, J. M. Arblaster, T. M. L. Wigley, & C. Tebaldi. (2004). Combinations of Natural and Anthropogenic Forcings in Twentieth-Century Climate. *Journal of Climate*, *17*(19), pp. 3721-3727.

[212] Connolly, R., W. Soon, M. Connolly, S. Baliunas, J. Berglund, C. J. Butler, ... & W. Zhang. (2021). How Much Has the Sun Influenced Northern Hemisphere Temperature Trends? An Ongoing Debate. *Research in Astronomy and Astrophysics*, *21*(6), p. 131.

[213] Chatzistergos, T. (2024). A Discussion of Implausible Total Solar-Irradiance Variations Since 1700. *Solar Physics*, *299*(2), p. 21.

[214] E.g., Hansen, J., R. Ruedy, M. Sato, M. Imhoff, W. Lawrence, D. Easterling, ... & T. Karl. (2001). A Closer Look at United States and Global Surface Temperature Change. *Journal of Geophysical Research: Atmospheres*, *106*(D20), pp. 23947-23963; Jones, P. D., D. H. Lister, & Q. Li. (2008). Urbanization Effects in Large-Scale Temperature Records, with an Emphasis on China. *Journal of Geophysical Research: Atmospheres*, *113*(D16); Parker, D. E. (2010). Urban Heat Island Effects on Estimates of Observed Climate Change. *Wiley Interdiscip. Rev.: Clim. Change* 2010, *1*(1), pp. 123−133; Dienst, M., J. Lindén, Ò. Saladié, & J. Esper. (2019). Detection and Elimination of UHI Effects in Long Temperature Records from Villages–A Case Study from Tivissa, Spain. *Urban Climate*, *27*, pp. 372-383.

[215] Serreze, M. C., A. P. Barrett, J. C. Stroeve, D. N. Kindig, & M. M. Holland. (2009). The Emergence of Surface-Based Arctic Amplification. *The Cryosphere*, *3*(1), pp. 11-19; England, M. R., I. Eisenman, N. J. Lutsko, & T. J. Wagner. (2021). The Recent Emergence of Arctic Amplification. Geophysical Research Letters, *48*(15), e2021GL094086; Symon, C. (Ed.). (2005). *Arctic Climate Impact Assessment-Scientific Report*. Cambridge University Press.

temperatures and static air temperature show a clear trend in warming over the past several decades.[216] These factors demonstrate how the overall warming of the Earth is plainly robust beyond the UHI effect.

*Emissions Scenarios.* The proposal also briefly mentions what it characterizes as "misleading" emissions scenarios, citing to a more lengthy discussion in the Draft CWG Report. 90 Fed. Reg. at 36,308. The CWG's conclusions in this area are both irrelevant and wrong. Representative Concentration Pathways ("RCPs") are intended to allow comparison over a range of potential future rates of global warming. They are not intended to predict the most likely outcomes, nor do they conflict with the voluminous scientific evidence that the burning of fossil fuels is causing climate change.

The proposal's criticisms based on its and the CWG's assertion that RCP8.5 has been treated as a "business as usual" scenario are wrong. *See id.* In the paper detailing the creation of the RCP8.5 scenario, the authors note that it is a "high business as usual scenario" that reflects "assumptions of high population and slow technological progress on the higher end of the range of possible baseline scenarios."[217] The authors did not claim it was a representation of current policies. This has continued to be the case. The IPCC AR6 describes RCP8.5 as "very high greenhouse gas emission scenarios," not "business as usual" and is fully transparent where findings are based on RCP8.5 (or other scenarios), allowing readers to understand the assumptions that have gone into the assessment. Projections of impacts under RCP8.5 are not intended to predict the most likely outcomes, but rather to understand the implications of higher-end emissions pathways, and can help illuminate signals of impacts that may also occur to a lesser extent under lower emissions scenarios.

Indeed, extensive impacts are predicted under emissions scenarios well below RCP8.5. We are *already* experiencing harmful and far-reaching impacts from climate change, and those impacts are projected to continue becoming more severe in the coming years even on relatively low future emissions trajectories.[218] The proposal also parrots the Draft CWG Report's suggestion that actual emissions trajectories "have tracked the IPCC's more optimistic scenarios," but that too is wrong.

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[216] Huang, B., P. Thorne, V. Banzon, T. Boyer, G. Chepurin, J. Lawrimore, …, & Huai-Min Zhang. (2017). NOAA Extended Reconstructed Sea Surface Temperature (ERSST), Version 5. *NOAA National Centers for Environmental Information*. doi:10.7289/V5T72FNM.

[217] Riahi, K., S. Rao, V. Krey, C. Cho, V. Chirkov, G. Fischer, ... & P. Rafaj. (2011). RCP 8.5—A Scenario of Comparatively High Greenhouse Gas Emissions. *Climatic Change*, *109*(1), p. 33.

[218] Jay, A. K., Crimmins, A. R., Avery, C. W., Dahl, T. A., Dodder, R. S., Hamlington, B. D., Lustig, A., Marvel, K., Méndez-Lazaro, P. A., Osler, M. S., Terando, A., Weeks, E. S., & Zycherman, A. (2023). *Ch. 1. Overview: Understanding Risks, Impacts, and Responses*. In *Fifth National Climate Assessment* [A. R. Crimmins, C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, & T. K. Maycock (Eds.)]. U.S. Global Change Research Program. https://doi.org/10.7930/NCA5.2023.CH1.

In fact, as summarized in a recent scientific article:

> The literature on current policy scenarios has become increasingly robust in recent years, with a growing consensus that the central estimate of 21st century warming is now likely below 3°C. This reflects progress on both clean energy technologies and climate policies that has reduced the plausibility of high-emissions pathways, as well as a recognition that the higher end of emissions scenarios was never intended to represent the most likely no policy baseline outcome. However, it is difficult to fully preclude warming of 4°C or more under a current policy world if there are continued positive emissions after 2100 or if carbon cycle feedbacks and climate sensitivity are on the high end of current estimates in the literature. Current policy scenarios are a useful benchmark for assessing climate impacts and the effects of further mitigation, but should not be seen as either a ceiling or a floor on future warming outcomes.[219]

Furthermore, the proposal's discussion of actual emissions trajectories ignores the fact that these emissions would be higher without the very regulations that it now proposes to eliminate.

*b. Health risks from heat waves and other extreme weather events.*

*i. Extreme weather.*

The over-whelming consensus of peer-reviewed literature finds that human-induced greenhouse gas emissions have altered the weather patterns in the United States and globally and have affected the frequency, severity, or other characteristics of many extreme weather events. The effects are not homogeneous—different types of weather events in different places are impacted in different ways—but there is strong scientific evidence for many. The proposal again only briefly mentions this issue, claiming that "extreme weather events have not demonstrably increased relative to historical highs," citing a more extended discussion in the Draft CWG Report. 90 Fed. Reg. at 36,309. But the data and arguments the Report makes to minimize the observed and projected trends for many types of extreme weather events are flawed, unsubstantiated or both.

Temperature extremes have the clearest climate change signals in the observational record. Since 1950, hot extremes have very likely increased in both frequency and intensity across North America, while cold extremes have correspondingly decreased.[220] Human-induced greenhouse

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[219] Hausfather, Z. (2025). An Assessment of Current Policy Scenarios Over the 21st Century and the Reduced Plausibility of High-Emissions Pathways. *Dialogues on Climate Change*, *2*(1), pp. 26-32. https://doi.org/10.1177/29768659241304854 (Original work published 2025).

[220] Seong, M.-G., S.-K. Min, Y.-H. Kim, X. Zhang, & Y. Sun. (2021). Anthropogenic Greenhouse Gas and Aerosol Contributions to Extreme Temperature Changes during 1951–2015. *Journal of Climate*, *34*, pp. 857–870, https://doi.org/10.1175/JCLI-D-19-1023.1; Dunn, R. J. H. et al. 2020: Development of an Updated Global Land In Situ-Based Data Set of Temperature and

gas emissions are very likely the main driver of these observed changes. Individual heatwave metrics may not show consistent trends across all regions, but combined measures of frequency, magnitude, and duration demonstrate clear upward trends.[221] Recent research indicates that heatwaves are now seven times more likely than 40 years ago, are substantially hotter, and affect larger geographical areas, primarily due to baseline global warming that is altering fundamental weather patterns across the United States.[222]

There is robust evidence that rainfall rates from tropical cyclones and hurricanes have increased due to global warming. In addition, human-caused greenhouse gas emissions have increased the probability of tropical cyclones reaching major intensity, have caused more frequent rapidly intensifying tropical cyclones, and have slowed hurricane track speeds over the United States.[223] These factors can increase the severity of damages to society. As mentioned above, the Draft CWG Report authors cherry-pick specific geographies and time domains to support misleading statements. For example, although (as the Draft CWG Report notes) no clear trend exists so far in the frequency of landfalling hurricanes specifically affecting the United States, hurricane

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Precipitation Extremes: HadEX3. *JGR Atmospheres*, *125*, e2019JD032263. https://doi.org/10.1029/2019JD032263.

[221] Keellings, D. & Moradkhani, H. (2020). Spatiotemporal Evolution of Heat Wave Severity and Coverage Across the United States. *Geophysical Research Letters*, *47*(9), e2020GL087097. https://doi.org/10.1029/2020gl087097.

[222] Rogers, C.D.W., Kornhuber, K., Perkins-Kirkpatrick, S.E., Loikith, P.C. & Singh, D. (2021). Six-fold Increase in Historical Northern Hemisphere Concurrent Large Heatwaves Driven by Warming and Changing Atmospheric Circulations. *J. Clim., 34*, pp. 715–36, https://doi.org/10.1175/JCLI-D-21-0200.1. *See also* Quilcaille, Y., Gudmundsson, L., Schumacher, D.L. et al. (2025). Systematic Attribution of Heatwaves to the Emissions of Carbon Majors. *Nature*, *645*, pp. 392–398. https://doi.org/10.1038/s41586-025-09450-9.

[223] Gilford, D. M., Giguere, J., & Pershing, A. J. (2024). Human-Caused Ocean Warming Has Intensified Recent Hurricanes. *Environmental Research: Climate*, *3*(4), 045019; Kishtawal, C. M., N. Jaiswal, R. Singh, & D. Niyogi. (2012). Tropical Cyclone Intensification Trends During Satellite Era (1986–2010). *Geophysical Research Letters*, 39, 2012GL051700, https://doi.org/10.1029/2012GL051700; Hall, T. M. & J. P. Kossin. (2019). Hurricane Stalling Along the North American Coast and Implications for Rainfall. *npj Clim Atmos Sci*, *2*, p. 17. https://doi.org/10.1038/s41612-019-0074-8; Kossin, J. P.. (2019). Reply to: Moon, I.-J. et al.; Lanzante, J. R. *Nature*, *570*, pp. E16–E22, https://doi.org/10.1038/s41586-019-1224-1; Bhatia, K. T., G. A. Vecchi, T. R. Knutson, H. Murakami, J. Kossin, K. W. Dixon, & C. E. Whitlock. (2019). Recent Increases in Tropical Cyclone Intensification Rates. *Nat Commun*, *10*, p. 635, https://doi.org/10.1038/s41467-019-08471-z; Kossin, J. P., K. R. Knapp, T. L. Olander & C. S. Velden. (2020). Global Increase in Major Tropical Cyclone Exceedance Probability Over the Past Four Decades. *PNAS*, *117*(22), pp. 11975-11980. https://doi.org/10.1073/pnas.1920849117.

activity in the North Atlantic basin has increased since the 1970s.[224] Furthermore, the Report highlights only selected metrics, ignoring the increasing probability of tropical cyclones reaching major intensity, more frequent rapidly intensifying tropical cyclones, and slowed tropical cyclone track speeds.[225]

The frequency, intensity, and/or total amount of rainfall from extreme precipitation events have increased across North America.[226] There is robust evidence that human-caused warming has contributed to increased frequency and severity of the heaviest precipitation events across 70% of the United States.[227] Mallakpour & Villarini (2015), Kunkel et al. (2020), and Davenport et al. (2021), provide robust evidence that rainfall frequency has increased across the continental United States since the 1950s, contributing to increased stream and river flooding.[228] This

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[224] Vecchi, G. A., C. Landsea, W. Zhang, G. Villarini, & T. Knutson. (2021). Changes in Atlantic Major Hurricane Frequency Since the Late-19th Century. *Nat Commun*, *12*, p. 4054. https://doi.org/10.1038/s41467-021-24268-5.

[225] Sobel, A. H., & Emanuel, K. A. (2025, May 19). Hurricane Risk in a Changing Climate — the Role of Uncertainty. *Nature*. https://doi.org/10.1038/d41586-025-01552-8.

[226] Sun, Q., X. Zhang, F. Zwiers, S. Westra, & L. V. Alexander. (2021). A Global, Continental, and Regional Analysis of Changes in Extreme Precipitation. *Journal of Climate*, *34*, pp. 243–258. https://doi.org/10.1175/JCLI-D-19-0892.1; Paik, S., S. Min, X. Zhang, M. G. Donat, A. D. King, & Q. Sun. (2020). Determining the Anthropogenic Greenhouse Gas Contribution to the Observed Intensification of Extreme Precipitation. *Geophysical Research Letters*, *47*, e2019GL086875, https://doi.org/10.1029/2019GL086875; Dunn, R. J. H. et al. (2020). Development of an Updated Global Land In Situ-Based Data Set of Temperature and Precipitation Extremes: HadEX3. *JGR Atmospheres*, 125, e2019JD032263, https://doi.org/10.1029/2019JD032263.

[227] Diffenbaugh, N. S., D. Singh, & J. S. Mankin. (2018): Unprecedented Climate Events: Historical Changes, Aspirational Targets, and National Commitments. *Sci. Adv.*, 4, eaao3354, https://doi.org/10.1126/sciadv.aao3354; Kirchmeier-Young, M. C., & X. Zhang. (2020). Human Influence Has Intensified Extreme Precipitation in North America. *Proc. Natl. Acad. Sci. U.S.A.*, *117*, pp. 13308–13313, https://doi.org/10.1073/pnas.1921628117.

[228] Mallakpour, I. & G. Villarini. (2015). The Changing Nature of Flooding Across the Central United States. *Nature Clim Change*, 5, pp. 250–254, https://doi.org/10.1038/nclimate2516.; Kunkel, K. E., T. R. Karl, M. F. Squires, X. Yin, S. T. Stegall, & D. R. Easterling. (2020). Precipitation Extremes: Trends and Relationships with Average Precipitation and Precipitable Water in the Contiguous United States. *Journal of Applied Meteorology and Climatology*, *59*, pp. 125–142, https://doi.org/10.1175/JAMC-D-19-0185.1; Davenport, F. V., M. Burke, & N. S. Diffenbaugh. (2021). Contribution of Historical Precipitation Change to US Flood Damages. *Proc. Natl. Acad. Sci. U.S.A.*, *118*, e2017524118, https://doi.org/10.1073/pnas.2017524118.

intensification of precipitation extremes is evident across various event durations as well as return intervals, particularly east of the Rocky Mountains.[229]

Drought conditions are also changing because drought is closely tied to temperature and precipitation, both of which are affected by global warming. Climate change amplifies drought conditions through atmospheric warming that enhances soil drying processes. Agricultural and ecological droughts have intensified on all continents, including North America, due to human-induced greenhouse gases.[230] Drought conditions are regional with robust trends evident in the southwestern United States, which is experiencing the driest soil moisture conditions in the past 1,200 years, along with decreased Colorado River streamflow.[231] These drought patterns interact with rising temperatures to create compounding stress on water resources and agricultural systems.

Fire weather conditions, characterized by compound hot, dry, and windy events, have already become more probable in some regions, and will become more frequent in certain areas as global warming intensifies.[232] This trend toward more dangerous fire weather intersects with drought

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[229] Dunn, R. J. H. et al. (2020). Development of an Updated Global Land In Situ-Based Data Set of Temperature and Precipitation Extremes: HadEX3. *JGR Atmospheres*, 125, e2019JD032263, https://doi.org/10.1029/2019JD032263.

[230] Greve, P., B. Orlowsky, B. Mueller, J. Sheffield, M. Reichstein, & S. I. Seneviratne. (2014). Global Assessment of Trends in Wetting and Drying Over Land. *Nature Geosci*, *7*, pp. 716–721, https://doi.org/10.1038/ngeo2247; Dai, A. & T. Zhao. (2017). Uncertainties in Historical Changes and Future Projections of Drought. Part I: Estimates of Historical Drought Changes. *Climatic Change*, *144*, pp. 519–533, https://doi.org/10.1007/s10584-016-1705-2; Spinoni, J. et al. (2019). A New Global Database of Meteorological Drought Events from 1951 to 2016. *Journal of Hydrology: Regional Studies*, *22*, 100593, https://doi.org/10.1016/j.ejrh.2019.100593; Williams, A. P., J. T. Abatzoglou, A. Gershunov, J. Guzman-Morales, D. A. Bishop, J. K. Balch, & D. P. Lettenmaier. (2019). Observed Impacts of Anthropogenic Climate Change on Wildfire in California. *Earth's Future*, *7*, pp. 892–910, https://doi.org/10.1029/2019EF001210.

[231] Udall, B. & J. Overpeck. (2017). The Twenty-First Century Colorado River Hot Drought and Implications for the Future. *Water Resources Research*, *53*, pp. 2404–2418, https://doi.org/10.1002/2016WR019638; Milly, P. C. D. & K. A. Dunne. (2020). Colorado River Flow Dwindles as Warming-driven Loss of Reflective Snow Energizes Evaporation. *Science*, *367*, pp. 1252–1255, https://doi.org/10.1126/science.aay9187.

[232] Jolly, W. M., M. A. Cochrane, P. H. Freeborn, Z. A. Holden, T. J. Brown, G. J. Williamson, & D. M. J. S. Bowman. (2015). Climate-Induced Variations in Global Wildfire Danger from 1979 to 2013. *Nat Commun*, *6*, p. 7537, https://doi.org/10.1038/ncomms8537; Abatzoglou, J. T. & A. P. Williams. (2016). Impact of Anthropogenic Climate Change on Wildfire Across Western US Forests. *Proc. Natl. Acad. Sci. U.S.A.*, *113*, pp. 11770–11775, https://doi.org/10.1073/pnas.1607171113; Williams, A. P., J. T. Abatzoglou, A. Gershunov, J. Guzman-Morales, D. A. Bishop, J. K. Balch, & D. P. Lettenmaier. (2019). Observed Impacts of Anthropogenic Climate Change on Wildfire in California. *Earth's Future*, *7*, pp. 892–910,

and temperature extremes to create heightened wildfire risk across multiple regions. For example, in the United States, the *high severity* burned area has significantly increased across most ecoregions over the past several decades, with an eightfold increase observed in the Western U.S., and this increase is linked to warmer and drier fire seasons.[233] It is very likely that negative impacts of fire will worsen in the future due to climate change.[234]

The increasing likelihood of compound events, where multiple extremes occur simultaneously or in sequence, often produces impacts that exceed the sum of individual extreme events, exacerbating risks. Concurrent heatwaves and droughts are becoming more likely, with strong evidence that human-caused climate change has increased the probability of such compound events.[235] Increasing frequency of events can compound deleterious effects. For example, mortality effects for each hurricane can persist for 15 years[236]; therefore, each additional hurricane's impacts potentially compound on top of previous storms. These combinations create particularly severe stress on infrastructure, ecosystems, and human communities, as systems designed to handle individual extremes may fail under compound stresses.

The evaluation of evidence across multiple types of extreme weather events reveals a climate system in transition, where human-induced greenhouse gas emissions are driving fundamental changes in atmospheric and hydrological processes. While confidence levels vary by

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https://doi.org/10.1029/2019EF001210; Abatzoglou, J. T., D. S. Battisti, A. P. Williams, W. D. Hansen, B. J. Harvey, & C. A. Kolden. (2021). Projected Increases in Western US Forest Fire Despite Growing Fuel Constraints. *Commun Earth Environ*, *2*, 227, https://doi.org/10.1038/s43247-021-00299-0.

[233] Parks & Abatzoglou. (2020). Warmer and Drier Fire Seasons Contribute to Increases in Area Burned at High Severity in Western US Forests From 1985 to 2017. *Geophysitcal Research Letters*, https://doi.org/10.1029/2020GL089858.

[234] Halofsky, J.E., Peterson, D.L. & Harvey, B.J. (2020). Changing Wildfire, Changing Forests: The Effects of Climate Change on Fire Regimes and Vegetation in the Pacific Northwest, USA. *Fire Ecol*, *16*, p. 4. https://doi.org/10.1186/s42408-019-0062-8.

[235] Diffenbaugh, N. S., D. Singh, & J. S. Mankin. (2018). Unprecedented Climate Events: Historical Changes, Aspirational Targets, and National Commitments. *Sci. Adv.*, 4, eaao3354, https://doi.org/10.1126/sciadv.aao3354; Zscheischler, J. & S. I. Seneviratne. (2017). Dependence of Drivers Affects Risks Associated with Compound Events. *Sci. Adv.*, 3, e1700263, https://doi.org/10.1126/sciadv.1700263; Herrera-Estrada, J. E. & J. Sheffield. (2017). Uncertainties in Future Projections of Summer Droughts and Heat Waves over the Contiguous United States. *J. Climate*, *30*, pp. 6225–6246, https://doi.org/10.1175/JCLI-D-16-0491.1; Sarhadi, A., M. C. Ausín, M. P. Wiper, D. Touma, & N. S. Diffenbaugh. (2018). Multidimensional Risk in a Nonstationary Climate: Joint Probability of Increasingly Severe Warm and Dry Conditions. *Sci. Adv.*, 4, eaau3487, https://doi.org/10.1126/sciadv.aau3487.

[236] Young, R. & Hsiang, S. (2024). Mortality Caused by Tropical Cyclones in the United States. *Nature*, *635*, pp. 121–128. https://doi.org/10.1038/s41586-024-07945-5.

phenomenon and region, the overall pattern demonstrates a clear shift toward more intense heat, heavier precipitation events, more powerful storms, and increasingly complex interactions between different types of extremes. This evolving extreme weather landscape poses significant challenges for infrastructure design, ecosystem management, and human adaptation strategies, underscoring the critical importance of both greenhouse gas mitigation and comprehensive climate adaptation planning in policy and decision-making processes.

As noted above, the authors of the Draft CWG Report selectively cite parts of IPCC AR6 and National Climate Assessments NCA4 and NCA5 but ignore consensus in those reports as well as in the broader scientific literature. The Draft CWG Report is self-contradictory: it argues that there are limitations of using short data records for analyses (*e.g.*, p. 63, Box: Perils of short data records), but then presents analyses that rely on short datasets (*e.g.*, p. 70, Fig. 6.8.1), even when there are longer relevant datasets available.[237] The CWG selects the limited data that seemingly supports its claims but ignores the more complete set of data that together provides a coherent picture that often contradicts or provides key context for those claims. For example, the Draft CWG Report uses only USHCN temperature data (Fig. 6.3.3) for temperature analysis; uses one location from the Nile River (Fig. 6.1.1) to generalize that there is no trend in extreme precipitation in the United States; and uses selective precipitation monitoring stations (Fig. 6.4.1)—all of which are either wrong or misleading.

Extreme temperatures, extreme precipitation, droughts, and wildfires occur on specific spatial and temporal scales, and analysis must be done accordingly. The Draft CWG Report selectively uses metrics that are inappropriate for the context, such as averages over the U.S. or globally, which are designed to obscure the signals that exist for certain sub-areas. For example, the Draft CWG Report averages heatwave data over the Continental U.S., the West and Central-east and shows precipitation events averaged across the Pacific coast, p. 64, Fig. 6.4.2, but precipitation and heat variability are generally large over such a wide spatial area,[238] so should not be

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[237] *See, e.g.*, van Marle, M. J. E., Kloster, S., Magi, B. I., Marlon, J. R., Daniau, A.-L., Field, R. D., Arneth, A., Forrest, M., Hantson, S., Kehrwald, N. M., Knorr, W., Lasslop, G., Li, F., Mangeon, S., Yue, C., Kaiser, J. W., and van der Werf, G. R.: Historic global biomass burning emissions for CMIP6 (BB4CMIP) based on merging satellite observations with proxies and fire models (1750–2015), Geosci. Model Dev., 10, 3329–3357, https://doi.org/10.5194/gmd-10-3329-2017, 2017.; Otón, G.; Pereira, J.M.C.; Silva, J.M.N.; Chuvieco, E. Analysis of Trends in the FireCCI Global Long Term Burned Area Product (1982–2018). Fire 2021, 4, 74.

[238] *See, e.g.*, Neiman, P. J., F. M. Ralph & G. A. Wick. (2008). Meteorological Characteristics and Overland Precipitation Impacts of Atmospheric Rivers Affecting the West Coast of North America Based on Eight Years of SSM/I Satellite Observations. Journal of Hydrometeorology, 9, pp. 24-47. doi:10.1175/JHM855.1; Guirguis, K., A. Gershunov, M. J. DeFlorio, T. Shulgina, L. Delle Monache, A. C. Subramanian, T. W. Corringham & F. M. Ralph. (2020). Four Atmospheric Circulation Regimes Over the North Pacific and Their Relationship to California Precipitation on Daily to Seasonal Timescales. *Geophysical Research Letters*, *47*, e2020GL087609. https://doi.org/10.1029/2020GL087609; Guirguis, K., Gershunov, A., DeFlorio, M. J., Shulgina, T., Delle Monache, L., Subramanian, A. C., et al. (2020). Four atmospheric circulation regimes over the North Pacific and their relationship to California precipitation on

evaluated as a mean, which would obscure relevant events. Similarly, on p. 69, Fig. 6.7.1, monthly percentages of "Very Dry" show no trend over the entire U.S., but that is because drought is very regional.[239] On p. 70, Fig. 6.8.1 shows *global* statistics of wildfires, but observational records have shown that wildfires have increased in the western U.S.[240] The report likewise exhibits temporal mismatches in scale, such as through its inappropriate use of 5-day precipitation totals as a metric for extreme precipitation events when such events often occur on 1-2 day time scales.[241] By emphasizing only global area burned, the Draft CWG Report also obfuscates the finding that global frequency of extreme wildfires has increased over two-fold over the past twenty years.[242]

*ii. Limitations to risk management and adaptation.*

The proposal's characterization of the manageability of extreme weather risks, relying upon the Draft CWG Report, is unsupported by scientific studies and ignores the limits of adaptive responses to climate change—not to mention the damage to U.S. adaptation and resilience capabilities inflicted by the current Administration's dismantling of, interference with, and reduction in funding for relevant programs at the U.S. National Oceanic and Atmospheric Administration ("NOAA"), National Science Foundation ("NSF"), and other agencies and institutions.

Risk is a function of the hazard, vulnerability and exposure to the hazard. For extreme weather, this includes not just physical hazard from the climate system but also social factors such as socioeconomic development, physical and social vulnerabilities, and cultural norms and practices.[243] The Draft CWG Report relies solely on Billion Dollar Disasters as a metric for

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daily to seasonal timescales. *Geophysical Research Letters*, 47, e2020GL087609. https://doi.org/10.1029/2020GL087609 (noting examples of regionally specific precipitation drivers along different parts of the Pacific Coast).

[239] Spinoni, J. et al.. (2019) A New Global Database of Meteorological Drought Events from 1951 to 2016. *Journal of Hydrology: Regional Studies*, *22*, 100593. https://doi.org/10.1016/j.ejrh.2019.100593.

[240] Westerling, A. L., H. G. Hidalgo, D. R. Cayan, & T. W. Swetnam. (2006). Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity. *Science*, *313*, pp. 940–943, https://doi.org/10.1126/science.1128834; Dennison, P. E., S. C. Brewer, J. D. Arnold, & M. A. Moritz. (2014). Large Wildfire Trends in the Western United States, 1984–2011. *Geophysical Research Letters*, *41*, pp. 2928–2933, https://doi.org/10.1002/2014GL059576.

[241] O'Gorman, P. A.. (2015). Precipitation Extremes Under Climate Change. *Curr Clim Change Rep*, *1*, pp. 49–59. https://doi.org/10.1007/s40641-015-0009-3.

[242] Cunningham et al. (2024). Increasing Frequency and Intensity of the Most Extreme Wildfires on Earth. *Nat. Ecology& Evolution*, *8*, pp. 1420-1425. https://doi.org/10.1038/s41559-024-02452-2.

[243] Ara Begum, R., R. Lempert, E. Ali, T.A. Benjaminsen, T. Bernauer, W. Cramer, X. Cui, K. Mach, G. Nagy, N.C. Stenseth, R. Sukumar, & P. Wester. (2022). Point of Departure and Key

evaluating extreme weather impacts, disregarding the numerous other data sources and metrics used to estimate societal damage such as morbidity,[244] mortality,[245] crop yields,[246] and satellite imagery of floods.[247] The Report's authors demonstrate an incomplete and flawed understanding of the impacts of extreme weather, for example stating that "Mortality during heat extremes is typically caused by heat stroke and heat exhaustion" (p. 112), when in reality, deaths from extreme temperatures can result from a broad range of causes, including cardiovascular, respiratory and mental diseases.[248] And the Draft CWG Report misleadingly cites a 2015 study regarding trends in cold- and heat-related deaths without including a follow-up study finding that absent deep and rapid emission reductions, increased heat-related deaths will outpace reduction in cold-related deaths.[249] The proposal restates the Draft CWG Report's flawed and arbitrary claim. 90 Fed. Reg. at 36,308.

Risks from extreme weather are already impacting every aspect of American life. The two main strategies to reduce risk are mitigation and adaptation. Mitigation strategies involve reducing emission of greenhouse gases—for example, by adopting declining greenhouse gas standards for vehicle emissions—thereby addressing the root cause of the increasing hazards. Adaptation focuses on measures that reduce people's vulnerability and exposure to the hazards—for

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Concepts. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 121–196. doi:10.1017/9781009325844.003.

[244] Baker, R.E., Mahmud, A.S., Miller, I.F. et al. (2022). Infectious Disease in an Era of Global Change. *Nat Rev Microbiol*, *20*, pp. 193–205. https://doi.org/10.1038/s41579-021-00639-z.

[245] Ebi, K. L., J. Vanos, J. W. Baldwin, J. E. Bell, D. M. Hondula, N. A. Errett, K. Hayes, C. E. Reid, S. Saha, J. Spector & P. Berry. (2021). Extreme Weather and Climate Change: Population Health and Health System Implications. *Annu Rev Public Health*, *42*, pp. 293-315. doi: 10.1146/annurev-publhealth-012420-105026.

[246] Kuwayama, Y., A. Thompson, R. Bernknopf, B. Zaitchik & P. Vail. (2019). Estimating the Impact of Drought on Agriculture Using the US Drought Monitor *Am. J. Agric. Environ.*, *101*, pp. 193–210.

[247] Tellman, B., Sullivan, J.A., Kuhn, C. et al. (2021). Satellite Imaging Reveals Increased Proportion of Population Exposed to Floods. *Nature*, *596*, pp. 80–86. https://doi.org/10.1038/s41586-021-03695-w.

[248] Ma Y., L. Zhou, K. Chen. (2020). Burden of Cause-Specific Mortality Attributable to Heat and Cold: A Multicity Time-Series Study in Jiangsu Province, China, *Environment International*, *144*. https://doi.org/10.1016/j.envint.2020.105994.

[249] Gasparrini, A., Guo, Y., Sera, F., Vicedo-Cabrera, A. M., Huber, V., Tong, S., ... & Armstrong, B. (2017). Projections of Temperature-Related Excess Mortality Under Climate Change Scenarios. *The Lancet Planetary Health*, *1*(9), pp. e360-e367.

example, changing buildings to withstand flooding and fires or planting drought-resilient crops. Both strategies are necessary to address climate risks.[250]

The proposal faults the Endangerment Finding for failing to consider adaptation, and suggests that doing so would ameliorate the risks from extreme weather. As a threshold matter, the D.C. Circuit has rejected nearly identical claims that the Endangerment Finding failed to consider adaptation as "foreclosed by the language of the statute and the Supreme Court's decision in *Massachusetts v. EPA*."[251] In any event, the discussion in the Draft CWG Report wrongly assumes that adaptation alone will be sufficient to reduce the risks from extreme weather. But even if adaptation strategies may reduce damage somewhat, the evidence shows that this is not occurring fast enough in relation to climate change,[252] and adaptation measures can be complicated and expensive. As extreme weather events become more frequent, impacts can compound if recovery is still in progress before the next event.[253] Climate change is increasing the likelihood of cascading risks—for example high temperatures that lead to drought, crop failures, malnutrition, and increased vulnerability to infectious diseases.[254] If climate change continues without sufficient abatement, we will hit hard limits to adaptation. Hard limits are physical limits when adaptation to manage risks is no longer is possible. Evidence suggests that the climate will cross such limits by mid-century, including extreme heat thresholds (wet bulb

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[250] Lawler, J. J., B. Spencer, J. D. Olden, S. H. Kim, C. Lowe, S. Bolton, B. M. Beamon, L. Thompson, J. G. Voss. (2013). Mitigation and Adaptation Strategies to Reduce Climate Vulnerabilities and Maintain Ecosystem Services. *Climate Vulnerability*, pp. 315–35. doi: 10.1016/B978-0-12-384703-4.00436-6; Gupta, A., Shukla, A.K. (2024). Optimal Approaches in Global Warming Mitigation and Adaptation Strategies at City Scale. *Discov Sustain*, *5*, p. 272. https://doi.org/10.1007/s43621-024-00497-8.

[251] *Coalition for Responsible Regulation*, 684 F.3d at 118 (concluding that "predicting society's adaptive response to the dangers or harms caused by climate change—do[es] not inform the 'scientific judgment' that § 202(a)(1) requires of EPA").

[252] Parker, L.E., A.J. McElrone, S.M. Ostoja, E.J. Forrestel. (2020). Extreme Heat Effects on Perennial Crops and Strategies for Sustaining Future Production. *Plant Science*, *295*, p.110397. https://doi.org/10.1016/j.plantsci.2019.110397; Brown, T. C., Mahad V. & Ramirez J. A. (2019). Adaptation to Future Water Shortages in the United States Caused by Population Growth and Climate Change. *Earth's Future*, *7*, pp. 219–34. https://doi.org/10.1029/2018EF001091; Ebi, K. L. (2024). Understanding the Risks of Compound Climate Events and Cascading Risks. *Dialogues on Climate Change*, *2*(1), pp. 33-37. https://doi.org/10.1177/29768659241304857.

[253] Young, R., Hsiang, S. (2024). Mortality Caused by Tropical Cyclones in the United States. *Nature*, *635*, pp. 121–128. https://doi.org/10.1038/s41586-024-07945-5.

[254] Semenza, J.C., Rocklöv, J. & Ebi, K.L. (2022). Climate Change and Cascading Risks from Infectious Disease. *Infect Dis Ther*, *11*, pp. 1371–1390. https://doi.org/10.1007/s40121-022-00647-3.

temperatures over 35°C) that are intolerable to the human body[255] and islands made uninhabitable due to sea level rise and lack of fresh water.[256]

*c. Sea level rise.*

Sea level rise due to thermal expansion of seawater and melting of land-based ice is one of the most predictable and robust effects of warming temperatures. Observations confirm that with some local variability, sea levels are rising globally including in the United States.[257] Global mean sea level rose faster in the 20th century than in any prior century over the last three millennia and has further accelerated since the late 1960s.[258]

The proposal addresses sea level rise in a series of conclusory and generalized statements suggesting sea level rise has been minimal and recent data suggest it is not as concerning as predicted in the Endangerment Finding. 90 Fed. Reg. at 36,309. As in other areas the proposal relies heavily on the Draft CWG Report. That Report's conclusion that "U.S. tide gauge measurements reveal no obvious acceleration beyond the historical average rate of sea level rise" is arbitrary, unsupported by scientific consensus, and relies on the authors' flawed and selective use of a subset of data that favors the authors' conclusions. Even so, the Report's authors do not dispute the fact that sea level is on the whole rising.

The current observational record is complemented by evidence of large changes in sea level associated with climate changes in the past. During the Last Glacial Maximum, global mean sea

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[255] Raymond, C., Matthews, T., Horton, R. M. (2020) The Emergence of Heat and Humidity Too Severe for Human Tolerance. *Sci. Adv.*, *6*, eaaw1838. DOI:10.1126/sciadv.aaw1838.

[256] Kane H. H., Fletcher C. H. (2020). Rethinking Reef Island Stability in Relation to Anthropogenic Sea Level Rise. *Earth's Futures*, *8*, e2020EF001525. https://doi.org/10.1029/2020EF001525.

[257] Kopp, R. E., Kemp, A. C., Bittermann, K., Horton, B. P., Donnelly, J. P., Gehrels, W. R., ... & Rahmstorf, S. (2016). Temperature-Driven Global Sea-Level Variability in the Common Era. *Proceedings of the National Academy of Sciences*, *113*(11), E1434-E1441; Wang, J., Church, J.A., Zhang, X. & Chen, X. (2021). Reconciling Global Mean and Regional Sea Level Change in Projections and Observations. *Nature Communications*, *12*(1), p. 990; Dangendorf, S., Sun, Q., Wahl, T., Thompson, P., Mitrovica, J. X., & Hamlington, B. (2024). Probabilistic Reconstruction of Sea-Level Changes and their Causes since 1900. *Earth System Science Data Discussions*, 2024, pp. 1-37.

[258] Fox-Kemper, B., H.T. Hewitt, C. Xiao, G. Aðalgeirsdóttir, S.S. Drijfhout, T.L. Edwards, N.R. & Y. Yu, (2021). Ocean, Cryosphere and Sea Level Change. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1211–1362, doi: 10.1017/9781009157896.011.

level was 400 feet below current levels.[259] Millions of years ago during the Pliocene Epoch, when atmospheric $CO_2$ concentrations were comparable to current concentrations, global mean sea level ranged between 15 to 100 feet above current levels.[260] Furthermore, satellite altimetry and observations of land ice changes and ocean heat corroborate the conclusion of global mean sea level rise and acceleration.[261]

Local effects on sea level rise due to ocean circulation, glacial isostatic rebound, and local land compaction are well known and discussed in the literature.[262] Therefore, an understanding of sea level rise and projections is necessarily based on multiple datasets. On the East Coast of the U.S., nearly all sites show acceleration, and this acceleration is statistically significant over the Gulf Coast and Southeast Coast.[263] The lower rates of sea level rise and lack of acceleration on the west coast of the United States are not underreported, despite the Draft CWG Report's claims. These phenomena are well known and are explained by uplift at the Cascadia subduction zone and glacial isostatic rebound (lower overall rates), and multidecadal climate variability (lack of

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[259] Clark, P. U., He, F., Golledge, N. R., Mitrovica, J. X., Dutton, A., Hoffman, J. S., & Dendy, S. (2020). Oceanic Forcing of Penultimate Deglacial and Last Interglacial Sea-Level Rise. *Nature*, *577*(7792), pp. 660-664.

[260] Dumitru, O., Austermann, J., Polyak, V. J., Fornós, J. J., Asmerom, Y., Ginés, J., Ginés, A., & Onac, B. P. (2019). Constraints on Global Mean Sea Level During Pliocene Warmth. *Nature*, *574*, pp. 233–236. https://doi.org/10.1038/s41586-019-1543-2; Lisiecki, L. E. & Raymo, M. E. (2005). A Pliocene-Pleistocene Stack of 57 Globally Distributed Benthic δ18O Records. *Paleoceanography*, *20*, PA1003.

[261] Guérou, A., Meyssignac, B., Prandi, P., Ablain, M., Ribes, A., & Bignalet-Cazalet, F. (2023). Current Observed Global Mean Sea Level Rise and Acceleration Estimated from Satellite Altimetry and the Associated Measurement Uncertainty. *Ocean Science*, *19*(2), pp. 431-451; Otosaka, I. N., Shepherd, A., Ivins, E. R., Schlegel, N. J., Amory, C., van den Broeke, M., ... & Wouters, B. (2022). Mass Balance of the Greenland and Antarctic Ice Sheets from 1992 to 2020. *Earth System Science Data Discussions*, *2022*, pp. 1-33; Hugonnet, R., McNabb, R., Berthier, E., Menounos, B., Nuth, C., Girod, L., ... & Kääb, A. (2021). Accelerated Global Glacier Mass Loss in the Early Twenty-First Century. *Nature*, *592*(7856), pp. 726-731.

[262] Guérou, A., Meyssignac, B., Prandi, P., Ablain, M., Ribes, A., & Bignalet-Cazalet, F. (2023). Current Observed Global Mean Sea Level Rise and Acceleration Estimated from Satellite Altimetry and the Associated Measurement Uncertainty. *Ocean Science*, *19*(2), pp. 431-451; Otosaka, I. N., Shepherd, A., Ivins, E. R., Schlegel, N. J., Amory, C., van den Broeke, M., ... & Wouters, B. (2022). Mass Balance of the Greenland and Antarctic Ice Sheets from 1992 to 2020. *Earth System Science Data Discussions*, *2022*, pp. 1-33; Hugonnet, R., McNabb, R., Berthier, E., Menounos, B., Nuth, C., Girod, L., ... & Kääb, A. (2021). Accelerated Global Glacier Mass Loss in the Early Twenty-First Century. *Nature*, *592*(7856), pp. 726-731.

[263] Dangendorf, S., Hendricks, N., Sun, Q., Klinck, J., Ezer, T., Frederikse, T., ... & Törnqvist, T. E. (2023). Acceleration of US Southeast and Gulf Coast Sea-level Rise Amplified by Internal Climate Variability. *Nature Communications*, *14*(1), p. 1935.

acceleration).[264] This does not somehow disprove that the other processes contributing to sea level changes are occurring, or that there is a net rise in sea levels.

However, as in other areas, the Draft CWG Report selects a small subset of data to fit its predetermined conclusions. Here, the authors pick five sites out of many in the United States, show the tide gauge data for four them and, on that basis, state that sea level rise is not accelerating. The authors provide no statistical analysis and no explanation for disregarding the NOAA sea level rise projections for the New York site. The tide gauge data from the fifth site in Florida appears to show acceleration but the actual data was not included in the Draft CWG Report. It is impossible to make a scientifically sound conclusion based on specific sites taken out of a statistically meaningful context and without analysis. The authors do not provide any justification for drawing conclusions from inherently subjective observations while ignoring more rigorous analytical methodologies and do not contravene the extensive data documenting that sea level is rising and projected to rise further.

*d. Model inputs/assumptions.*

Global climate models remain a focus of intense scientific research and refinement. Model results undergo rigorous study—both within a particular model and across groups of independently developed models—and are compared with observations where possible. Models deepen our understanding of the climate system and the impacts of human activities. However, Chapter 5 of the Draft CWG Report inappropriately suggests that studies of model performance undercut the attribution of climate changes to anthropogenic drivers and the projections of future climate changes under potential future emission scenarios. For example, while CMIP6 models show larger tropospheric warming trends than several observational products for particular periods, several independent studies demonstrate that this is explained by (a) observational uncertainties and dataset versions (radiosonde and satellite homogenization, diurnal-cycle corrections, and stratospheric contamination of tropospheric retrievals), (b) internal decadal variability and the distinction between ensemble means versus individual realizations, and (c) uncertain historical forcings, especially aerosols and post-2000 forcing updates.[265] Contrary to

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[264] Harvey, T. C., Hamlington, B. D., Frederikse, T., Nerem, R. S., Piecuch, C. G., Hammond, W. C., ... & Boening, C. (2021). Ocean Mass, Sterodynamic Effects, and Vertical Land Motion Largely Explain US Coast Relative Sea Level Rise. *Communications Earth & Environment*, *2*(1), p. 233; Burgette, R. J., Weldon, R. J., & Schmidt, D. A. (2009). Interseismic Uplift Rates for Western Oregon and Along-strike Variation in Locking on the Cascadia Subduction Zone. *Journal of Geophysical Research: Solid Earth*, *114*(B1); Hamlington, B. D., Gardner, A. S., Ivins, E., Lenaerts, J. T., Reager, J. T., Trossman, D. S., ... & Willis, M. J. (2020). Understanding of Contemporary Regional Sea-Level Change and the Implications for the Future. *Reviews of Geophysics*, *58*(3), e2019RG000672.

[265] E.g., Po-Chedley, S., Thorsen, T. J., & Fu, Q. (2015). Removing Diurnal Cycle Contamination in Satellite-derived Tropospheric Temperatures: Understanding Tropical Tropospheric Trend Discrepancies. *Journal of Climate*, *28*(6), pp. 2274-2290; Santer, B. D., Solomon, S., Pallotta, G., Mears, C., Po-Chedley, S., Fu, Q., ... & Bonfils, C. (2017). Comparing Tropospheric

the implications presented in Chapter 5, the CMIP6 model outputs do not diminish scientific confidence in the influence of human activity in driving climate change. Rather, they have enhanced our understanding of the climate system's complexity and feedback mechanisms while affirming the role of anthropogenic forcing.

Climate models are tools that can inform expectations of the earth system and key variables under a range of future conditions. Their results have repeatedly been shown to be scientifically robust. Major assessments (*e.g.*, Eyring et al. 2021) conclude that multiple independent lines of evidence (*e.g.*, fingerprinting including stratospheric cooling, ocean heat uptake, paleoclimate and energy-budget constraints) robustly support a large anthropogenic contribution to observed global warming consistent with model results.[266] Moreover, previous generations of climate models accurately forecasted future changes: Hausfather et al. (2019) compared observations to previous projections by models and found that when accounting for actual climate forcings, 14 of 17 models were within the applicable uncertainty ranges of the true warming value.[267]

Ultimately, as described above, climate models have been good predictors of actual warming. Discrepancies between model and observational data are expected and explainable, and enable deeper understanding of the climate system. Evidence from multiple independent global modeling efforts continues to support the well-established attribution of recent warming to anthropogenic greenhouse gases, which the Draft CWG Report authors themselves recognize in Chapter 3. None of the information presented in Chapter 5 refutes this conclusion.

*e. Attribution to anthropogenic emissions.*

*i. Climate sensitivity to emissions.*

The Draft CWG Report authors examine recent debates of climate sensitivity estimates with the aim of suggesting that the risks of climate change may be overstated. However, the prevailing estimates of climate sensitivity—including those cited by the report—reinforce the necessity of urgent and sustained reductions of greenhouse gases. Even under the lowest estimates of climate

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Warming in Climate Models and Satellite Data. *Journal of Climate*, *30*(1), pp. 373-392; Santer, B. D., Po-Chedley, S., Zhao, L., Zou, C. Z., Fu, Q., Solomon, S., ... & Taylor, K. E. (2023). Exceptional Stratospheric Contribution to Human Fingerprints on Atmospheric Temperature. *Proceedings of the National Academy of Sciences*, *120*(20), e2300758120.

[266] Eyring, V., N.P. Gillett, K.M. Achuta Rao, R. Barimalala, M. Barreiro Parrillo, N. Bellouin, C...and Y. Sun, 2021: Human Influence on the Climate System. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 423–552, doi: 10.1017/9781009157896.005.

[267] Hausfather, Z., Drake, H. F., Abbott, T., & Schmidt, G. A. (2020). Evaluating the Performance of Past Climate Model Projections. *Geophysical Research Letters*, *47*(1), e2019GL085378.

sensitivity, the projected impacts remain severe and pose grave threats to vulnerable populations and ecosystems.

Scientists use a variety of approaches to better understand how the climate will respond to the rapidly increasing levels of carbon dioxide in the atmosphere. Given the complexity of the climate system, these approaches have produced a range of results based on the methodologies employed and the scope of the study. The most recent IPCC assessment of this literature reduced the breadth of the range in estimates of the warming effect of a doubling of atmospheric $CO_2$, lowering the highest estimates and raising the lowest estimates.[268] The Draft CWG Report cherry picks one recent study whose authors suggest that the revision to the lower estimates may not be justified based on their preferred methodologies. As the Draft CWG Report itself notes, this study and others are the subject of ongoing scientific debate. While the range of climate sensitivity estimates will continue to be narrowed by the scientific community, this does not undermine the strong consensus that human emissions of greenhouse gases are driving global warming, and that rapid, substantial reductions of emissions are needed to limit future warming.

*ii. Climate change attribution.*

Climate change attribution can generally be separated into two steps: the attribution of climate change to greenhouse gas emissions and the attribution of climate impacts to climate change. Various statistical methods are used in climate change attribution, some of which are discussed in the report. However, most fundamentally, climate change attribution is supported by the physical understanding of the climate system. As detailed above, it is well understood that increasing concentrations of greenhouse gases cause rising temperatures, and that rising temperatures can exacerbate extreme weather events such as heavy precipitation and extreme heat.

There is unequivocal evidence that the observed warming trend since the pre-industrial period is driven primarily by contributions from greenhouse gas emissions from human activities.[269] As described above, *supra* Comment VI.B.2.a, many factors contribute to radiative forcing including total solar radiation. While solar radiation has slightly increased during the 20th century, its contribution to global warming is small compared to the contribution from

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[268] Forster, P., T. Storelvmo, K. Armour, W. Collins, J.-L. Dufresne, D. Frame, D.J. … & H. Zhang, 2021: The Earth's Energy Budget, Climate Feedbacks, and Climate Sensitivity. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 923–1054, doi: 10.1017/9781009157896.009.

[269] Eyring, V., N.P. Gillett, K.M. Achuta Rao, R. Barimalala, M. Barreiro Parrillo, N. Bellouin, …and Y. Sun, 2021: Human Influence on the Climate System. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 423–552, doi: 10.1017/9781009157896.005.

greenhouse gases.[270] Overlaid on the warming trend are internal variabilities of the climate system such as Pacific Decadal Oscillation (PDO),[271] Atlantic Multidecadal Oscillation (AMO),[272] and El Nino Southern Oscillation (ENSO). These internal variabilities affect atmospheric circulation and ocean temperatures by redistributing energy in the climate system. They can lead to short-term variations in global temperature and regional climate patterns. However, they do not change the net energy of the earth system thus do not contribute to long-term warming trends. Assessments of trends account for these natural, internal variability patterns.[273]

Recent advancements in attribution science also enable scientists to assess with increasing precision whether and to what extent individual extreme events' impacts are attributable to climate change. For example, climate change made the June 2021 Pacific Northwest heatwave 2-4ºF hotter[274] and Hurricane Harvey's rainfall 15-20% heavier[275] than they would have been without climate change. Efforts such as World Weather Attribution (WWA) are designed to conduct preliminary rapid attribution assessments of notably damaging events while awaiting the process for a paper to go through peer review, which can take several months. The Draft CWG Report failed to mention that to date, 26 WWA rapid attributions have been later published in peer-reviewed journals with the main findings unchanged,[276] including some that found little

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[270] Ziskin, S., & Shaviv, N. J. (2012). Quantifying the Role of Solar Radiative Forcing over the 20th Century. Advances in Space Research, *50*(6), pp. 762-776; Meehl, G. A., Washington, W. M., Ammann, C. M., Arblaster, J. M., Wigley, T. M. L., & Tebaldi, C. (2004). Combinations of Natural and Anthropogenic Forcings in Twentieth-Century Climate. *Journal of Climate*, *17*(19), pp. 3721-3727.

[271] Mantua, N. J., & Hare, S. R. (2002). The Pacific Decadal Oscillation. *Journal of Oceanography*, *58*(1), pp. 35-44.

[272] Knight, J. R., Folland, C. K., & Scaife, A. A. (2006). Climate Impacts of the Atlantic Multidecadal Oscillation. *Geophysical Research Letters*, *33*(17).

[273] *Id.*; Wang, C., Deser, C., Yu, J. Y., DiNezio, P., & Clement, A. (2016). El Niño and Southern Oscillation (ENSO): A Review. *Coral reefs of the eastern tropical Pacific: Persistence and loss in a dynamic environment*, pp. 85-106.

[274] Philip, S. Y., Kew, S. F., Van Oldenborgh, G. J., Anslow, F. S., Seneviratne, S. I., Vautard, R., ... & Otto, F. E. (2022). Rapid Attribution Analysis of the Extraordinary Heat Wave on the Pacific Coast of the US and Canada in June 2021. *Earth System Dynamics*, *13*(4), pp. 1689-1713.

[275] Risser, M. D., & Wehner, M. F. (2017). Attributable Human-induced Changes in the Likelihood and Magnitude of the Observed Extreme Precipitation during Hurricane Harvey. *Geophysical Research Letters*, *44*(24), pp. 12-457; Van Oldenborgh, G. J., Van Der Wiel, K., Sebastian, A., Singh, R., Arrighi, J., Otto, F., ... & Cullen, H. (2017). Attribution of Extreme Rainfall from Hurricane Harvey, August 2017. *Environmental Research Letters*, *12*(12), 124009.

[276] Kimutai, J., Barnes, C., Zachariah, M., Philip, S. Y., Kew, S. F., Pinto, I., ... & Otto, F. E. (2025). Human-induced Climate Change Increased 2021–2022 Drought Severity in Horn of Africa. *Weather and Climate Extremes*, *47*, 100745; Patiño Arias, L. P., Rivera, J. A., Sörensson,

impact of climate change on particular individual extreme events.[277] The most recent attribution science even allows scientists to pinpoint the contribution of particular polluters to the occurrence of heatwaves.[278]

The Draft CWG Report also creates a logical fallacy that extreme events must be either caused by climate change or not. It concludes that if a weather event would be unlikely with or without climate change, then climate change could not have caused it. This is a misunderstanding of the science on how climate change affects extreme events. Climate change does not necessarily serve as a sole cause or create all-new weather events; rather, it exacerbates the frequency and severity of extreme weather events, making them more likely to occur and more destructive than they otherwise would have been.

*f. Erroneous claims on benefits of greenhouse gases.*

*i. Direct impacts of $CO_2$ on the environment.*

An extensive body of scientific evidence has documented the severe and negative consequences that elevated levels of greenhouse gas emissions have had, and absent abatement, will continue to have on the Earth's environment, both land and water.[279] The proposal ignores or downplays

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A., Zachariah, M., Barnes, C., Philip, S., ... & Otto, F. E. (2023). Interplay Between Climate Change and Climate Variability: the 2022 drought in Central South America.; Philip, S. Y., Kew, S. F., Van Oldenborgh, G. J., Anslow, F. S., Seneviratne, S. I., Vautard, R., ... & Otto, F. E. (2022). Rapid Attribution Analysis of the Extraordinary Heat Wave on the Pacific Coast of the US and Canada in June 2021. *Earth System Dynamics*, *13*(4), pp. 1689-1713; Ciavarella, A., Cotterill, D., Stott, P., Kew, S., Philip, S., van Oldenborgh, G. J., ... & Zolina, O. (2021). Prolonged Siberian Heat of 2020 Almost Impossible Without Human Influence. *Climatic Change*, *166*(1), p. 9.

[277] Harrington, L. J., Wolski, P., Pinto, I., Ramarosandratana, A. M., Barimalala, R., Vautard, R., ... & Van Oldenborgh, G. J. (2022). Limited Role of Climate Change in Extreme Low Rainfall Associated with Southern Madagascar Food Insecurity, 2019–21. *Environmental Research: Climate*, *1*(2), 021003; Otto, F. E., Coelho, C. A., King, A., De Perez, E. C., Wada, Y., Van Oldenborgh, G. J., ... & Cullen, H. (2015). 8. Factors Other than Climate Change, Main Drivers of 2014/15 Water Shortage in Southeast Brazil. *Bulletin of the American Meteorological Society*, *96*(12), S35-S40.

[278] Quilcaille, Y., Gudmundsson, L., Schumacher, D.L. et al. (2025). Systematic Attribution of Heatwaves to the Emissions of Carbon Majors. *Nature*, *645*, pp. 392–398. https://doi.org/10.1038/s41586-025-09450-9.

[279] *See, e.g.*, Jay, A. K., Crimmins, A. R., Avery, C. W., Dahl, T. A., Dodder, R. S., Hamlington, B. D., Lustig, A., Marvel, K., Méndez-Lazaro, P. A., Osler, M. S., Terando, A., Weeks, E. S., & Zycherman, A. (2023). *Ch. 1. Overview: Understanding risks, impacts, and responses*. In A. R. Crimmins, C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, & T. K. Maycock (Eds.),

the vast majority of these impacts (and associated scientific research) in favor of discussing discrete and marginal issues that the report either mischaracterizes or selectively cites in a deeply flawed effort to question the harms associated with climate change. Chapter 2 of the Draft CWG Report does so by focusing on $CO_2$ fertilization and ocean changes, but does not address or properly characterize the harmful overall impacts $CO_2$ emissions are having in those areas.

*$CO_2$ Fertilization.* Increased $CO_2$ in the atmosphere has many harmful impacts on the environment. Increased temperatures drive increased water stress (regardless of drought) by increasing rates of evapotranspiration and overall vapor pressure deficit, drying soils.[280] These stresses can further compound.[281] $CO_2$ fertilization, or greening, is heavily referenced in the report, appearing in Chapters 1, 2, 9, and 11. Any impact $CO_2$ fertilization has on carbon fixation, however, does not offset warming and other harmful changes caused by $CO_2$. For instance, the draft report favors citing papers estimating high rates of $CO_2$ fertilization and ignores research estimating more limited rates—but even the papers selectively cited by the authors estimate that global greening slowed the rise in land surface air temperature by just 12% in the last 30 years. The draft report also fails to consider the potential harmful effects of elevated carbon dioxide concentrations, such as the spread of nuisance plants, increased allergen production, and decreased nutritional value, to suggest incorrectly that greening is categorically good.[282]

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*Fifth National Climate Assessment*. U.S. Global Change Research Program. https://doi.org/10.7930/NCA5.2023.CH1.

[280] Grossiord, C., Buckley, T.N., Cernusak, L.A., Novick, K.A., Poulter, B., Siegwolf, R.T.W., Sperry, J.S. and McDowell, N.G. (2020), Plant responses to rising vapor pressure deficit. New Phytol, 226: 1550-1566. https://doi.org/10.1111/nph.16485

[281] Flores, B.M., Montoya, E., Sakschewski, B., Nascimento, N., Staal, A., Betts, R.A., Levis, C., Lapola, D.M., Esquível-Muelbert, A., Jakovac, C. & Nobre, C.A., 2024. Critical Transitions in the Amazon Forest System. *Nature*, *626*(7999), pp. 555-564.

[282] Albertine J. M., Manning W. J., DaCosta M., Stinson K. A., Muilenberg M. L., Rogers C. A. (2014). Projected Carbon Dioxide to Increase Grass Pollen and Allergen Exposure Despite Higher Ozone Levels. *PLoS One*, *9*(11), e111712. https://doi.org/10.1371/journal.pone.0111712; Ziska, L. H. (2020). An Overview of Rising $CO_2$ and Climatic Change on Aeroallergens and Allergic Diseases. *Allergy Asthma Immunol Res*., *12*(5), pp. 771-782. https://doi.org/10.4168/aair.2020.12.5.771.
Kellie Schmitt, Less Nutritious Crops: Another Result of Rising $CO_2$, Hopkins Bloomberg Public Health (Sept. 27, 2024), https://magazine.publichealth.jhu.edu/2024/less-nutritious-crops-another-result-rising-co2.J. Hatfield et al. (2014). In *Climate Change Impacts in the United States: The Third National Climate Assessment*, [J. Melillo, T. T. C. Richmond, G. W. Yohe, Eds.] (U.S. Global Change Research Program), pp. 150–174.

In addition, studies have found $CO_2$ fertilization is limited by other factors, including increasing vapor pressure deficit,[283] or nutrient limitations in many areas.[284] Reich et al. 2014 found that "elevated $CO_2$ concentrations did not increase plant biomass when both rainfall and nitrogen were at their lower level."[285] Moreover, $CO_2$ fertilization effect may be increasingly limited by increasing water demands in a warmer world.[286] The draft report also erroneously implies that increased greenness in the recent past is an indicator that land vegetation will continue to respond similarly to increased carbon dioxide into the future by misleadingly asserting there is "no evidence" of a slowing trend by relying on only two studies when the scientific consensus, based on multiple analyses, provides contradictory evidence that a slowdown in the rate of global greening is indeed occurring.[287]

The Draft CWG Report ignores important negative effects of $CO_2$. For example, the chapter does not address the effects on crop yield, or the net-negative impact of climate change on food security overall.[288] To single out one effect to the absence of others does not give an accurate

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[283] Barningham, S. (2023). *Detection of Forest Resilience to Environmental Change and Quantification of Contemporary Carbon Fluxes Over Amazonia Using Remote Sensing*. University of Exeter (United Kingdom).

[284] Fleischer, K., & Terrer, C. (2022). Estimates of Soil Nutrient Limitation on the $CO_2$ Fertilization Effect for Tropical Vegetation. *Global Change Biology*, *28*(21), pp. 6366-6369.

[285] Reich, P. B., Hobbie, S. E., & Lee, T. D. (2014). Plant Growth Enhancement by Elevated $CO_2$ Eliminated by Joint Water and Nitrogen Limitation. *Nature Geoscience*, *7*(12), pp. 920-924.

[286] Li, S., Wang, G., Zhu, C., Lu, J., Ullah, W., Hagan, D.F.T., Kattel, G., Liu, Y., Zhang, Z., Song, Y. & Sun, S., (2023). Vegetation Growth due to $CO_2$ Fertilization is Threatened by Increasing Vapor Pressure Deficit. *Journal of Hydrology*, *619*, p. 129292.

[287] Wang et al. (2020). Recent Global Decline of $CO_2$ Fertilization Effects on Vegetation Photosynthesis.
*Science*. https://doi.org/10.1126/science.abb7772.https://doi.org/10.1126/science.abb7772; Chen, B., Ke, Y., Ciais, P., Zeng, Z., Black, A., Lv, H., et al. (2022). Inhibitive Effects of Recent Exceeding Air Temperature Optima of Vegetation Productivity and Increasing Water Limitation on Photosynthesis Reversed Global Greening. *Earth's Future*, *10*, e2022EF002788. https://doi.org/10.1029/2022EF002788; Chen, Z., Wang, W., Forzieri, G. et al. (2024). Transition from Positive to Negative Indirect $CO_2$ Effects on the Vegetation Carbon Uptake. *Nat Commun*, *15*, 1500. https://doi.org/10.1038/s41467-024-45957-x; Pan, N. et al. (2018). Increasing Global Vegetation Browning Hidden in Overall Vegetation Greening: Insights from Time-varying Trends. *Remote Sens. Environ*. *214*, pp. 59–72, https://doi.org/10.1016/j.rse.2018.05.018.

[288] Bezner Kerr, R., T. Hasegawa, R. Lasco, I. Bhatt, D. Deryng, A. Farrell,… & P. Thornton, 2022: Food, Fibre, and Other Ecosystem Products. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report

understanding of the impacts and misrepresents the scientific literature. The draft report also disregards the broader context that greenness itself is not a complete metric of ecosystem function, nor is it unequivocally positive everywhere. In certain areas of the world like the Arctic, greening can exacerbate warming both through changes to albedo and water vapor, which may accelerate feedback to the climate system through accelerated permafrost thaw and increased plant respiration resulting in additional greenhouse gas emissions.[289] The draft report's authors also overlook evidence that increased greenness has significant negative implications for the water cycle, including enhanced soil drying and vegetation water stress.[290] Furthermore, different plants display differential responses to the carbon dioxide fertilization effect.[291] In other words, there are winners and losers. This effect can interrupt the ecological balance of biodiversity in natural ecosystems where nuisance species gain advantage and increase risk of crop loss due to weed pressure,[292] which the draft report does not acknowledge in its discussion of agriculture. Moreover, the draft report omits or inappropriately minimizes harms to public health and welfare related to the carbon dioxide fertilization effect. These include increased

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of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 713–906, doi:10.1017/9781009325844.007.

[289] Yu, L., G. Leng, L. Yao, C. Lu, S. Han, S. Fan, (2025). Disentangling the Contributions of Water Vapor, Albedo and Evapotranspiration Variations to the Temperature Effect of Vegetation Greening over the Arctic, *Journal of Hydrology*, *646*, 132331, https://doi.org/10.1016/j.jhydrol.2024.132331.E.; A.G. Schuur, B.W. Abbott,R. Commane, J. Ernakovich, E. Euskirchen, G. Hugelius, G.Grosse, M. Jones, C. Koven, V. Leshyk, D. Lawrence, M. M. Loranty, M. Mauritz, D. Olefeldt, S.Natali, H. Rodenhizer, V. Salmon, C. Schädel, J. Strauss, C. Treat, & M. Turetsky, (2022). Permafrost and Climate Change: Carbon Cycle Feedbacks From the Warming Arctic, *Annu. Rev. Environ. Resour.* 2022. *47*, pp. 343–71, https://doi.org/10.1146/annurev-environ-012220-011847; Maes, S.L., Dietrich, J., Midolo, G. et al. 2024. Environmental Drivers of Increased Ecosystem Respiration in a Warming Tundra, *Nature*, *629*, pp. 105–113. https://doi.org/10.1038/s41586-024-07274-7.

[290] Yang, Y., Roderick, M.L., Guo, H. et al. 2023. Evapotranspiration on a Greening Earth. *Nature Revs. Earth & Environ. 4*, pp. 626–641. https://doi.org/10.1038/s43017-023-00464-3; Liu, Y., Li, Z., Chen, Y. et al. 2025. Global Greening Drives Significant Soil Moisture Loss. *Commun Earth Environ*. *6*, p. 600. https://doi.org/10.1038/s43247-025-02470-3.

[291] Fleischer, K., Rammig, A., De Kauwe, M.G. et al. 2019. Amazon Forest Response to $CO_2$ Fertilization Dependent on Plant Phosphorus Acquisition. *Nat. Geosci*. *12*, pp. 736–741. https://doi.org/10.1038/s41561-019-0404-9; César Terrer et al., 2016. Mycorrhizal Association as a Primary Control of the $CO_2$ Fertilization Effect. *Science*, *353*, pp. 72-74. https://doi.org/10.1126/science.aaf4610.

[292] Phillips, O., Vásquez Martínez, R., Arroyo, L. et al., 2002. Increasing Dominance of Large Lianas in Amazonian Forests. *Nature*, *418*, pp. 770–774. https://doi.org/10.1038/nature00926; Mohan, J. E., Ziska, L. H., Schlesinger, W. H., Thomas, R. B., Sicher, R. C., George, K., & Clark, J. S. 2006. Biomass and Toxicity Responses of Poison Ivy (Toxicodendron radicans) to Elevated Atmospheric $CO_2$. *Proc Natl Acad Sci U.S.A. 103*(24), pp. 9086-9089. https://doi.org/10.1073/pnas.0602392103.

human exposure to allergens from enhanced plant production of pollen and the risk of malnutrition for certain populations due to potential nutrient dilution of crops cultivated under high carbon dioxide concentrations.

Moreover, the scientific literature that finds $CO_2$ has substantial, harmful impacts on climate already recognizes any effects of $CO_2$ fertilization. Leaf-level photosynthetic response to $CO_2$ is already included in Earth system models[293] and was highlighted in the technical summary of the AR6 WGI IPCC report.[294]

The chapter also does not address or acknowledge $CO_2$ feedbacks that can drive additional warming through other gases, which have no fertilization effect, *e.g.*, methane production from wetlands, ice loss, permafrost thaw, and soil carbon emissions.[295] These raise temperatures without any impact on $CO_2$ directly. Furthermore, while the $CO_2$ fertilization effect is included in models as mentioned above, many models do not include these other feedbacks that generally result in warming.

Regardless, noting the existence of the well-known phenomenon of $CO_2$ fertilization does not affect the other clear and staggering harms resulting from increasing $CO_2$ and other greenhouse gas emissions. The authors do not (and could not) claim otherwise.

*Ocean Changes.* Observed impacts of $CO_2$ on the oceans are largely related to ocean warming including ocean heatwaves as well as stratification and deoxygenation.[296] Ocean surface pH has also declined globally over the past four decades. Tropical coral reefs are particularly vulnerable to ocean heat because when stressed by high temperatures they expel their symbiotic algae, without which they eventually die. Such coral "bleaching" events have become more common on

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[293] Felzer, B. S. (2025). Modeling the Future Carbon Sink: Land-use and Climate Change May Offset $CO_2$ Fertilization in the United States. *Plants, People, Planet*, *7*(3), pp. 763-775; Arora, V. K., & J. F. Scinocca. (2016). Constraining the Strength of the Terrestrial $CO_2$ Fertilization Effect in the Canadian Earth System Model Version 4.2 (CanESM4.2). Geosci. Model Dev., 9, pp. 2357-2376. doi:10.5194/gmd-9-2357-2016.

[294] Arias, P. A., Bellouin, N., Coppola, E., Jones, R. G., Krinner, G., Marotzke, J., ... & Zhang, X. (2021). Technical Summary. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 33−144. doi:10.1017/9781009157896.002.

[295] Ripple, W.J., Wolf, C., Lenton, T.M., Gregg, J.W., Natali, S.M., Duffy, P.B., Rockström, J. & Schellnhuber, H.J., 2023. Many Risky Feedback Loops Amplify the Need for Climate Action. *One Earth*, *6*(2), pp. 86-91.

[296] Cooley, S., Schoeman, D., Bopp, L., Boyd, P., Donner, S., Kiessling, W., ... & Simmons, C. T. (2022). Oceans and Coastal Ecosystems and Their Services. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. *Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 379–550, doi:10.1017/9781009325844.005.

the Great Barrier Reef.[297] According to that report, which is cited in the Draft CWG Report, "the predicted consequences of climate change, which include more frequent and intense mass coral bleaching events, are now a contemporary reality. Simultaneously, chronic stressors such as high turbidity, increasing ocean temperatures and changing ocean chemistry can all negatively affect recovery rates, while more frequent acute disturbances mean that the intervals for recovery are becoming shorter." Far from the rebound claimed by the CWG, coral cover gains in recent years were reversed over the summer of 2024 in the largest extent of bleaching ever recorded.[298]

Ocean acidification periods associated with changes in atmospheric carbon dioxide, combined with effects of warming such as stratification and deoxygenation, have been devastating to ocean biota in the past. As stated above, while ocean surface pH has declined globally over the past four decades, impacts of increased $CO_2$ on the oceans so far have largely been driven by heat.[299] Still Chapter 2.2 of the Draft CWG Report focuses solely on evidence for impacts of ocean acidification (decreases in pH) and fails to consider ocean warming or its negative effects. Of the five major mass extinctions in the geological record, combinations of changes in ocean pH, temperature, and oxygenation have played a significant role in four.[300] Importantly, these changes have tended to occur together, as they do at present. The magnitude of future warming, acidification, deoxygenation, sea level rise and other climate-induced drivers depend on future emissions.

The fact that corals first arose over 200 million years ago does not mean that they are simply resilient to these changes as the Draft CWG Report authors suggest. In fact, the two main coral groups present in the fossil record (Tabulate and Rugose corals) went extinct during the Permo-Triassic extinction along with 90% of marine species.[301] Modern Scleractinian coral reefs did not

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[297] Australian Institute of Marine Science (2022). Continued Coral Recovery Leads to 36-year Highs Across Two-thirds of the Great Barrier Reef. https://www.aims.gov.au/sites/default/files/2022-08/AIMS_LTMP_Report_on%20GBR_coral_status_2021_2022_040822F3.pdf.

[298] Australian Institute of Marine Science LTMP (2025). Substantial Impacts from Bleaching and Cyclones Reduce Regional Coral Cover to Near Long-term Averages. https://doi.org/10.25845/CS9T-0K11.

[299] Cooley, S., Schoeman, D., Bopp, L., Boyd, P., Donner, S., Kiessling, W., ... & Simmons, C. T. (2022). Oceans and Coastal Ecosystems and Their Services. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. *Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 379–550, doi:10.1017/9781009325844.005.

[300] Kiessling, W., & Simpson, C. (2011). On the Potential for Ocean Acidification to be a General Cause of Ancient Reef Crises. *Global Change Biology*, *17*(1), pp. 56-67; Wignall, P. B., & Bond, D. P. (2024). The Great Catastrophe: Causes of the Permo-Triassic Marine Mass Extinction. *National Science Review*, *11*(1), nwad273..

[301] Wilkinson, I.P. & Scrutton, C. (2000). Corals: Fossil Focus. (Nottingham, UK: British Geological Survey.).

arise for another 20-25 million years.[302] Millions of people globally depend on coral reefs for food and livelihoods[303] and their disappearance would be devastating. Chemistry and history demonstrate that if $CO_2$ keeps rising, significant declines in pH can occur, with large consequences.

Lastly the Draft CWG Report wrongly suggests that the scientific literature overstates the significance of ocean acidification. However the scientific literature does recognize that decreases in ocean pH are not necessarily uniformly or universally observed yet. Cooley et al. 2022 states: "Recent studies indicate that two more decades of observations may be required before anthropogenic ocean acidification emerges over natural variability in some coastal sites and regions."[304]

*ii. Impacts on agriculture.*

The proposal's consideration of climate change impacts on U.S. agriculture unreasonably focuses on $CO_2$ fertilization while excluding or minimizing other climate change impacts that offset $CO_2$ fertilization effects. It is only by making these distorted and flawed methodological choices that the proposal manages to erroneously suggest that climate change will be neutral or beneficial for U.S. agriculture.

Contrary to the broad statements in the Draft CWG Report, $CO_2$ fertilization will not be universal across environments and crop photosynthetic systems[305] and does not rise to the

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[302] Veron J.E.N., Stafford-Smith M.G., Turak E. & DeVantier L.M. (2016). Corals of the World. Accessed 18 Aug 2025, version 0.01. https://www.coralsoftheworld.org/page/evolution/?version=0.01.

[303] Cinner, J. E., McClanahan, T. R., Graham, N. A., Daw, T. M., Maina, J., Stead, S. M., ... & Bodin, Ö. (2012). Vulnerability of Coastal Communities to Key Impacts of Climate Change on Coral Reef Fisheries. *Global Environmental Change*, *22*(1), pp. 12-20.

[304] Cooley, S., Schoeman, D., Bopp, L., Boyd, P., Donner, S., Kiessling, W., ... & Simmons, C. T. (2022). Oceans and Coastal Ecosystems and Their Services. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 379–550, doi:10.1017/9781009325844.005 (citing Sutton, A. J., Sabine, C. L., Feely, R. A., Cai, W. J., Cronin, M. F., McPhaden, M. J., ... & Weller, R. A. (2016). Using Present-day Observations to Detect when Anthropogenic Change Forces Surface Ocean Carbonate Chemistry Outside Preindustrial Bounds. *Biogeosciences*, *13*(17), pp. 5065-5083; Turk, D., Wang, H., Hu, X., Gledhill, D. K., Wang, Z. A., Jiang, L., & Cai, W. J. (2019). Time of Emergence of Surface Ocean Carbon Dioxide Trends in the North American Coastal Margins in Support of Ocean Acidification Observing System Design. *Frontiers in Marine Science*, *6*, 91.

[305] Ainsworth, E. A., & Long, S. P. (2021). 30 years of Free-air Carbon Dioxide Enrichment (FACE): What Have We Learned About Future Crop Productivity and its Potential for Adaptation? *Global Change Biology*, *27*(1), pp. 27-49.

magnitude suggested in the Draft CWG Report. Meta-analysis of three decades of field studies[306] demonstrates that any realistic productivity increases from the $CO_2$ fertilization effect are roughly half the magnitude of increases stated in the Draft CWG Report, which relies on the numbers from greenhouse and open-top chamber (OTC) experiments reported on https://CO2science.org/ (not a peer-reviewed source). Ainsworth & Long 2021, which the Draft CWG Report also cites, clearly details how growth and yield data from greenhouse and OTC experiments are not correlated with field-collected data under the same conditions and should not be used to assess climate impacts.[307] Moreover, understanding the overall impacts of climate change on agricultural productivity requires integration of the $CO_2$ fertilization effect with the direct (*e.g.*, temperature, precipitation) and indirect (*e.g.*, pest, pathogen) impacts associated with increased $CO_2$ and other greenhouse gases. Importantly, the fertilization effect is expected to be more than offset by the other harmful impacts of climate change that can be attributed to greenhouse gas emissions.[308]

The Draft CWG Report neglects to address any of the significant impacts on agricultural yield incurred by temperature, precipitation, or pests and pathogens. First, changes in temperature,[309] the amount of precipitation, and the duration of droughts[310] have had the greatest impacts on agricultural yields. The combination of heat and drought lead to vapor pressure deficits (VPD) that are rapidly increasing in most temperate agricultural regions and result in significant yield losses.[311] The EU has thus far experienced more of this impact than the U.S.;[312] several hypotheses exist to explain the lower warming in the U.S. (described as the "warming hole"). However, there is a predicted reduction in precipitation in the U.S. Midwest,[313] and despite the current "warming hole," modeling of the total U.S. agriculture outputs to inputs under SSP2-4.5

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[306] *Id.*

[307] *Id.*

[308] Ainsworth, E. A., Sanz-Saez, A., & Leisner, C. P. (2025). Crops and Rising Atmospheric $CO_2$: Friends or Foes? *Philosophical Transactions B*, *380*(1927), 20240230.

[309] Hultgren, A., Carleton, T., Delgado, M., Gergel, D. R., Greenstone, M., Houser, T., ... & Yuan, J. (2025). Impacts of Climate Change on Global Agriculture Accounting for Adaptation. *Nature*, *642*(8068), pp. 644-652.

[310] Furtak, K., & Wolińska, A. (2023). The Impact of Extreme Weather Events as a Consequence of Climate Change on the Soil Moisture and on the Quality of the Soil Environment and Agriculture – A Review. *CATENA*. *231*, 107378.

[311] Lobell, D. B., & Di Tommaso, S. (2025). A Half-century of Climate Change in Major Agricultural Regions: Trends, Impacts, and Surprises. *Proceedings of the National Academy of Sciences*, *122*(20), e2502789122.

[312] *Id.*

[313] Ting, M., Seager, R., Li, C., Liu, H., & Henderson, N. (2021). Future Summer Drying in the US Corn Belt and the Role of Midlatitude Storm Tracks. *Journal of Climate*, *34*(22), pp. 9043-9056.

predicts a loss of 5.6% in 2025, suggesting that climate change is already negatively impacting domestic productivity.[314] Globally, Lobell & Di Tommaso 2025 document decreases in yields of wheat, maize and barley from 1974-2023 by 10%, 4%, and 13%, respectively, because of increased temperature and VPD.[315] These losses are greater than the small yield gains shown by soybeans and rice, resulting in global net loss for major crops.

Indirect climate impacts on crops have also been identified. $CO_2$-induced growth stimulation can increase water use, exacerbating impacts of water stress.[316] Water stress then exacerbates heat stress and loss, particularly for crops with the $C_3$ photosynthetic pathway.[317] Further, the reduced evapotranspiration stimulated by higher $CO_2$ can exacerbate heat stress impacts on productivity that can be manifested at higher overall temperatures and during heatwaves.[318] Increased heat stress during flowering, for example, can negatively impact fruit and seed production.[319]

Climate change will likely exacerbate agricultural water scarcity in the western U.S., which already faces considerable shortfalls in water availability leading to reductions in the irrigated

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[314] Ortiz-Bobea, A., Chambers, R. G., He, Y., & Lobell, D. B. (2025). Large Increases in Public R&D Investment Are Needed to Avoid Declines of US Agricultural Productivity. *Proceedings of the National Academy of Sciences*, *122*(11), e2411010122.

[315] Lobell, D. B., & Di Tommaso, S. (2025). A Half-century of Climate Change in Major Agricultural Regions: Trends, Impacts, and Surprises. *Proceedings of the National Academy of Sciences*, *122*(20), e2502789122.

[316] Ainsworth, E. A., Sanz-Saez, A., & Leisner, C. P. (2025). Crops and Rising Atmospheric $CO_2$: Friends or Foes? *Philosophical Transactions B*, *380*(1927), 20240230.

[317] Ainsworth, E. A., & Long, S. P. (2021). 30 years of Free-air Carbon Dioxide Enrichment (FACE): What Have We Learned About Future Crop Productivity and its Potential for Adaptation? *Global Change Biology*, *27*(1), pp. 27-49; Stella, T., Webber, H., Olesen, J. E., Ruane, A. C., Fronzek, S., Bregaglio, S., ... & Ewert, F. (2021). Methodology to Assess the Changing Risk of Yield Failure due to Heat and Drought Stress Under Climate Change. *Environmental Research Letters*, *16*(10), 104033; Lobell, D. B., & Di Tommaso, S. (2025). A Half-century of Climate Change in Major Agricultural Regions: Trends, Impacts, and Surprises. *Proceedings of the National Academy of Sciences*, *122*(20), e2502789122.

[318] Ainsworth, E. A., & Long, S. P. (2021). 30 years of Free-air Carbon Dioxide Enrichment (FACE): What Have We Learned About Future Crop Productivity and its Potential for Adaptation? *Global Change Biology*, *27*(1), pp. 27-49.

[319] Barnabas, B., Jager, K., & Feher, A. (2008). The Effect of Drought and Heat Stress on Reproductive Processes in Cereals. *Plant, Cell & Environment*, *31*, pp. 11–38; Zhu, P., Burney, J., Chang, J., Jin, Z., Mueller, N. D., Xin, Q., ... & Ciais, P. (2022). Warming Reduces Global Agricultural Production by Decreasing Cropping Frequency and Yields. *Nature Climate Change*, *12*(11), pp. 1016-1023.

agricultural footprint.[320] In California's Central Valley, for example, climate change contributed to 11% of the overall groundwater decline between 1980 and 2022.[321] The warmer, drier climate results in greater evaporative demand,[322] higher crop irrigation requirements,[323] lower mean precipitation,[324] and changes in snowmelt timing.[325]

Livestock producers also face increasingly challenging management decisions and productivity losses due to fluctuations in precipitation, rangeland forage conditions, and feed costs exacerbated by climate change.[326] Increased temperatures can result in heat stress on livestock, reducing their welfare and productivity.[327] Between 2000 and 2018, an increase of 1.023 °C in U.S. average temperature coupled with heatwaves resulted in a dairy sector loss exceeding $1.2

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[320] Hanak, E., Ayres, A., Peterson, C., Escriva-Bou, A., Cole, S., & Joaquín Morales, Z. (2023). Managing Water and Farmland Transitions in the San Joaquin Valley. *Public Policy Institute of California*. https://www.ppic.org; Deines, J. M., Schipanski, M. E., Golden, B., Zipper, S. C., Nozari, S., Rottler, C., ... & Sharda, V. (2020). Transitions from Irrigated to Dryland Agriculture in the Ogallala Aquifer: Land Use Suitability and Regional Economic Impacts. *Agricultural Water Management*, *233*, 106061.

[321] Williams, E. L., & Abatzoglou, J. T. (2025). Climate Change Increases Evaporative and Crop Irrigation Demand in North America. *Earth's Future*, *13*(7), e2025EF005931.

[322] Overpeck, J. T., & Udall, B. (2020). Climate Change and the Aridification of North America. *Proceedings of the National Academy of Sciences*, *117*(22), pp. 11856-11858

[323] Zhang, L., Bai, G., Evett, S. R., Colaizzi, P. D., Xue, Q., Marek, G., ... & Lin, X. (2025). Increased Irrigation Could Mitigate Future Warming-induced Maize Yield Losses in the Ogallala Aquifer. *Communications Earth & Environment*, *6*(1), p. 483.

[324] Partridge, T., Winter, J., Kendall, A., Basso, B., Pei, L., & Hyndman, D. (2023). Irrigation benefits outweigh costs in more US croplands by mid-century. *Communications Earth & Environment*, *4*(1), 274.

[325] Qin, Y., Abatzoglou, J. T., Siebert, S., Huning, L. S., AghaKouchak, A., Mankin, J. S., ... & Mueller, N. D. (2020). Agricultural Risks from Changing Snowmelt. *Nature Climate Change*, *10*(5), pp. 459-465.

[326] Derner, J. D., & Augustine, D. J. (2016). Adaptive Management for Drought on Rangelands. *Rangelands*, *38*(4), pp. 211-215.

[327] Thornton, P., Nelson, G., Mayberry, D., & Herrero, M. (2022). Impacts of Heat Stress on Global Cattle Production During the 21st Century: A Modelling Study. *The Lancet Planetary Health*, *6*(3), pp. e192-e201.

billion.[328] Other livestock species show similar sensitivity to temperature stress.[329] The higher precipitation and flooding events that are exacerbated by climate change will also harm livestock health and productivity.[330]

Increased incidence and intensity of heatwaves also pose a significant risk to farm workers who are increasingly suffering a variety of adverse health outcomes including heat stroke, kidney disease, and exacerbation of cardiovascular and respiratory diseases.[331] Health-related impacts to outdoor workers since 1990 increased by at least 90% globally; in the U.S. that translates to annual labor productivity losses of over $90 billion from 2001-2009.[332] Other climate change impacts on human health, including for workers, are described below.

Outbreaks of multiple pest species and increased pathogen damage are also anticipated with a warming climate. Subedi et al. 2023 reported anticipated losses of 18%, 1%, and 32% in wheat, rice, and maize, respectively, in North America from insect pests with a 2°C temperature rise.[333] Deutsch et al. 2021 found that warming increases the potential for pest infestations, with increasing numbers of generations (*e.g.*, aphids), range expansion (*e.g.*, pink bollworm), and

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[328] Wankar, A. K., Rindhe, S. N., & Doijad, N. S. (2021). Heat Stress in Dairy Animals and Current Milk Production Trends, Economics, and Future Perspectives: The Global Scenario. *Tropical Animal Health and Production*, *53*(1), p. 70.

[329] Schauberger, G., Mikovits, C., Zollitsch, W., Hörtenhuber, S. J., Baumgartner, J., Niebuhr, K., ... & Schönhart, M. (2019). Global Warming Impact on Confined Livestock in Buildings: Efficacy of Adaptation Measures to Reduce Heat Stress for Growing-fattening Pigs. *Climatic Change*, *156*(4), pp. 567-587; Izar-Tenorio, J., Jaramillo, P., Griffin, W. M., & Small, M. (2020). Impacts of Projected Climate Change Scenarios on Heating and Cooling Demand for Industrial Broiler Chicken Farming in the Eastern US. *Journal of Cleaner Production*, *255*, 120306.

[330] Crist, S., Mori, J., & Smith, R. L. (2020). Flooding on Beef and Swine Farms: A Scoping Review of Effects in the Midwestern United States. *Preventive Veterinary Medicine*, *184*, 105158; Thornton, P., Nelson, G., Mayberry, D., & Herrero, M. (2022). Impacts of Heat Stress on Global Cattle Production During the 21st Century: A Modelling Study. *The Lancet Planetary Health*, *6*(3), pp. e192-e201.

[331] Jackson, L. L., & Rosenberg, H. R. (2010). Preventing Heat-related Illness Among Agricultural Workers. *Journal of Agromedicine*, *15*(3), 200-215.

[332] Parsons, L. A., Masuda, Y. J., Kroeger, T., Shindell, D., Wolff, N. H., & Spector, J. T. (2022). Global Labor Loss due to Humid Heat Exposure Underestimated for Outdoor Workers. *Environmental Research Letters*, *17*(1), 014050.

[333] Subedi, B., Poudel, A., & Aryal, S. (2023). The Impact of Climate Change on Insect Pest Biology and Ecology: Implications for Pest Management Strategies, Crop Production, and Food Security. *Journal of Agriculture and Food Research*, *14*, 100733.

increased overwinter survival (*e.g.*, corn earworm).[334] Ainsworth & Long 2023 summarized multiple studies, finding crop and pest/disease interactions resulted in variable responses, but that crop losses increased by 50% in some experiments.[335] Changing plant tissue chemistry also influences pest responses. Pest damage can increase because of reduced plant defenses and higher consumption of lower nutrient tissue.[336] These responses are host and pest-specific, reducing predictability for farmers.

The fertilizing impact of $CO_2$ will also saturate and cause limitations in other plant nutrients, which will shift the nutritional value of grains and other crops with the $C_3$ photosynthetic system. Ainsworth et al. 2025 provide substantial evidence for nutritional losses with $CO_2$ increases.[337] Taub et al. 2008 conducted a metanalysis that revealed that protein and micronutrient density decreases in grains under higher $CO_2$ conditions.[338] Similarly, Loladze 2014 and Subedi et al. 2023 document nutritional quality (protein, minerals, vitamins) decreases and carbohydrate increases in multiple crops with increased $CO_2$ levels.[339]

Even if plant breeding and genetic modification of crops could help mitigate nutritional losses, as suggested by the Draft CWG Report, the regional variation in temperature and precipitation, differential responses of crops and varieties, and need for solutions for specialty and perennial crops will all require substantial research and investment[340] and will slow our ability to keep up with nutritional changes caused by climate change. Although progress has been made on some types of genetic engineering, the substantial research and investment in crop development that

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[334] Deutsch, C. A., Tewksbury, J. J., Tigchelaar, M., Battisti, D. S., Merrill, S. C., Huey, R. B., & Naylor, R. L. (2018). Increase in Crop Losses to Insect Pests in a Warming Climate. *Science*, *361*(6405), pp. 916-919.

[335] Ainsworth, E. A., & Long, S. P. (2021). 30 years of Free-air Carbon Dioxide Enrichment (FACE): What Have We Learned About Future Crop Productivity and its Potential for Adaptation? *Global Change Biology*, *27*(1), pp. 27-49.

[336] Subedi, B., Poudel, A., & Aryal, S. (2023). The Impact of Climate Change on Insect Pest Biology and Ecology: Implications for Pest Management Strategies, Crop Production, and Food Security. *Journal of Agriculture and Food Research*, *14*, 100733.

[337] Ainsworth, E. A., Sanz-Saez, A., & Leisner, C. P. (2025). Crops and Rising Atmospheric $CO_2$: Friends or Foes? *Philosophical Transactions B*, *380*(1927), 20240230.

[338] Taub, D. R., Miller, B., & Allen, H. (2008). Effects of Elevated $CO_2$ on the Protein Concentration of Food Crops: A Meta-analysis. *Global Change Biology*, *14*(3), pp. 565-575.

[339] Loladze, I. (2014). Hidden Shift of the Ionome of Plants Exposed to Elevated $CO_2$ Depletes Minerals at the Base of Human Nutrition. *elife*, *3*, e02245; Subedi, B., Poudel, A., & Aryal, S. (2023). The Impact of Climate Change on Insect Pest Biology and Ecology: Implications for Pest Management Strategies, Crop Production, and Food Security. *Journal of Agriculture and Food Research*, *14*, 100733.

[340] Ainsworth, E. A., Sanz-Saez, A., & Leisner, C. P. (2025). Crops and Rising Atmospheric $CO_2$: Friends or Foes? *Philosophical Transactions B*, *380*(1927), 20240230.

will be necessary will inevitably lag the climate impacts needing mitigation.[341] And while the CWG Report suggests that the cost of dietary amendments to resolve nutrient limitations is manageable because of theoretical global per-capita income increases, such increases are not supported in the literature. Diffenbaugh & Burke 2019, for example, documents that climate change has disproportionately reduced incomes in low latitude, low-income nations.[342]

Integrating all climate change impacts on agriculture, a recent study on projected agricultural yields in 2100 found losses of roughly 6 to 20% in U.S. corn, soy, wheat, and sorghum under a moderate emissions scenario (RCP 4.5), with incorporation of the $CO_2$ fertilization effect. Under a high emission scenario (RCP 8.5), that range rises to roughly 20 to 35%.[343] Overall, the fertilization effect only diminished losses by 5 to 10% and pest and pathogen impacts are not incorporated into these numbers.[344] Similar scale losses across many regions will mean global social and supply chain disruptions.[345]

The Draft CWG Report attempts to use econometric relationships of trends in farmland value over time as a surrogate for the effects of climate change on yields, under the rationale "that if climate change is a long-term net benefit for agriculture it should be capitalized into higher market values for agricultural land, and vice versa." But the basis for this theory is not supported by even the authors of the paper on which the Draft CWG Report relies. The Draft CWG Report cites Ortiz-Bobea (2019 [*sic*] 2020) to suggest that climate change causes no decrease in U.S. farmland values,[346] but the author of that paper also looked more directly at yield impacts of climate change in another publication and found that in fact climate change induced heat and water stress negatively impact yields of U.S. rain-fed crops.[347] Furthermore, the scientific literature demonstrates that farmer adaptation is shaped by multiple biophysical, economic,

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[341] Pixley, K. V., Cairns, J. E., Lopez-Ridaura, S., Ojiewo, C. O., Dawud, M. A., Drabo, I., ... & Zepeda-Villarreal, E. A. (2023). Redesigning Crop Varieties to Win the Race Between Climate Change and Food Security. *Molecular Plant*, *16*(10), pp. 1590-1611.

[342] Diffenbaugh, N. S., & Burke, M. (2019). Global Warming has Increased Global Economic Inequality. *Proceedings of the National Academy of Sciences*, *116*(20), pp. 9808-9813.

[343] Hultgren, A., Carleton, T., Delgado, M., Gergel, D. R., Greenstone, M., Houser, T., ... & Yuan, J. (2025). Impacts of Climate Change on Global Agriculture Accounting for Adaptation. *Nature*, *642*(8068), pp. 644-652.

[344] *Id.*

[345] He, X., et al. (2020). Temporal Dynamics in Viral Shedding and Transmissibility of COVID-19. *Nature Medicine*, *26*, pp. 672-675. https://doi.org/10.1038/s41591-020-0869-5.

[346] Ortiz-Bobea, A. (2020). The Role of Nonfarm Influences in Ricardian Estimates of Climate Change Impacts on US Agriculture. *American Journal of Agricultural Economics*, *102*(3), pp. 934-959.

[347] Ortiz-Bobea, A., Wang, H., Carrillo, C. M., & Ault, T. R. (2019). Unpacking the Climatic Drivers of US Agricultural Yields. *Environmental Research Letters*, *14*(6), 064003.

institutional, and personal factors.[348] More robust econometric approaches account for these multiple constraints, integrating crop models, nonlinear yield responses, and farmer decision data to capture how climate stressors interact with farmer land management decisions. Reliance on selective, indirect land value data rather than studies on the direct impacts of climate change on agricultural yields suggests the Draft CWG Report authors deliberately included only a subset of data supporting supposed climate change benefits.

*iii. Overall assessment of costs of climate change.*

The proposal fails to undertake a comprehensive assessment of the economic impacts of climate change. The literature underpinning these economic impacts, including Social Cost of Carbon (SCC) estimates, is both extensive and rigorously peer reviewed, with findings replicated across multiple methods (bottom-up, top-down, expert elicitation, and more), including their underlying assumptions.[349] By focusing on specific studies in isolation, the proposal overlooks this broad evidence base and the clear scientific consensus supporting SCC values. Critically, the SCC enables quantification of climate impacts on welfare (*e.g.*, to health and labor) in ways not typically captured by output-oriented growth metrics. It is precisely for this reason that it is such an important tool for understanding the costs and benefits of climate action, among data on other impacts like the economic and job opportunities of the clean energy transition.

Empirical evidence shows that climate damages scale nonlinearly with temperature and are borne unevenly across populations, with health impacts often rivaling or exceeding damages in agriculture, energy, and infrastructure. The CWG Report's metrics based on GDP share understate climate risk, as mortality and morbidity generate large welfare losses not reflected in

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[348] Castellano & Moroney. (2018). Farming Adaptations in the Face of Climate Change. *Renewable Agriculture and Food Systems*. https://doi.org/10.1017/S174217051700076X; Su & Chen. 2022. Econometric Approaches That Consider Farmers' Adaptation in Estimating the Impacts of Climate Change on Agriculture: A Review. *Sustainability*. https://doi.org/10.3390/su142113700; Manono et al. (2025). A Review of the Socio-Economic, Institutional, and Biophysical Factors Influencing Smallholder Farmers' Adoption of Climate Smart Agricultural Practices in Sub-Saharan Africa. *Earth*. https://doi.org/10.3390/earth6020048; Li et al. (2025). Predicting Changes in Agricultural Yields Under Climate Change Scenarios and their Implications for Global Food Security. *Scientific Reports*. https://doi.org/10.1038/s41598-025-87047-y.

[349] National Academies of Sciences, Engineering, and Medicine. (2017). Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide. Washington, DC: National Academies Press. https://doi.org/10.17226/24651; Rennert, K., et al. (2022). Comprehensive Evidence on the Social Cost of Carbon. *Nature*, 610, pp. 687–692. https://doi.org/10.1038/s41586-022-05224-9; EPA, Report on the Social Cost of Greenhouse Gases: Estimates and methodologies (Nov. 2023), *available at* https://perma.cc/9VZR-DV8C.

such measures. Regardless, recent studies quantify macroeconomic damages as approximately six times larger than previously estimated.[350]

Evidence demonstrates robust temperature-damage relationships across sectors, with adaptation proving only a partial and often costly solution. County- and sector-level studies reveal large health and labor losses overlooked by aggregate growth regressions, with mortality as a key driver.[351] Moreover, localized declines in cold-related deaths can mask substantial increases in heat-driven morbidity and health care demand.[352] Comprehensive meta-analyses of climate economics consistently conclude that the optimal policy is to reduce emissions, with the SCC serving as a critical tool that supports this conclusion.[353] No credible analysis finds that the optimal policy is inaction, a finding that has held from the Stern Review (2006) through and including Tol's recent study (2024) cited in the CWG Report.[354]

Uncertainty is assessed via Monte Carlo methods linking socioeconomic, climate, and damage modules, with results reported as distributions. Across modern damage functions and discounting approaches, central estimates for climate change damage remain robustly above zero. Diverse

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[350] Carleton, T., et al. (2022/2023). Mortality Risk from Climate-driven Wildfire Smoke. *Quarterly Journal of Economics*, *137*(4), pp. 2037–2106. https://doi.org/10.1093/qje/qjad005; EPA SC-GHG Report, *supra* n.349; Bilal, A., & Känzig, D. R. (2024). The Macroeconomic Impact of Climate Change: Global vs. Local Temperature. NBER Working Paper No. 32450. https://doi.org/10.3386/w32450 (NBER Working Paper No. 32450, issue date May 2024; revision Nov 2024).

[351] Burke, M., et al. (2024). Climate and Labor Market Impacts. NBER Working Paper No. 32985. https://www.nber.org/papers/w32985; Carleton, T., et al. (2022/2023). Mortality Risk from Climate-driven Wildfire Smoke. *Quarterly Journal of Economics*, *137*(4), pp. 2037–2106. https://doi.org/10.1093/qje/qjad005; Kalkuhl, M., & Wenz, L. (2020). The Impact of Climate Change on Economic Growth and Development. *World Development*, *127*, 104749. https://doi.org/10.1016/j.worlddev.2019.104749; Gould, E., et al. (2025). Sectoral damages of climate change in the United States. *Science Advances*, *11*(2), eadr3070. https://doi.org/10.1126/sciadv.adr3070.

[352] Moore, F. C., Drupp, M. A., Rising, J., Dietz, S., Rudik, I., & Wagner, G. (2024). Synthesis of Evidence Yields High Social Cost of Carbon due to Structural Model Variation and Uncertainties. *Proceedings of the National Academy of Sciences*, *121*(52), e2410733121.

[353] Rennert, K., et al. (2022). Comprehensive Evidence on the Social Cost of Carbon. *Nature*, 610, pp. 687–692. https://doi.org/10.1038/s41586-022-05224-9.

[354] Stern, N. (2006). The Economics of Climate Change. *American Economic Review*, *98*(2), pp. 1-37; Tol, R. (2024). Meta-analysis of Climate Damages and Policy Implications. *Energy Economics*, 129, 106901. https://doi.org/10.1016/j.eneco.2024.106901.

methodologies (*e.g.*, structural models, empirical studies, and expert elicitation) converge on consistent values.[355]

Federal guidance from 2023 reasonably adopted a 2% central real discount rate, alongside inclusion of empirically based health and labor damages, which substantially increased values compared with legacy integrated assessment models.[356] SCC estimates have risen partly due to revised assumptions, but such updates are a standard feature of modeling outcomes and do not undermine validity. They reflect an ongoing process of empirical calibration and scientific assessment.

Increases in the SCC are also driven by incorporating newly quantified damages as they pass peer review and reach sufficient robustness for inclusion. Since many climate impacts remain unquantified, SCC values are generally understood to be lower-bound estimates.[357] Claims of low or negative SCC values rely on high discount rates or narrowly defined damages. As emerging research on contemporary health burdens is integrated, estimates increase. For example, a recent study quantifying the health costs of climate-driven wildfire smoke place the damages for this impact *alone* at roughly $15 per ton of $CO_2$,[358] while another recent study suggests this impact may still be underestimated by more than 90%.[359] This is one of many impacts not yet incorporated into mainstream SCC estimates,[360] reinforcing that these are lower-bound estimates.

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[355] Moore, F. C., Drupp, M. A., Rising, J., Dietz, S., Rudik, I., & Wagner, G. (2024). Synthesis of Evidence Yields High Social Cost of Carbon due to Structural Model Variation and Uncertainties. *Proceedings of the National Academy of Sciences*, *121*(52), e2410733121; Rennert, K., et al. (2022). Comprehensive Evidence on the Social Cost of Carbon. *Nature*, 610, pp. 687–692. https://doi.org/10.1038/s41586-022-05224-9; EPA SC-GHG Report, *supra* n.349; Howard, P.H., Sterner, T. (2017). Few and Not So Far Between: A Meta-analysis of Climate Damage Estimates. *Environ Resource Econ*, *68*, pp. 197–225. https://doi.org/10.1007/s10640-017-0166-z.

[356] OMB. (2023). Circular No. A-4, available at https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/11/CircularA-4.pdf; EPA SC-GHG Report, *supra* n.349.

[357] Moore, F. C., Drupp, M. A., Rising, J., Dietz, S., Rudik, I., & Wagner, G. (2024). Synthesis of Evidence Yields High Social Cost of Carbon due to Structural Model Variation and Uncertainties. *Proceedings of the National Academy of Sciences*, *121*(52), e2410733121.

[358] Qiu, Y., et al. (2025). Climate Change, Wildfire Smoke, and the Social Cost of Carbon. *NBER Working Paper No. 33829*. https://www.nber.org/papers/w33829.

[359] Alari, A. et al. (2025). Quantifying the Short-Term Mortality Effects of Wildfire Smoke in Europe: A Multi-Country Epidemiological Study in 654 Contiguous Regions. *The Lancet*, *9*(8), p. 101296. https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(25)00174-3/fulltext.

[360] EPA SC-GHG Report, *supra* n.349.

Some of the categories of damages that remain unquantified and challenging to factor into the SCC, as explored above, would be further exacerbated by reaching tipping points (*e.g.*, biodiversity loss). This consideration is not included in the Dietz et al. 2021 study, which incidentally demonstrates that tipping points imply economic losses across every global region, reinforcing the need to factor these into climate studies.[361] A long literature pioneered by economist Martin Weitzman demonstrates that even a small chance of extreme warming justifies strong climate action, because the possibility of catastrophic damages outweighs other considerations.[362] Recent work shows that when accounting for this kind of uncertainty, estimates of the SCC could be 6 to 200 times higher than standard values.[363]

Rigorous cost-benefit analysis requires using the SCC to estimate emissions impacts; omitting the SCC from analysis conceals large and uneven damages, particularly in health. Uncertainty is not a rationale for exclusion, as rigorous policy must incorporate the full range of evidence. The SCC is also widely applied in practice, including by the Government of Canada and U.S. states such as New York, all of which use the 2023 U.S. federal estimates.[364]

*g. Soundness of IPCC and NCA reports.*

The leading scientific assessments that the proposal tries to downplay, including the Intergovernmental Panel on Climate Change (IPCC) and U.S. Global Change Research Program National Climate Assessment (NCA) reports, are undergirded by robust, high-integrity, and transparent procedures that enhance the soundness of the conclusions they reach—all of which the Draft CWG Report lacks. See Comment VIII, *infra*, for further discussion.

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[361] Dietz, S., Rising, J., Stoerk, T., & Wagner, G. (2021). Economic Impacts of Tipping Points in the Climate System. *Proceedings of the National Academy of Sciences*, *118*(34), e2103081118. https://doi.org/10.1073/pnas.2103081118.

[362] Weitzman, Martin L. (2014). Fat Tails and the Social Cost of Carbon. *American Economic Review*, *104*(5), pp. 544–546. DOI: 10.1257/aer.104.5.544; Wagner, G., & Weitzman, M. L. (2018). Potentially Large Equilibrium Climate Sensitivity Tail Uncertainty. *Economics Letters*, *168*, pp. 144-146.

[363] Dong, Jinchi; Tol, Richard S. J.; Wang, Fangzhi. (2025). *The Weitzman Premium on the Social Cost of Carbon*. (Preprint) arXiv

[364] Environment and Climate Change Canada (Env. Canada). (2025). Social Cost of Greenhouse Gases: Estimates for Canada. Government of Canada. https://www.canada.ca/en/environment-climate-change/services/climate-change/science-research-data/social-cost-ghg.html; OMB. (2023). Circular No. A-4, available at https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/11/CircularA-4.pdf; EPA SC-GHG Report, *supra* n.349.

### C. The proposal's scientific claims conflict with previous EPA findings.

EPA's proposal asks whether "due to new scientific information and developments since the 2009 Endangerment Finding, there is a strong enough scientific record to support an affirmative finding that greenhouse gas emissions from Section 202(a) sources cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare." As the foregoing discussion demonstrates, the answer to that question is clearly "yes" and the issues the proposal identifies to question that conclusion are both insufficient as a matter of law and arbitrary and capricious. The proposal's claims about the science are unlawful for other reasons, though. Namely, EPA has, myriad times since adopting the Endangerment Finding considered the evidence that greenhouse gases harm human health and welfare—consistently finding that the scientific evidence only more strongly supported its original conclusions. During that time, EPA also considered and rejected many of the critiques that the proposal now adopts. The proposal's failure to acknowledge, let alone explain its departure from these detailed and consistent findings over the course of a decade and a half is further reason it is arbitrary and capricious. Section 1 below describes EPA's consistent and clear record, prior to this proposal, affirming that greenhouse gases endanger human health and welfare. Section 2 describes past instances where EPA considered and rejected some of the specific claims the proposal now adopts.

#### *1. EPA has noted the strengthened evidence for endangerment in its rulemakings since 2009.*

We discuss four broad areas of evidence reflected in EPA's Endangerment Finding that EPA has clearly and continuously reaffirmed since 2009—subsequent history that is unacknowledged or explained in the current proposal. These are: 1) human activities are driving accumulation of greenhouse gases in the atmosphere; 2) There have been an unprecedented rise in greenhouse gases; 3) greenhouse gas emissions cause climate change; and 4) human-induced climate change harms human health and welfare.

##### *a. Human activities are driving accumulation of greenhouse gases in the atmosphere.*

In the 2009 Endangerment Finding, EPA determined that "human activities are intensifying the naturally occurring greenhouse effect by adding greenhouse gases to the atmosphere," and concluded the "high atmospheric concentrations of greenhouse gases are the unambiguous result of human activities." 74 Fed. Reg. at 66,419, 66,517. EPA further specified that increasing concentrations of all of the greenhouse gases, including carbon dioxide, methane, nitrous oxide, and fluorinated gases, can primarily be attributed to anthropogenic sources.[365] EPA relied on an

[365] "The global atmospheric carbon dioxide concentration has increased about 38 percent from preindustrial levels to 2009, and almost all of the increase is due to anthropogenic emissions. The global atmospheric concentration of methane has increased by 149 percent since pre-industrial levels (through 2007); and the nitrous oxide concentration has increased 23 percent (through 2007). The observed concentration increase in these gases can also be attributed primarily to

exhaustive review of peer-reviewed climate change science assessments (IPCC, USGCRP, and NRC) to conclude there is overwhelming evidence to support the conclusion that greenhouse gas emissions are primarily driven by anthropogenic sources.[366]

Over the past 15 years, EPA has continuously re-affirmed this finding through continuous review of scientific literature in its promulgation of several specific industry standards and rules, and in its denials of petitions to reconsider the initial endangerment finding. EPA's industry standards set greenhouse gas emission reduction requirements on a sector-by-sector basis, including electricity generation, oil & natural gas production, transportation, and landfills. Throughout the process of developing these standards, which included its ongoing review of the scientific consensus, incorporation of input from commenters, and updating its findings over time, EPA has continually reinforced that human activities are the predominant driver of increasing atmospheric concentrations of greenhouse gases.[367] For example, based on extensive underlying scientific evidence:

- In 2012, in the final rule for model year 2017 and later light-duty vehicle greenhouse gas emissions and CAFE standards, EPA noted more recent climate science assessments have reached similar conclusions to the initial Endangerment Finding, including that greenhouse gas emissions are "caused largely by human activities."[368]
- Similarly, in EPA's 2016 finding that greenhouse gases from aircraft cause air pollution, "EPA finds that… recent assessments [from IPCC, USGCRP, and NRC] support and

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anthropogenic emissions. The industrial fluorinated gases have relatively low concentrations, but these concentrations have also been increasing and are almost entirely anthropogenic in origin." *See* Endangerment Finding, 74 Fed. Reg. at 66,517.

[366] Assessments from the Intergovernmental Panel on Climate Change, the United States Global Change Research Program, and the National Research Council of the National Academies provided the primary scientific basis for the Endangerment Finding, but EPA notes the assessments were also "rigorously reviewed by the expert community, and also by the United States government agencies and scientists, including by EPA itself." *See* EPA Light-Duty Vehicle Standards, 77 Fed. Reg. 62,624, 62,894 (Oct. 15, 2012). Initial climate assessments include USGCRP (2009), IPCC (2007), NRC (2001), which were synthesized in EPA's Technical Support Document (TSD).

[367] *See e.g.,* EPA Light-Duty Vehicle Standards, 75 Fed. Reg. at 25,397; EPA Denial of Petitions, 75 Fed. Reg. at 49,564; Performance Standards for EGUs, 80 Fed. Reg. at 64,517; Standards of Performance for Municipal Solid Waste Landfills, 81 Fed. Reg. 59,332, 59,339 (Aug. 29, 2016); EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,799, 39,807-808; EPA Oil and Gas Standards, 89 Fed. Reg. at 16,838; EPA 2022 Denial of Petitions Decision Document at 3, 16.

[368] Light-Duty Vehicle Standards, 77 Fed. Reg. at 62,895.

strengthen evidence cited in 2009 Endangerment Finding that current atmospheric GHG concentrations… are a result of both historic and current anthropogenic emissions."[369]

- As of 2024, in updated standards for fossil fuel-fired electric generating units, EPA states "atmospheric concentrations of GHGs… continue to climb, primarily because of both historical and current anthropogenic emissions."[370]

EPA has also reinforced these findings through the Agency's 2010 and 2022 denials of petitions for reconsideration of the Endangerment Finding.[371] In its 2010 denial of ten petitions that claimed flaws in the scientific evidence, EPA reaffirmed its "ability to state with confidence … that there is compelling evidence that anthropogenic emissions of greenhouse gases are the primary driver" of climate change.[372] Similarly, in its 2022 denial of four petitions, EPA leveraged updated climate assessments from 2016-2021[373] to conclude that recent climactic changes can be "attributed… to the human-induced buildup of greenhouse gases in our atmosphere."[374]

EPA's 2025 Reconsideration of the Endangerment Finding arbitrarily ignores (and certainly does not explain) a decade and a half of EPA findings of anthropogenic causality based on long-standing scientific consensus. The proposal states only that "the causal role of anthropogenic emissions is not the exclusive source of [increased greenhouse gas concentrations]" and natural factors and other anthropogenic factors, including urbanization and localized population growth, need to be studied further. These statements neither refute anthropogenic causality nor even directly address the issue. In any event, they fall well short of EPA's duty to provide a more detailed explanation where the Agency is proposing to depart from past factual findings. That duty is heightened even further here where EPA's past findings are consistent over a decade and a half and supported by detailed evidence from peer-reviewed scientific assessments.

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[369] Aircraft Engine Endangerment Finding, 81 Fed. Reg. 54,422, 54,444 (Aug. 15, 2016). Updated climate assessments include USGCRP (2014), IPCC (2013), NRC (2014).

[370] EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,808.

[371] EPA proposes to rescind its 2010 and 2022 reconsideration denials with no additional explanation. But, as our comments make clear, those denials contain additional information that speaks directly to the strengthened basis of the Endangerment Finding. EPA's failure to consider that information as it evaluates the exact same question is arbitrary and capricious. So too is its proposal to rescind these denials without providing any additional explanation

[372] 75 Fed. Reg. at 49,557.

[373] Updated climate assessments include USGCRP (2016, 2017-2018), IPCC (2018, 2019, 2021), NAS (2016, 2017, 2019), and NOAA (2021).

[374] EPA 2022 Denial of Petitions Decision Document at 11-13.

*b. There has been an unprecedented rise in atmospheric greenhouse gases.*

In the 2009 Endangerment Finding, EPA determined that "current atmospheric greenhouse gas concentrations are now at elevated and essentially unprecedented levels as a result of both historic and current anthropogenic emissions." 74 Fed. Reg. at 66,497.[375] Further, EPA also established that these "…well-mixed greenhouse gases have been increasing, and are projected to continue increasing unless the major emitters take action to reduce emissions." 74 Fed. Reg. at 66,539.[376]

Over the past 15 years, EPA has continuously re-affirmed this finding through review of scientific literature in its promulgation of several specific industry standards and rules, and in its denials of petitions to reconsider the initial endangerment finding. In the process of developing these standards, EPA followed a comprehensive approach to updating and reviewing the scientific consensus on the finding and incorporating input from commenters and continually reinforcing that the scientific evidence supports its claims. For example:

- From 2015 to 2024, EPA consistently cited evidence in introducing and updating standards for the electricity generation in particular and has documented the anthropogenic increase through 2022 by showing that "the average concentration of $CO_2$ as measured on top of Mauna Loa was 387 parts per million [in 2009], far above preindustrial concentrations of about 280 parts per million"[377] and rose further "at Mauna Loa in Hawaii and at other sites around the world … [to] 419 parts per million (ppm) in 2022. …The 2022 $CO_2$ concentration of 419 ppm is already higher than at any time in the last 2 million years."[378]

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[375] EPA also establishes a link between the increase in atmospheric concentration of greenhouse gases to increase in warming rates by showing evidence "from indirect, historical estimates of past climate changes that suggest that the changes in global surface temperature over the last several decades are unusual." *See* 74 Fed. Reg. at 66,518.

[376] EPA reiterates that the atmospheric concentration of greenhouse gases is expected to increase by stating "…no reason to expect that, without substantial and near-term efforts to significantly reduce emissions, atmospheric levels of greenhouse gases will not continue to climb, and thus lead to ever greater rates of climate change" and future projections show an increasing trend "For the year 2030, projections of the six greenhouse gases show an increase of 25 to 90 percent compared with 2000 emissions." *See* 74 Fed. Reg. at 66,518-19.

[377] EPA Electric Utility Generating Standards, 80 Fed. Reg. at 64,520. This finding was also mentioned in other industry standards such as electricity, oil and gas, transportation and landfills. *See* EPA Fossil Fuel Generating Standards, 89 Fed. Reg. at 39,808; EPA Oil and Natural Gas Standards, 89 Fed. Reg. at 16,838; EPA Heavy Duty Vehicle Standards, 81 Fed. Reg. at 73,487; EPA Light Duty and Medium Duty Standards, 89 Fed. Reg. at 27,862; EPA Denial of Petitions, 75 Fed. Reg. at 49,564.

[378] *See* EPA Fossil Fuel Generating Standards, 89 Fed. Reg. at 39,808. This finding was also mentioned in other industry standards such as electricity, oil and gas, transportation and landfills.

- In the oil and gas industry, EPA, relying on evidence from NOAA, recognizes the increase in methane concentration as it stated "atmospheric methane concentrations in 2014 were about 1,823 parts per billion, 150 percent higher than methane concentrations were in the year 1750."[379] By 2024, methane concentration had "reached 1,912 parts per billion … more than two and a half times the preindustrial concentration of 722 ppb."[380] In these standards, EPA also highlighted warming trends as they state, "the last 30 years were likely the warmest 30 year period of the last 1,400 years [in the Northern Hemisphere]."[381]
- Emissions from the transportation sector are well recognized by EPA, in particular, $CO_2$, $CH_4$ and $N_2O$ concentrations: "The combined radiative forcing due to the cumulative (*i.e.*, 1750 to 2005) increase in atmospheric concentrations of $CO_2$, $CH_4$, and $N_2O$ is … very likely to have been unprecedented in more than 10,000 years."[382]

EPA has reaffirmed the increase in greenhouse gas concentrations and its warming effects by stating that "...[it] is a well-documented and straightforward observation"[383] through its 2010 and 2022 denials of petitions for reconsideration of the Endangerment Finding. In EPA's 2022

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*See* EPA Electric Utility Generating Standards, 80 Fed. Reg. at 64,520; EPA Oil and Natural Gas Standards, 89 Fed. Reg. at 16,820; EPA Heavy Duty Vehicle Standards, 81 Fed. Reg. at 73,478; EPA Light Duty and Medium Duty Standards, 89 Fed. Reg. at 27,862; EPA Denial of Petitions, 75 Fed. Reg. at 49,564.

[379] EPA Oil and Natural Gas Standards, 81 Fed. Reg. 35,824, 35,836 (June 3, 2016).

[380] "Moreover, the 2022 concentration was an increase of almost 17 ppb over 2021—the largest annual increase in methane concentrations in the dataset (starting in 1984), continuing a trend of rapid rise since a temporary pause ended in 2007." *See* EPA Oil and Natural Gas Standards, 89 Fed. Reg. 16,820, 16,840 (Mar. 8, 2024).

[381] United States average temperatures have similarly increased by 1.3° to 1.9 °F since 1895, with most of that increase occurring since 1970." *See* EPA Oil and Natural Gas Standards, 81 Fed. Reg. at 35,836. EPA reiterated this claim in 2024 by stating "Global average temperature has increased by about 1.1 °C (2.0 °F) in the 2011–2020 decade relative to 1850–1900.43 The years 2015–2021 were the warmest 7 years in the 1880–2021 record, contributing to the warmest decade on record with a decadal temperature of 0.82 °C (1.48 °F) above the 20th century. The IPCC determined (with medium confidence) that this past decade was warmer than any multi century period in at least the past 100,000 years." *See* EPA Oil and Natural Gas Standards, 89 Fed. Reg. at 16,838.

[382] EPA also highlighted the increase as unusual in many of its standards: "The global atmospheric $CO_2$ concentration has increased about 38% from pre-industrial levels to 2009, and almost all of the increase is due to anthropogenic emissions. The global atmospheric concentration of CH4 has increased by 149% since pre-industrial levels (through 2007); and the N2O concentration has increased by 23% (through 2007).". *See* EPA Light Duty Standards, 75 Fed. Reg. at 25,324, 25,491-25,492.

[383] EPA Denial of Petitions, 75 Fed. Reg. at 49,564.

denial, the Agency stressed that petitioners ignored the vast and growing body of science.[384] The 2022 denial went on to further establish the scientific attribution to the Endangerment Finding as they "considered the entirety of the evidence regarding both historical and projected climate change… [and] there is independent scientific evidence regarding projected climate impacts that also supports the finding of endangerment."[385]

*c. The warming effect of greenhouse gases and other impacts.*

In the 2009 Endangerment Finding, EPA determined that the "six well-mixed greenhouse gases constitute the largest anthropogenic driver of climate change" and the "warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level."[386] Among the observed and projected effects of climate change include changes in precipitation, increases in extreme events, ocean acidification, and changes in physical and biological systems.[387]

Over the past 15 years, EPA has re-affirmed these findings through continuous review of scientific literature in its promulgation of several specific industry standards and rules, and in its denials of petitions to reconsider the initial endangerment finding. Throughout the process of developing these standards, which included its ongoing review of the scientific consensus, incorporation of input from commenters, and updating its findings over time, EPA has continually reinforced that greenhouse gases exert a warming effect on the climate and this warming effect is demonstrated by increasing global air and ocean temperatures, rising sea levels, and shrinking ice. For example:

- In the 2011 greenhouse gas emissions standards for vehicles, EPA reinforced the "warming of the climate system is unequivocal, as is now evident from observations of

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[384] EPA 2022 Denial of Petitions Decision Document at 12-13. EPA relied on the following scientific assessments to document climate change and human-induced buildup of greenhouse gases: USGCRP 2016 Climate and Health Assessment and 2017-2018 Fourth National Assessment, 1.5 Degrees Celsius, 2019 Climate Change and Land, 2019 Ocean and Cryosphere in a Changing Climate, three volumes of the 2021 IPCC Sixth Assessment Report, NAS 2016 Attribution of Extreme Weather Events in the Context of Climate Change, 2017 Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide, and 2019 Climate Change and Ecosystems assessments, NOAA's State of the Climate Report 2021.

[385] EPA 2022 Denial of Petitions Decision Document at 16.

[386] EPA further quantifies the warming effect of greenhouse gas accumulation by stating "Of the total anthropogenic heating effect … since preindustrial times, the combined heating effect of the six well-mixed greenhouses is responsible for roughly 75 percent, and it is expected that this share may grow larger over time". *See* 2009 Endangerment Finding, 74 Fed. Reg. at 66,517.

[387] Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, EPA, December 7, 2009, pp. 23-44.

increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level."[388] EPA specified that "Nine of the 10 warmest years on record have occurred since 2001."[389]

- In EPA's 2015 greenhouse gas emissions standards for electric generating units, EPA documented the measurable climate impacts of warming effects, stating that "U.S. average temperatures have similarly increased by 1.3 to 1.9 °F since 1895, with most of that increase occurring since 1970. Global sea levels rose 0.19 m (7.5 inches) from 1901 to 2010. Contributing to this rise was the warming of the oceans and melting of land ice."[390] Additionally, EPA noted that "2014 was the warmest year globally in the modern global surface temperature record, going back to 1880; this now means 19 of the 20 warmest years have occurred in the past 20 years, and except for 1998, the ten warmest years on record have occurred since 2002."[391]
- In EPA's 2016 finding that GHG from aircrafts cause air pollution, EPA reviewed recent climate assessments to further conclude that the "heating effect caused by the human-induced buildup of these and other GHGs in the atmosphere, plus other human activities… is extremely likely (>95 percent likelihood) to be the cause of most of the observed global warming since the mid-20th century."[392] This certainty increased from the initial "very likely" level found in the 2009 Endangerment Finding.[393] EPA considered "these observed changes as additional evidence of the unequivocal warming of the climate system driven primarily by elevated atmospheric GHG concentrations."[394]
- In the more recent 2024 Oil and Gas standards, EPA again reaffirmed these conclusions, saying "[s]ince the 2016 Endangerment Findings, the climate has continued to change, with new records being set for several climate indicators such as global average surface temperatures, GHG concentrations, and sea level rise"[395] and that "[w]arming temperatures in the atmosphere, ocean, and land have led to, for example: increased numbers of heat waves, wildfires, and other severe weather events; reduced air quality; more intense hurricanes and rainfall events; and sea level rise."[396]

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[388] GHG Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. 57106 (Sept. 15, 2011).

[389] GHG Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. at 57106.

[390] Standards of Performance for GHG from EGUs, 80 Fed. Reg. at 64,520.

[391] Standards of Performance for GHG from EGUs, 80 Fed. Reg. at 64,520.

[392] 2016 Finding that GHG from Aircraft Cause Air Pollution, 81 Fed. Reg. at 54,424.

[393] 2009 Endangerment Finding, 74 Fed. Reg. at 66,518.

[394] 2016 Finding that GHG from Aircraft Cause Air Pollution, 81 Fed. Reg. at 54,443.

[395] Performance Standard for Oil and Gas, 89 Fed. Reg. at 16,837

[396] Performance Standard for Oil and Gas, 89 Fed. Reg. at 16,867.

EPA's 2010 and 2022 denials of petitions for reconsideration likewise reinforced these findings. In the 2010 denial, which noted that petitioners had raised no objections to the Administrator's analysis of climate risks,[397] EPA explained that "the physical effect of greenhouse gases on climate and the environment remains a basic scientific fact—greenhouse gases slow the loss of Earth's heat, which would otherwise escape to space."[398] Further, EPA stated that "the scientific literature is clear that the heating effect caused by the buildup of greenhouse gases is warming the climate system."[399] Similarly, in its 2022 denial of four petitions, EPA emphasized that petitioners disregarded updated scientific assessments,[400] reaffirmed its finding,[401] and concluded that newer science was "largely consistent with, and in many cases strengthen[ed] and add[ed] to" the basis for the 2009 Endangerment Finding.[402]

EPA's 2025 Reconsideration states that projections have not come to fruition in "light of empirical observations made after it was finalized in 2009 through 2024." 90 Fed. Reg. at 36,308. But this conclusion arbitrarily ignores EPA's long record of finding the opposite to be

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[397] EPA Denial of Petitions, 75 Fed. Reg at 49,568. ("Petitioners have not raised any objections to EPA's analysis and judgments concerning [global warming and associated climate change] risks and impacts to public health and welfare, which were the foundation of the Administrator's Endangerment Finding"); *see id.* at 49,576 - 49,578, 49,581, 49,583, 49,585.

[398] *Id.*

[399] *Id.*

[400] Major recent assessments include USGCRP's 2016 Climate and Health Assessment and 2017-2018 Fourth National Climate Assessment; IPCC's 2018 Global Warming of 1.5°C26, 2019 Climate Change and Land, and 2019 Ocean and Cryosphere in a Changing Climate assessments, as well as the three volumes of the 2021 IPCC Sixth Assessment Report (AR6); The NAS 2016 Attribution of Extreme Weather Events in the Context of Climate Change, 2017 Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide, and 2019 Climate Change and Ecosystems assessments; NOAA's annual State of the Climate reports published by the Bulletin of the American Meteorological Society, most recently in August of 2021.

[401] EPA 2022 Denial of Petitions Decision Document at 1, 3 ("The science supporting the Administrator's finding that elevated concentrations of greenhouse gases in the atmosphere … is robust, voluminous, and compelling, and has been strongly affirmed by recent scientific assessments of the National Academies, the US Global Change Research Program, and the Intergovernmental Panel on Climate Change."); 2022 Denial at pp. 16 ("The Administrator considered the entirety of the evidence regarding both historical and projected climate change…even in the absence of definite historical attribution, there is independent scientific evidence regarding projected climate impacts that also supports the finding of endangerment.").

[402] EPA 2022 Denial of Petitions Decision Document at 5, citing 81 Fed. Reg. at 54,434 ("These new assessments are largely consistent with, and in many cases strengthen and add to, the already compelling and comprehensive scientific evidence detailing the role of the six well-mixed GHGs in driving climate change, explained in the 2009 Endangerment Finding.").

true, including in multiple recent final rules where the Agency has documented that new observational records are being set for worsening extreme events in the U.S.[403]

*d. Human-induced climate change harms human health and welfare.*

In the 2009 Endangerment Finding, EPA determined that climate change has "the potential to affect essentially every aspect of human health, society and the natural environment." 74 Fed. Reg. at 66,523. Specifically, EPA considered health risks from "changes in air quality, increases in temperatures, changes in extreme weather events, increases in food- and water-borne pathogens, and changes in aeroallergens." 74 Fed. Reg. at 66,497. EPA evaluated welfare impacts associated with "numerous and far-ranging risks to food production and agriculture, forestry, water resources, sea level rise and coastal areas, energy, infrastructure, and settlements, and ecosystems and wildlife." *Id*.

Over the past 15 years, EPA has continuously re-affirmed this finding through review of scientific literature in its promulgation of several specific industry standards and rules, and in its denials of petitions to reconsider the initial endangerment finding. Throughout the process of developing these standards, which included its ongoing review of the scientific consensus, incorporation of input from commenters, and updating its findings over time, EPA has continually reinforced that emissions of greenhouse gases harm the public.[404] For example, among others:

- In introducing 2011 vehicle emissions standards, EPA explained that "[s]etting GHG emissions standards for the heavy-duty sector will help to ameliorate climate change," concluding that six greenhouse gases "in combination result in air pollution which may reasonably be anticipated to endanger both public health and welfare…"[405]

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[403] *See, e.g.*, EPA, Climate Change Indicators in the United States (5th Ed. 2024), at 67 ("Climate Change Indicators"), https://www.epa.gov/system/files/documents/2024-09/climate_indicators_2024.pdf; Performance Standards for EGUs, 80 Fed. Reg. at 64,517-64,522; 81 Fed. Reg. at 35,833; EPA New Source Performance Standards for GHG From New, Modified, and Reconstructed Fossil Fuel-Fired EGUs, 89 Fed. Reg. at 39,807-39,810, 40,064 ("Since the 2016 Endangerment Finding, the climate has continued to change, with new observational records being set for several climate indicators such as global average surface temperatures, GHG concentrations, and sea level rise….These updated observations and projections document the rapid rate of current and future climate change both globally and in the U.S.").

[404] *See e.g.,* EPA Light-Duty Vehicle Standards, 75 Fed. Reg. at 25,399; EPA Denial of Petitions, 75 Fed. Reg. at 49,557; Performance Standards for EGUs, 80 Fed. Reg. at 64,517, 64,518; Standards of Performance for Municipal Solid Waste Landfills, 81 Fed. Reg. at 59,276, 59,338; EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,808; EPA Oil and Gas Standards, 89 Fed. Reg. at 16,837; EPA 2022 Denial of Petitions Decision Document at 3, 16.

[405] EPA Emissions Standards for Medium and Heavy Duty Vehicles, 76 Fed. Reg. at 57,109. This finding has been repeated in rulings from 2010-2024. *See e.g.* EPA Light-Duty Vehicle

- In a 2016 oil and gas emissions standards ruling, EPA stated that, since the 2009 Finding, "the climate has continued to change, with new records being set for a number of climate indicators." EPA emphasized that new assessments, which have been through rigorous peer review by the expert community, "strengthen the case that GHGs endanger public health and welfare both for current and future generations."[406]
- In 2016, in EPA's finding on aircraft emissions causing air pollution[407] EPA found additional evidence to "strengthen and further support the judgement that GHGs in the atmosphere may reasonably be anticipated to endanger the public health and welfare of current and future generations."[408]
- Most recently, in a 2024 oil and gas rule, EPA found that "major scientific assessments continue to demonstrate advances in our understanding of the climate system and the impacts that GHGs have on public health and welfare."[409]

EPA has repeatedly reaffirmed that climate change from greenhouse gases endangers public health and welfare through its 2010 and 2022 denials of petitions for reconsideration of the Endangerment Finding. In the Agency's 2022 denial, for instance, EPA stressed that petitioners

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Standards, 75 Fed. Reg. at 25,324; EPA 2017 Light Duty Emissions and CAFE Standards, 77 Fed. Reg. at 62,624; EPA Oil ang Gas Standards, 81 Fed. Reg. at 35,824.

[406] EPA Oil and Gas Standards, 81 Fed. Reg. at 35,834. Additional rules have also considered new findings. *See e.g.,* EPA Oil and Gas Standards, 89 Fed. Reg. at 27,842; EPA Standards for EGUs, 80 Fed. Reg. at 64,510; EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,798.

[407] This finding not only placed "considerable weight" on the evidence in the record for the 2009 Endangerment Finding but also includes the review of science assessments released after 2009.

[408] Additionally, they found that "No information or assessments published since late 2009 suggest that it would be reasonable for the EPA to now reach a different or contrary conclusion." *See* Aircraft Engine Endangerment Finding, 81 Fed. Reg. at 54,424.

[409] EPA Oil and Gas Standards, 89 Fed. Reg. at 16,837. This evidence included references to U.S. Global Change Research Program's (USGCRP) 2016 Climate and Health Assessment 30 and 2017–2018 Fourth National Climate Assessment (NCA4); IPCC's 2018 Global Warming of 1.5 °C, 2019 Climate Change and Land, and the 2019 Ocean and Cryosphere in a Changing Climate assessments, as well as the 2023 IPCC Sixth Assessment Report (AR6); the NAS 2016 Attribution of Extreme Weather Events in the Context of Climate Change, 2017 Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide, and 2019 Climate Change and Ecosystems assessments; National Oceanic and Atmospheric Administration's (NOAA) annual State of the Climate reports published by the Bulletin of the American Meteorological Society, most recently in 2022; EPA Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts (2021).

ignored the updated scientific assessments,[410] reaffirmed the same conclusion,[411] and noted that newer science strengthened the 2009 record.[412]

EPA's 2025 proposal ignores the long record of EPA findings, stating without support and without acknowledging or explaining its departure from prior findings that greenhouse gas concentrations have risen, "without producing the degree of adverse impacts to public health and welfare in the United States that the EPA anticipated in the 2009 Endangerment Finding." As described above, the scant justifications it does offer are unlawful and arbitrary, and in any event, they do not discharge EPA's duty to provide a more detailed explanation where the Agency is proposing to depart from consistent and long-standing past factual findings, which are themselves supported by detailed evidence from peer-reviewed scientific assessments.

### *2. EPA has previously considered and rejected the scientific claims this proposal now adopts.*

In addition to the extensive regulatory history that the proposal ignores, EPA also has previously considered and rejected some of the specific claims the proposal now adopts. For instance:

1. Mortality Risk from Temperatures: In the proposal, citing the Draft CWG Report, EPA claims that "mortality risk from cold temperatures remains by far the greater threat to public health in the United States and around the world at the aggregate level (2025 CWG Draft Report)." 90 Fed. Reg. at 36,308. In the 2016 finding that greenhouse gas emissions from aircrafts cause air pollution, however, EPA concluded "climate change increases the likelihood of heat waves, which are associated with increased deaths and illnesses" and while "climate change is also expected to lead to reductions in cold-related

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[410] Major recent assessments include USGCRP's 2016 Climate and Health Assessment and 2017-2018 Fourth National Climate Assessment; IPCC's 2018 Global Warming of 1.5°C, 2019 Climate Change and Land, and 2019 Ocean and Cryosphere in a Changing Climate assessments, as well as the three volumes of the 2021 IPCC Sixth Assessment Report (AR6); The NAS 2016 Attribution of Extreme Weather Events in the Context of Climate Change, 2017 Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide, and 2019 Climate Change and Ecosystems assessments; NOAA's annual State of the Climate reports published by the Bulletin of the American Meteorological Society, most recently in August of 2021.

[411] EPA 2022 Denial of Petitions Decision Document at 1, 3 ("The science supporting the Administrator's finding that elevated concentrations of greenhouse gases in the atmosphere may reasonably be anticipated to endanger the public health and welfare of current and future U.S. generations is robust, voluminous, and compelling, and has been strongly affirmed by recent scientific assessments of the National Academies, the US Global Change Research Program, and the Intergovernmental Panel on Climate Change.")

[412] EPA 2022 Denial of Petitions Decision Document at 5, citing 81 Fed. Reg. at 54,442. ("These new assessments are largely consistent with, and in many cases strengthen and add to, the already compelling and comprehensive scientific evidence detailing the role of the six well-mixed GHGs in driving climate change, explained in the 2009 Endangerment Finding.")

mortality… increases in heat-related mortality due to global warming in the United States were unlikely to be compensated for by decreases in cold-related mortality."[413] EPA does not acknowledge or explain its departure from this prior position.

2. Sea Level Rise: The proposal, citing the Draft CWG Report, claims that recent data suggest aggregate sea level rise has been minimal, at least with respect to the United States: "Recent data and analyses suggest that aggregate sea level rise has been minimal, at least with respect to impacts on the United States, and that sea level has risen in some domestic localities while falling in others (2025 CWG Draft Report)." 90 Fed. Reg. at 36,309. However, in EPA's recent 2024 greenhouse gas standards for fossil fired-electric generating units, the Agency concluded "the climate has continued to change with new observational records being set for several climate indicators such as… sea level rise."[414] In the US in particular, "sea level rise has amplified coastal flooding and erosion impacts, requiring the installation of costly pump stations, flooding streets, and increasing storm surge damages" according to the NCA4.[415] Similarly, in EPA's 2022 Denial of Petitions for Reconsideration, they state "since the 2009 Endangerment Finding, evidence regarding climatic changes has continued to accumulate, with new records being set for several climate indicators such as global average surface temperatures, greenhouse gas concentrations, and sea level rise."[416] EPA arbitrarily fails to acknowledge or explain the inconsistent prior findings.
3. Ecological Impact of Greenhouse Gases: The proposal, relying on the Draft CWG Report, claims that the Endangerment Finding did not consider certain benefits like enhanced plant growth. 90 Fed. Reg. at 36,308. However, in recent industry standards, EPA has taken the opposite position, stating "elevated concentrations of $CO_2$ stimulate plant growth (which can be positive in the case of beneficial species, but negative in terms of weeds and invasive species, and can also lead to a reduction in plant micronutrients) and cause ocean acidification."[417] EPA does not acknowledge or explain this departure from its prior findings.
4. Agricultural Impact of Greenhouse Gases: EPA's proposal, relying on the Draft CWG Report, suggests greenhouse gases will stimulate food production and allow "the United States to export significant food supplies around the world for economic and humanitarian purposes." 90 Fed. Reg. at 36,309-310. However, in EPA's 2022 Denial of Petitions for Reconsideration, the Agency concludes that "the body of evidence points towards increasing risk of net adverse impacts on U.S. food production and agriculture,

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[413] Finding That Greenhouse Gas Emissions from Aircraft Cause or Contribute to Air Pollution That May Reasonably Be Anticipated To Endanger Public Health and Welfare, 81 Fed. Reg. at 54,452.

[414] EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,807.

[415] EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,809.

[416] EPA 2022 Denial of Petitions Decision Document at 11.

[417] *See, e.g.*, EPA Standards for EGUs and Repeal of ACE, 89 Fed. Reg. at 39,810; EPA Oil and Gas Standards, 89 Fed. Reg. at 16,840.

with the potential for significant disruptions and crop failure in the future."[418] EPA does not acknowledge or explain this departure from its prior findings.

### D. Greenhouse gas emissions unquestionably endanger public health and welfare.

Emission of greenhouse gasses cause numerous direct and indirect health impacts, and there is expert consensus that the continued unfettered emission of harmful pollutants will drive increased climate-attributable morbidity and mortality.[419] The public health impacts of greenhouse gas emissions are unequally distributed—lower-income populations, younger, elderly, disabled, and Indigenous individuals, and women will face a greater health burden.[420] EPA cannot reasonably proceed here without first considering the full scope of public health impacts detailed above and summarized below and addressing countervailing facts that contradict the Agency's reversal in policy.

#### *1. Air quality.*

Worsening air quality due to greenhouse gas emissions causes significant negative health impacts.[421] There are multiple direct and indirect pathways through which greenhouse gas emissions deteriorate air quality. Pollution generated by wildfires—including particulate matter, carbon monoxide, and hazardous air pollutants—contributes to death, respiratory disease, cardiac events, and negative birth outcomes.[422] Additionally, wildfire pollution, particulate matter pollution, and aeroallergens are all produced in heightened quantities with warmer ambient temperatures that result from greenhouse gas emissions.[423] Each of these is associated with heightened climate-sensitive cardiovascular and respiratory distress.[424] Ground-level ozone (commonly referred to as "smog") is also associated with increased ambient temperatures and

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[418] EPA 2022 Denial of Petitions Decision Document at 32.

[419] *See* Intergovernmental Panel on Climate Change, Climate Change 2022: Impacts, Adaptation and Vulnerability, Working Group II Contribution to the Sixth Assessment Report of the IPCCC 50 (Hans-Otto Pörtner et al. eds., 2022) (2022) [hereinafter IPCC, AR6].

[420] *Id.* at 78.

[421] *Air Pollution* World Health Org., https://www.who.int/health-topics/air-pollution#tab=tab_2 (last visited July 10, 2025) (WHO estimates that ambient and indoor air pollution jointly cause approximately 7 million premature deaths annually).

[422] *See* J. Wentz, Conference Report: Attribution Science and Climate Law at 17 (March 2025), *available at* https://perma.cc/4M4X-J3FZ.

[423] *Id.*; A.B. Singh & Pawan Kumar, Climate Change and Allergic Diseases: An Overview, 3 Front Allergy 964987 (2022).

[424] *See* IPCCC, AR6, at 11.

causes respiratory disease, obstructive pulmonary disease, asthma attacks, lung disease, preterm and low birthweight infants, cancer, harms to brain health, and premature death.[425]

### *2. Extreme weather events.*

Emissions of greenhouse gas raise ambient temperatures, which in turn heightens the frequency and severity of extreme weather events, including extreme heat, precipitation, and flooding.[426] These extreme events directly cause mortality and morbidity and indirectly contribute additional health stressors, by disrupting health services and emergency management systems.[427]

Extreme heat attributable to greenhouse gas emissions has significant implications for public health, contributing to more mortality than any other climatic hazard.[428] Conclusively, health impact studies have found that climate change induced by greenhouse gas emissions has contributed to rising ambient temperatures, increasing the pervasiveness of extreme heat exposure.[429] Exposure to extreme heat causes a variety of health issues including heat stroke, heat exhaustion, heat cramps, rhabdomyolysis, heat rashes, and hyperthermia.[430] Further, extreme heat can exacerbate existing health issues, including cardiovascular and respiratory diseases, diabetes-related health issues, and cerebrovascular disease.[431]

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[425] Hans Orru et al., Impact of Climate Change on Ozone-Related Mortality and Morbidity in Europe, 41 European Respiratory J. 285 (2013); *Health Effects of Ozone Pollution*, U.S. Environmental Protection Agency, https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution (last updated Mar. 13, 2025). EPA also lists the following health impacts of ozone: coughing and sore or scratchy throat; difficulty breathing; inflammation and damage to the airways; aggravation of lung diseases such as asthma, emphysema, and chronic bronchitis, increased frequency of asthma attacks. *Id. See also* Am. Lung Ass'n, *Declaration*.

[426] *See* IPCCC, AR6, at 8, 11.

[427] *Id.* at 11.

[428] Am. Lung Ass'n, *Declaration*; A.M. Vicedo-Cabrera et al., The Burden of Heat-Related Mortality Attributable to Recent Human-Induced Climate Change, 11 Nature Climate Change 492 (2021). See also Jagadeesh Puvvula et al., Estimating the Burden of Heat-Related Illness Morbidity Attributable to Anthropogenic Climate Change in North Carolina, 6 GeoHealth e2022GH000636 (2022).

[429] See Wentz (2025), *supra* n.422, at 12; Maria Romanello et al., The 2023 Report of the Lancet Countdown on Health and Climate Change, 402 Lancet 2346, 2360 (2023).

[430] *See Heat Stress and Workers*, Nat'l Inst for Occupational Safety & Health, https://www.cdc.gov/niosh/heat-stress/about/index.html (last updated July 11, 2024); Wentz (2025), *supra* n.422, at 12.

[431] *Weather Extremes*, Nat'l Inst. of Env't Health Sci., https://www.niehs.nih.gov/health/topics/agents/extremeweather (last visited July 10, 2025); *Heat and Health*, World Health Org. (May 28, 2024), https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health. Additionally, the incidence of extreme heat

The climatic impacts resulting from greenhouse gas emissions increase severe precipitation, storm, and flooding events.[432] Directly, extreme weather events cause mortality, property loss, and displacement.[433] Indirectly, these events threaten already fragile infrastructure, health services, and emergency response systems, resulting in high public and private costs.[434] Emissions-induced climate change also increases the occurrence of fire weather, which heightens the risk and potential severity of wildfires.[435] In addition to morbidity, loss of property, and displacement, wildfires produce harmful smoke that is associated with severe respiratory ailments.[436]

***3. Disease, water quality, and water quantity.***

Ambient warming caused by greenhouse gas emissions increases the instances of infectious diseases, including vector-borne illnesses such as malaria and diarrheal disease.[437] The

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exposure disproportionately falls on vulnerable populations, including the elderly, those exposed to high levels of occupational heat, children, disabled, and individuals without access to shelter or air conditioning. *See* Wentz (2025), *supra* n.422, at 12.

[432] See Wentz (2025), *supra* n.422, at 14 (citing Mark Risser & Michael Wehner, Attributable Human-Induced Changes in the Likelihood and Magnitude of the Observed Extreme Precipitation During Hurricane Harvey, 44 Geophysical Rsch. Letters 12457 (2017) and Geert Jan van Oldenborgh, Attribution of Extreme Rainfall from Hurricane Harvey, August 2017, 12 Env't Rsch. Letters 1 (2017)).

[433] *See* Wentz (2025), *supra* n.422, at 14.

[434] *Id*. *New Report: Extreme Weather Events Cost Economy $2 Trillion Over the Last Decade*, Int'l Chamber of Commerce (Nov. 11, 2024), https://iccwbo.org/news-publications/policies-reports/new-report-extreme-weather-events-cost-economy-2-trillion-over-the-last-decade/.

[435] See Wentz (2025), *supra* n.422, at 15 (citing Marco Turco et al., Anthropogenic Climate Change Impacts Exacerbate Summer Forest Fires in California, 120(25) Proc. Natl. Acad. Sci. e2213815120 (2023); Michael Goss et al., Climate Change is Increasing the Likelihood of Extreme Autumn Wildfire Conditions Across California, 15 Env't Rsch. Letters 094016 (2020); and Simon F.B. Tett et al., Explaining Extreme Events of 2016 from a Climate Perspective, 99 Bulletin of the Am. Meteorological Soc. S1, S65 (2018)).

[436] *See* Wentz (2025), *supra* n.422, at 17; *see also* Am. Lung Ass'n, *Declaration* ("Particulate pollution and other harmful substances in [wildfire] smoke are linked to lung disease, lung cancer, heart disease, stroke, dementia, and preterm birth.").

[437] *See* IPCCC, AR6, at 11; Anthony J. McMichael et al., *Global Climate Change*, ch. 20 in World Health Org., Comparative Quantification of Health Risks: Global and Regional Burden of Disease Attributable to Selected Major Risk Factors 1606 (Majid zzati et al. eds., 2004).

prevalence of infection diseases increases with higher ambient temperatures—which expand the geographic range of zoonotic-borne diseases—and through increased human displacement.[438]

Climatic changes resulting from greenhouse gas emissions threaten the ability of local governments to provide safe drinking water and adequate sanitation services.[439] Elevated runoff of pollutants and sediment from heavy precipitation degrades water quality.[440] Additionally, the increasing frequency and duration of droughts strain the existing water supply and undermine food production and distribution systems.[441] Finally, saltwater intrusion—which is exacerbated by drought and sea-level rise—reduces the supply of potable water.[442]

#### *4. Other public health benefits.*

The public health benefits of greenhouse gas reductions are large.[443] Regulation that decreases emissions is a cost-effective way to avert premature climate-related morbidity and mortality.[444] Additionally, because of the co-emittance of harmful pollutants—such as nitrous oxide and particulate matter—with greenhouse gas, there are significant health co-benefits from emissions-reducing regulation.[445]

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[438] *See* IPCCC, AR6, at 51–52; *see also* Am. Lung Ass'n, *Declaration* ("Disease-carrying insects like ticks and mosquitoes are multiplying and spreading to new areas, increasing exposure to illnesses like Lyme disease and Dengue fever. Water- and food-borne pathogens are also spreading.").

[439] *See Climate Adaptation and Source Water Impacts*, U.S. Environmental Protection Agency, https://www.epa.gov/arc-x/climate-adaptation-and-source-water-impacts (last updated Jan. 10, 2025). EPA also notes increased prevalence of harmful algal blooms, which can have secondary impacts on human health. *Id*.

[440] *Id.*

[441] *Id.*

[442] *Id.*

[443] *See* Am. Lung Ass'n, *Declaration* ("[T]he actions that reduce the pollution driving climate change result in immediate health benefits."); *See* Wentz (2025), *supra* n.422, at 18 (citing Geroge D. Thurston & Michelle L. Bell, *The Human Health Co-Benefits of Air Quality Improvements Associated with Climate Change Mitigation*, Climate Change and Global Pub. Health 181 (K.E. Pinkerton & W.N. Rom eds, 2020).

[444] See Jinghong Gao et al., Public Health Co-benefits of Greenhouse Gas Emissions Reduction: A Systematic Review, 627 Sci. of the Total Env't. 388, 390 (2018); Drew T. Shindell, Yunha Lee & Greg Faluvegi, Climate and Health Impacts of US Emissions Reductions Consistent with 2°C; 6 Nat. Climate Change 503 (2016); J. Jason West et al., Co-benefits of Mitigating Global Greenhouse Gas Emissions for Future Air Quality and Human Health, 3 Nat. Climate Change 885 (2013).

[445] *Id.* at 397.

## VII. Even considered within EPA's flawed interpretation of Section 202(a), EPA cannot rationally conclude that the scientific evidence does not support finding endangerment.

In the end, there is simply no plausible interpretation of the scientific evidence—or the lived experience of the last 15 years—that allows EPA rationally to conclude that emissions of greenhouse gases from motor vehicles are not endangering public health and welfare. The evidence on climate change, and on EPA's endangerment finding itself, has repeatedly been considered and credited by courts, which have acknowledged the strength of the evidence on greenhouse gas emissions and the dangers of climate change.[446] Most notably, of course, the D.C. Circuit considered the very question of the scientific record's support for the endangerment finding itself and concluded that "[t]he body of scientific evidence marshaled by EPA in support of the Endangerment Finding is substantial" and supported every link in the causal chain between motor vehicle emissions, a warming climate, and the hazards to public health and welfare that result. *Coalition for Responsible Regulation*, 684 F.3d at 120. The Supreme Court denied certiorari on that central question.

The evidentiary foundation of the endangerment finding is so strong that even EPA's flyspecking purported procedural improprieties cannot shake it. EPA proposes that the 2009 Finding is

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[446] *See, e.g.*, *Juliana v. United States*, 947 F.3d 1159, 1168 (9th Cir. 2020) (holding that the district court had correctly found that plaintiffs had suffered concrete and particularized injuries as a result of climate change); *City of New York v. Chevron Corp.*, 993 F.3d 81, 86 (2d Cir. 2021) (recognizing that "[g]lobal warming is one of the greatest challenges facing humanity today. Among the scientific community, there is near universal consensus that global warming is primarily caused, or at least accelerated, by the burning of fossil fuels, which emits greenhouse gases like carbon dioxide and methane into the atmosphere"); *WildEarth Guardians v. U.S. BLM*, 870 F.3d 1222, 1236 (10th Cir. 2017) (noting the Bureau of Land Management's acknowledgment that "climate change is a scientifically verified reality," and declining to give BLM any greater deference on the question because "it does not involve 'the frontiers of science' . . . i.e., as a barely emergent knowledge and technology"); *AquAlliance v. U.S. Bureau of Reclamation*, 287 F. Supp. 3d 969, 1023 (E.D. Cal. 2018) (concluding that the agency's record "supports a finding that climate change will have an impact on the water supply," and crediting climate modeling scenarios that demonstrate climate change impacts); *City of Oakland v. BP P.L.C.*, 325 F. Supp. 3d 1017, 1020-21 (N.D. Cal. 2018) (crediting, after lengthy fact development and expert testimony, that "climate scientists are in vast consensus that the combination of fossil fuels has, in and of itself, materially increased carbon dioxide levels, which in turn has materially increased the median temperature of the plant, which in turn has accelerated ice melt and raised (and continues to raise) the sea level"); *City of New York v. BP P.L.C.*, 325 F. Supp. 3d 466, 475 (S.D.N.Y. 2018) (recognizing "that the City, and many other governmental entities around the United States and in other nations, will be forced to grapple with the harmful impacts of climate change in the coming decades"); *Fentress v. Exxon Mobil Corp.*, 304 F. Supp. 3d 569, 576-77 (S.D. Tex. 2018) ("To pretend that environmental risks about climate change were unknown until Exxon itself shared information about climate change is an affront to scientists, academics, and government bodies, not to mention the people who were already experiencing the effects of climate change by 2015.").

unlawful because it "severed" the question of whether motor vehicles emit pollutants that contribute to air pollution, and whether that air pollution is dangerous; it identified dangerous pollution separately from weighing standards available to reduce that pollution; it failed to distinguish between emissions from *new* motor vehicles and emissions from the fleet as a whole; and it did not distinguish between individual greenhouse gases emitted by motor vehicles, rather than the six "well-mixed" pollutants that are collectively driving climate change. 90 Fed. Reg. at 36,303-04. But EPA notably does not engage in any analysis of *how* taking these different analytical paths would have—or would now—change the ultimate conclusion that greenhouse gas emissions are contributing to harms to human health and welfare. EPA proposes these purported procedural flaws as independent bases for rescinding the Endangerment Finding without asking or answering the question: so what?

If EPA is correct, for instance, that it must determine that motor vehicle emissions *themselves*—not in conjunction with emissions from different classes or categories of sources—contribute to endangering human health and welfare, it has not proposed a basis for determining that they do *not*. That presumably is because EPA *cannot* so determine, because the scientific evidence connecting greenhouse gas emissions to human health and welfare harms is overwhelming. Indeed, since 2009, attribution science has developed to quantify specific harmful impacts attributable to specific emission sources.[447] Even focusing on motor vehicles alone—which in 2022 emitted 80% of greenhouse gases from the transportation sector, which as a whole was the largest U.S. source of greenhouse gas emissions from *any* sector (28% of U.S. emissions)[448]—the state of the science does not support a conclusion that motor vehicle emissions do not endanger health and welfare.

Likewise, if EPA is correct that it must consider only emissions from *new* motor vehicles, it must still explain how it could rationally conclude that emissions from the more than 13 million new vehicles sold each year—more than 60 million vehicles over the typical 5 model-year period for which EPA has typically set standards—do not contribute to dangerous air pollution. If EPA is correct that it erred in making a finding based on a group of six pollutants, two of which motor vehicles do not emit, then it must still explain how "analyzing the properties and impacts of each on an individual basis," 90 Fed. Reg. at 36,310, affects the endangerment calculus. The typical passenger vehicle emits 4.6 metric tons of $CO_2$ per year. Considering just $CO_2$ emissions from *new* motor vehicles, then, EPA would have to grapple with the question of whether 59.8 million metric tons of carbon dioxide emissions endangers human health and welfare. Using EPA's 2023 social cost of carbon metrics, those emissions alone would wreak more than $7 billion in damage to human health and welfare.[449]

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[447] *See generally, e.g.*, Wentz (2025), *supra* n.422; EPA SC-GHG Report, *supra* n.349.

[448] EPA, Fast Facts on Transportation Greenhouse Gas Emissions, available at https://perma.cc/7WHU-K7BA.

[449] *See* Cost of Carbon Project, EPA Values for the Social Cost of Greenhouse Gases, n. 1, *available at*: https://perma.cc/VX7Y-AH2D.

But while EPA nitpicks perceived procedural or methodological flaws in the Endangerment Finding, it does none of the scientific or quantitative analysis to actually rebut the inescapable conclusion that, no matter how it slices the baloney, greenhouse gas emissions endanger human health and welfare. So, besides advancing a fundamentally incorrect interpretation of Section 202(a), EPA's proposal is flawed for at least two additional reason: first, it does not and cannot show that the alleged procedural errors are anything but harmless to the ultimate endangerment conclusions; and second, by failing to engage with the scientific and technical record on these procedural or methodological points, EPA fails to provide a reasoned explanation and impermissibly "ignore[s] prior factual findings and the supporting record evidence contradicting the new policy." *California v. EPA*, 940 F.3d 1342, 1353 (D.C. Cir. 2019).

The conclusion that motor vehicle emissions of greenhouse gases contribute to dangerous air pollution is inescapable no matter how EPA contorts the text of Section 202(a). And even if EPA wants to set aside the 2009 Finding based on purported interpretative or procedural errors, it cannot now hide behind those alleged errors to avoid engaging with the science. The Supreme Court in *Massachusetts* was clear that EPA can "avoid taking further action only if it determines that greenhouse gases do not contribute to climate change or if it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do." 549 U.S. at 533. EPA maintains in this proposal that it incorrectly analyzed the endangerment question in 2009; if that is so, it must fully analyze that question now, based on the substantial and growing body of scientific evidence now. But EPA has not done that.

Courts have been clear that EPA can only decline to answer the fundamental question—are these emissions contributing to dangerous air pollution—in the face of profound uncertainty that is not present here. Indeed, courts have repeatedly instructed federal agencies that they cannot avoid their obligations to characterize, quantify, and consider the impacts of climate change based on uncertainties. *See, e.g.*, *Sierra Club v. FERC*, 867 F.3d 1357, 1373-74 (D.C. Cir. 2017) (holding that FERC should have—and could have—estimated greenhouse gas emissions and their environmental effects before authorizing a pipeline project); *Center for Biological Diversity v. Zinke*, 900 F.3d 1053 (9th Cir. 2018) (holding FWS's refusal to make "any projection as to the synergistic effects of climate change, simply because of the uncertainty" was "unacceptable"); *WildEarth Guardians v. U.S. BLM*, 870 F.3d 1222, 1236 (10th Cir. 2017) (declining to give BLM any greater deference based on climate science uncertainties because "it does not involve 'the frontiers of science' . . . *i.e.*, as a barely emergent knowledge and technology"); *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1198-1203 (9th Cir. 2008) (holding that uncertainty is not a sufficient reason to not monetize climate effects in regulatory decision-making); *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 68 (D.D.C. 2019) (rejecting the Interior Department's assertion that quantifying the impacts of greenhouse gas emissions would be "overly speculative," stating "that assertion is belied by an administrative record replete with information on oil and gas development and GHG emissions," and quantitative analyses of greenhouse gas emission and climate change impacts).

Ultimately, the factual record for endangerment, however EPA slices the statutory language, is overwhelming. EPA could not and has not reasonably concluded that there is no endangerment under any circus-mirror interpretation of Section 202(a). The 2009 Endangerment Finding was fundamentally correct in 2009, and any rational assessment of the facts today would lead to the

same result: EPA has the authority and the obligation to address greenhouse gas emissions from motor vehicles.

## VIII. EPA should not rely on, nor receive deference for relying on, the DOE Climate Working Group's draft report or other outputs.

EPA relies extensively on the DOE Draft CWG Report in its proposed repeal of the Endangerment Finding, citing it 22 times and relying on it for each of the central assertions in the proposal's "Climate Science Discussion." However, this hastily put together assessment, developed in secret and designed explicitly to provide counterweight to the prevailing scientific consensus around the effects of climate change, fails basic standards of scientific integrity expected for information upon which agencies rely for significant policy decisions.

The Draft CWG Report was not subject to a standard independent peer review and does not comply with EPA, DOE, or OMB guidance on use and evaluation of scientific information. Despite this, EPA relies extensively on the report in this proposal while disregarding more rigorous scientific assessments. In addition, DOE and EPA failed to comply with statutory requirements under the Federal Advisory Committee Act ("FACA") in the establishment, operation, and use of the CWG, including by denying the public an opportunity to participate in that process. Further compounding these procedural deficiencies, the Secretary of Energy purported to "dissolve" the improperly constituted advisory committee the day after the public comment period on the Draft CWG Report closed.[450] It is therefore unclear when–if ever–a final report will be completed and what process any subsequent revision of the report will entail. As a result of these failures, EPA should not rely on the Draft CWG Report nor receive any deference by courts for doing so. Also, given the uncertainty regarding whether anyone will be reviewing and responding to the nearly 60,000 comments submitted on the Draft CWG Report and revising it, EPA should review and consider all comments submitted to DOE in addition to those submitted to this docket.

### A. The Draft CWG Report fails to meet federal standards for data quality and scientific integrity.

The Draft CWG Report fails to meet even the Trump Administration's own incomplete and flawed directives regarding scientific integrity. With the stated goal of "restoring a gold standard for science to ensure that federally funded research is transparent, rigorous, and impactful, and that Federal decisions are informed by the most credible, reliable, and impartial scientific evidence available," President Trump issued Executive Order 14303, "Restoring Gold Standard Science," on May 23, 2025. Exec. Order No. 14303 § 1, 90 Fed. Reg. 22,601 (May 23, 2025). The "Restoring Gold Standard Science" Executive Order—while a deeply flawed policy that largely seeks to elevate political agendas and ultimately censor the science underpinning

[450] Scott Waldman, *Disbanded DOE climate group vows to continue work*, E&E News (Sept. 11, 2025), https://subscriber.politicopro.com/article/eenews/2025/09/11/disbanded-doe-climate-group-vows-to-continue-work-00556267.

foundational health and environmental protections[451]—disclaims the "promot[ion] of scientific information in a highly misleading manner," and professes to embrace "scientific integrity" over the politicization of science. Exec. Order No. 14303 § 1.

As relevant here, Executive Order 14303 requires that to be considered compliant with the Administration's policies, research must be conducted in a manner that meets nine requirements: it must be (1) reproducible; (2) transparent; (3) communicative of error and uncertainty; (4) collaborative and interdisciplinary; (5) skeptical of its findings and assumptions; (6) structured for falsifiability of hypotheses; (7) subject to unbiased peer review; (8) accepting of negative results as positive outcomes; and (9) without conflicts of interest. Exec. Order No. 14303, § 3. Executive Order 14303 directs the U.S. Office of Science and Technology Policy ("OSTP") to issue implementation guidelines for agencies, who are then to adopt their own "scientific integrity policies." *Id.* § 3. On June 23, 2025, OSTP issued this guidance, which reiterates and elaborates on the nine principles laid out in the Executive Order. The Draft CWG Report adheres to none of the nine principles enumerated in the Executive Order and OSTP guidance, nor with other standards for rigorous scientific study within the federal government and broader scientific community.

The Draft CWG Report's shortcomings are numerous. Although DOE describes the CWG as "five independent scientists...with diverse expertise in physical science, economics, climate science and academic research,"[452] CWG members—appointed by Energy Secretary Chris Wright without the transparency and fair balance required by FACA—are known "climate skeptics" with contrarian views regarding climate change science,[453] who all have a history of questioning the impacts of human-caused greenhouse gas emissions on climate change and asserting that leading scientific assessments on climate change are wrong. Far from being a collaborative or interdisciplinary process, the Draft CWG Report was produced in secret by this handful of authors all of whom represent fringe climate skeptic viewpoints and lacked input from the full set of U.S. agencies that usually coordinate and contribute relevant expertise on climate

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[451] *See, e.g.*, Carolyn Y. Johnson, *Why Trump's Push for 'Gold-Standard Science' Has Researchers Alarmed*, Wash. Post (May 31, 2025), https://www.washingtonpost.com/science/2025/05/31/trump-science-gold-standard-politics/; Leigh Krietsch Boerner, *'Gold Standard Science' May Lead to Discarding Valid Research,* Chem. & Engineering News (June 9, 2025), https://cen.acs.org/policy/Gold-Standard-Science-lead-discarding/103/web/2025/05; Colette Delawalla et al., *Trump's New 'Gold Standard' Rule Will Destroy American Science As We Know It*, The Guardian (May 29, 2025), https://www.theguardian.com/commentisfree/2025/may/29/trump-american-science.

[452] U.S. Dep't of Energy, *Climate*, https://www.energy.gov/topics/climate.

[453] *See, e.g.*, Molly Taft, *Scientists Say New Government Climate Report Twists Their Work*, Wired (July 30, 2025), https://www.wired.com/story/scientists-say-new-government-climate-report-twists-their-work/; Eric Niiler & Scott Patterson, *Climate Skeptics Are Tapped by Trump Administration to Justify Regulatory Rollback*, Wall St. J. (Aug. 1, 2025), https://www.wsj.com/science/environment/climate-skeptics-are-tapped-by-trump-administration-to-justify-regulatory-rollback-17c8afc5.

science initiatives, including NOAA, NASA, NSF, USGS, EPA, DOI, USDA, and others. By contrast, leading scientific assessments utilize large, interdisciplinary teams with a breadth of expertise across related subject areas and agencies. For example, the Fifth National Climate Assessment—the website which the Trump Administration took offline shortly before releasing the Draft CWG Report[454]—was prepared with input from 14 federal agencies, nearly 500 authors, and 250 contributors.[455] And the IPCC Sixth Assessment Report was prepared by three working groups, each with more than 200 consulting experts and authors across a broad range of disciplines.[456] Most recently, in light of the EPA proposal to repeal the endangerment finding, the National Academy of Sciences conducted a more thorough review of the science and summarized in a peer-reviewed report the latest evidence on whether greenhouse gas emissions threaten public health and welfare in the United States, concluding that "EPA's 2009 finding that the human-caused emissions of greenhouse gases threaten human health and welfare was accurate, has stood the test of time, and is now reinforced by even stronger evidence."[457]

Moreover, the Draft CWG Report has undergone no peer review other than what appears to be, at best, a minimal review by undisclosed individuals internal to DOE.[458] DOE has provided few details regarding this "internal" review—including no details on the individuals who participated, what feedback they provided, or how specifically CWG changed the Report in response. This failure to engage in peer review is contrary not only to the "Restoring Gold Standard Science" Executive Order's directives but also to other U.S. government policies and scientific community norms regarding quality scientific work. For example, the U.S. Office of Management and Budget has directed that "important scientific information shall be peer

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[454] Rebecca Dzombak, *National Climate Report Website Goes Dark*, N.Y. Times (July 1, 2025), https://www.nytimes.com/2025/07/01/climate/national-climate-assessment.html.

[455] U.S. Nat'l Inst. of Env't Health Sci., *Fifth National Climate Assessment Released*, Environmental Factor (Dec. 2023), https://factor.niehs.nih.gov/2023/12/feature/2-feature-fifth%20national%20climate%20assessment%20report.

[456] *See* IPCC, *IPCC Sixth Assessment Report, The Physical Science Basis: Authors*, https://www.ipcc.ch/report/ar6/wg1/about/authors/ (Working Group I had 234 expert authors); IPCC, *IPCC Sixth Assessment Report, Impacts, Adaptation and Vulnerability: Authors*, https://www.ipcc.ch/report/ar6/wg2/about/authors (Working Group II had 270 expert authors and contributors); IPCC, *IPCC Sixth Assessment Report, Working Group III: Mitigation of Climate Change: Authors*, https://www.ipcc.ch/report/ar6/wg3/about/authors Working Group III had 278 expert authors and contributors).

[457] National Academies of Sciences, Engineering, and Medicine. 2025. *Effects of Human-Caused Greenhouse Gas Emissions on U.S. Climate, Health, and Welfare*. Washington, DC: The National Academies Press. at 1, https://doi.org/10.17226/29239.

[458] *See, e.g.*, U.S. Dep't of Energy, *Department of Energy Issues Report Evaluating Impact of Greenhouse Gasses on U.S. Climate, Invites Public Comment* (July 29, 2025), https://www.energy.gov/articles/department-energy-issues-report-evaluating-impact-greenhouse-gasses-us-climate-invites (noting only "an internal peer-review period amongst DOE's scientific research community").

reviewed by qualified specialists before it is disseminated by the Federal government," and applies "stricter minimum requirements for the peer review of highly influential scientific assessments." Final Information Quality Bulletin for Peer Review, 70 Fed. Reg. 2664, 2671 (Jan. 14, 2005). Such review should, among other requirements, include "a broad and diverse representation of respected perspectives and intellectual traditions within the scientific community," "ensure that reviewers are independent of the agency sponsoring review," and include a peer review report. *Id.* at 2671-72. The D.C. Circuit recently explained that "the peer review process and the discipline provided by competing research studies guard against cherry-picking or poor design by forcing scientists to identify, explain, and submit for public scrutiny the discretionary choices that are inevitable in research design." *New Mexico Cattle Growers' Ass'n v. United States Fish & Wildlife Serv.*, No. 24-5075, 2025 WL 2423596, at *6 (D.C. Cir. Aug. 22, 2025).

Furthermore, the U.S. OSTP's *Agency Guidance for Implementing Gold Standard Science in the Conduct & Management of Scientific Activities* (June 23, 2025)[459] directs agencies to ensure peer review that is "impartial and independent" "prior to...publication[] or dissemination." *Id.* at 5. The OSTP guidance explains that "[e]ffective unbiased peer review relies on transparent, well-defined review criteria, competent and independent reviewers, and robust mechanisms to minimize conflicts of interest, often facilitated by double-blind or open peer review by qualified experts." *Id.* And it directs that "[a]gencies should ensure appropriate reviewer selection, prioritizing expertise, independence, and viewpoint diversity, and adopt double-blind review where appropriate, with clear disclosure of potential conflicts of interest," *id.*, none of which occurred with the Draft CWG Report.[460] The Draft CWG Report lacks the required independent, external scientific validation the Trump Administration claims to require, that is required by longstanding U.S. government policies, and that is typical within the scientific community.

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[459] Available at https://www.whitehouse.gov/wp-content/uploads/2025/03/OSTP-Guidance-for-GSS-June-2025.pdf.

[460] *See also* EPA, *Science and Technology Policy Council*, Peer Review Handbook (Oct. 2015), https://www.epa.gov/sites/default/files/2020-08/documents/epa_peer_review_handbook_4th_edition.pdf (detailing extensive requirements for strong peer review practices); IPCC, *Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports* § 4.3.4 (laying out detailed two-phase review procedures involving both expert and government review), https://archive.ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a-final.pdf; National Academies, *Review of the Draft 5th National Climate Assessment*, https://www.nationalacademies.org/our-work/review-of-the-draft-5th-national-climate-assessment (noting that the NCA underwent multiple rounds of public, expert, and interagency review, including by the National Academies); National Science Foundation, *Proposal and Award Policies & Procedures Guide 24-1*, at III-3 ("reviewers should have special knowledge of the science and engineering subfields involved in the proposals to be reviewed, as well as broad knowledge of science and engineering subfields[…]"), https://www.nsf.gov/policies/pappg/24-1.

While not applying the directives of Executive Order 14303 to the Draft CWG Report, EPA selectively utilizes the Order to attack the more robust assessment of climate change impacts in the Fifth National Climate Assessment ("NCA5"). EPA solicits comment on whether NCA5 "meet[s] the requirements" of Executive Order 14303 and on how that Order "should be taken into account when determining whether to finalize any of the alternatives proposed in this action." 90 Fed. Reg. at 36,325. This invocation and selective reliance on EO 14303 is unlawful, arbitrary and capricious.

First, the National Climate Assessment is authorized and mandated by Congress in the Global Change Research Act of 1990, which directs the federal government to assess "the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity." 15 U.S.C. § 2936(2). That assessment is intended "for use in the formulation of coordinated national policies for responding to" climate change. *Id.* § 2938(b)(2). It is well established that "the President is without authority to set aside congressional legislation by executive order." *In re United Mine Workers of Am. Int'l Union*, 190 F.3d 545, 551 (D.C. Cir. 1999); *see also Chamber of Commerce v. Reich*, 74 F.3d 1322, 1339 (D.C. Cir. 1996) (holding that an Executive Order was preempted by a conflicting statutory provision). Therefore, in the event of a conflict between the statutory mandate that EPA consider the NCA and EO 14303, the statute prevails. *See id.*

Second, as acknowledged by a broad range of scientific bodies and authorities, EO 14303 does not provide a sound basis for evaluating the reliability of NCA5. While purporting to "restor[e] a gold standard for science," EO 14303 has been widely criticized as "a dangerous … attempt to politicize American science."[461] The editors-in-chief and publications committee members of American Geophysical Union's scientific publications warned that the Order "attempts to suppress and eliminate scientific evidence that the administration finds uncomfortable and inconvenient."[462] A former Assistant Administrator of EPA's Office of Research and Development explained that it "risks undermining unbiased science in all federal agencies, subject to political whims,"[463] and thousands of scientists have signed an open letter opposing the Order.[464]

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[461] Wysession, M. E., Beal, L., Caprarelli, G.,Caylor, K., Destouni, G., Dixon, J., et al.(2025). The executive order "Restoring Gold Standard Science" is dangerous for America. AGU Advances, 6, e2025AV002011, https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2025AV002011.

[462] *Id.*

[463] H. Christopher Frey, *How Trump's 'gold standard' politicizes federal science*, The Conversation (June 5, 2025), https://theconversation.com/how-trumps-gold-standard-politicizes-federal-science-258277.

[464] Jeff Tollefson and Dan Garisto, *Trump's call for 'gold-standard science' has prompted an outcry: here's why*, Nature (May 28, 2025), https://www.nature.com/articles/d41586-025-01668-x.

Finally, even when applying the flawed directives of EO 14303, NCA5 is consistent with the scientific principles set forth in that Order. EPA states that "stakeholders state that NCA5 does not meet the requirements under Executive Order 14303," but it fails to identify those stakeholders or to specify what requirements of the Order NCA5 allegedly violates. 90 Fed. Reg. at 36,325.[465] Indeed, NCA5 is far more aligned with the Order's definition of "gold standard science" than is the Draft CWG Report. For instance, the Order states that gold standard science is "subject to unbiased peer review." Executive Order 14303 § 3(a)(vii). NCA5 was peer reviewed by an independent panel of the National Academies of Sciences, Engineering, and Medicine, which found that the "impeccably researched" NCA5 report "has done a masterful job pulling diverse information on the complex topic of global change together."[466] The Draft CWG Report did not undergo external peer review. The Order also explains that gold standard science is "collaborative and interdisciplinary." Executive Order 14303 § 3(a)(iv). NCA5 was prepared by more than 500 authors, and 250 additional technical contributors, representing a diverse range of scientific backgrounds and disciplines. The CWG, by contrast was comprised of five people with a history of questioning the impacts of human-caused greenhouse gas emissions on climate change who were selected to provide EPA with a claimed scientific basis for reconsideration of the Endangerment Finding. Other evidence of the CWG report's inconsistency with EO 14303 is described in greater detail elsewhere in these comments. But EPA does not question or solicit comment on the Draft CWG Report's compliance with the Order. Instead, EPA solely invokes the Order to challenge the science underlying the endangerment finding. "Such inconsistency is the hallmark of arbitrary action." *Sierra Club v. EPA*, 719 F.2d 436, 459 (D.C. Cir. 1983).

The lack of transparency and attention to scientific integrity principles in the CWG's formation and peer review process is especially problematic when combined with the Report's other scientific shortcomings. Rather than being a reproducible, transparent scientific investigation that is communicative of error and uncertainty, skeptical of its findings and assumptions, structured for falsifiability of hypotheses, and accepting of negative results as positive outcomes—as Executive Order 14303 and OSTP guidance require—the Draft CWG Report is methodologically opaque, misrepresents scientific studies on which the authors rely for their conclusions, and uses a biased framing structured to emphasize studies and results that align with the authors' known contrarian viewpoints.

First, the Draft CWG Report contains no methodological transparency regarding how its authors chose the studies, models, and data on which they relied for their conclusions—conclusions that contradict decades of established scientific consensus, *see supra* Comment VI. This is in stark contrast to other reputable scientific assessments of the impacts of greenhouse gases on climate,

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[465] EPA also claims that unidentified "public watchdog organizations have raised concerns related to the process and quality of the Fifth NCA," including concerns related to NCA's consistency with EO 14303. 90 Fed. Reg. 36,310. Reliance on these unspecified and anonymous critiques violates Order's ow principles of gold standard science, which include "transparen[cy]."

[466] National Academies of Sciences, Engineering, and Medicine. 2023. *Review of the Draft Fifth National Climate Assessment*. Washington, DC: The National Academies Press. https://doi.org/10.17226/26757.

including the IPCC and NCA assessments, which communicate extensive documentation of and standards for the bases for choosing the resources relied on in their analyses.[467] Rather than being communicative of uncertainty and structured for falsifiability of hypotheses, the Draft CWG Report fails to "quantify statistical uncertainties" as the OSTP guidance directs but rather presents broad narrative claims and provides little in terms of criteria under which these assertions could be tested. *Contrast* Draft CWG Report at ix ("possibly detrimental to," "often overlooked," "might be underestimated," "could prove more detrimental than beneficial") *with* IPCC, *Climate Change 2023 Synthesis Report* (using calibrated language describing conditions, causes, and findings, based on percentages, as subject to "very high confidence," "high confidence," "medium confidence," "low confidence," and "very low confidence").[468]

Second, numerous scientists cited in the Draft CWG Report have explained that the Report's authors misrepresent, ignore, or downplay their findings, underscoring that the Report creates just the type of highly misleading framing that EO 14303 purports to discourage.[469] Further, the Draft CWG Report only analyzed a small fraction of the available scientific papers on climate change across the relevant disciplines and subdisciplines, 284, compared to what is typically analyzed by an IPCC working group, 24,000.[470] And finally, the Draft CWG Report's own language—repeatedly and irrelevantly criticizing the mainstream media rather than focusing on serious science[471]—is itself suggestive of the politically and ideologically motivated nature of the CWG's endeavor. Rather than enhancing scientific integrity, transparency, and evidence-

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[467] See, e.g., https://toolkit.climate.gov/sites/default/files/2025-07/NCA5_IQ_Guidance.pdf; IPCC Principles.

[468] *See* IPCC, *Climate Change 2023 Synthesis Report: Summary for Policymakers* 3, n.4 (2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf ("Each finding is grounded in an evaluation of underlying evidence and agreement. The IPCC calibrated language uses five qualifiers to express a level of confidence: very low, low, medium, high and very high, and typeset in italics, for example, medium confidence. The following terms are used to indicate the assessed likelihood of an outcome or a result: virtually certain 99–100% probability, very likely 90–100%, likely 66–100%, more likely than not >50–100%, about as likely as not 33–66%, unlikely 0–33%, very unlikely 0–10%, exceptionally unlikely 0–1%. Additional terms (extremely likely 95–100%; and extremely unlikely 0–5%) are also used when appropriate. Assessed likelihood is typeset in italics, e.g., very likely. This is consistent with AR5 and the other AR6 Reports.").

[469] *See, e.g.*, Molly Taft, *Scientists Say New Government Climate Report Twists Their Work*, Wired (July 30, 2025) , https://www.wired.com/story/scientists-say-new-government-climate-report-twists-their-work/.

[470] *See*, Andrew Dressler, *The merchants of doubt are back*, The Climate Brink (Sep. 2, 2025).

[471] *E.g.*, Draft CWG Report at 16 (stating there is "misleading coverage in prominent media outlets"); *id.* at 48 ("It has become routine in media coverage...to make generalized assertions..."); *id.* at 57 (noting that temperature extremes "attract a great deal of media attention"); *id.* at 95 (referencing "media narratives"); *id.* at viii ("media coverage often distorts the science").

based policymaking, the Draft CWG Report runs counter to Executive Order 14303, the OSTP guidance implementing it, and to the broader foundational principles of good scientific research.

### *1. Agency information quality and peer review guidelines.*

The Draft CWG Report and EPA's use of it further violates OMB, DOE, and EPA policies regarding the use and peer review of scientific information. The Information Quality Act (IQA) requires OMB to issue guidelines "for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies." Pub. L. No. 106-554, § 515, 114 Stat. 2763 (2000). OMB has issued implementing guidelines, 67 Fed. Reg. 8452 (Feb. 22, 2002), that govern federal agencies' adoption of their own agency-specific guidelines. The Office of Management and Budget's ("OMB") 2005 Information Quality Bulletin for Peer Review "establishes that important scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal government" and outlines three tiers of information subject to different degrees of peer review process, providing guidance to all agencies regarding how to approach review of scientific information. 70 Fed. Reg. at 2665. The July version of the Draft CWG Report itself expressly states that it was "disseminated by the Department of Energy" and thus must comply with the IQA and "information quality guidelines issued by the Department of Energy." July Draft CWG Report at iii; *see also* DOE, *Final Report Implementing Updates to the Department of Energy's Information Quality Act Guidelines* 13 (2019) ("DOE IQA Guidelines")[472] (defining "dissemination" as "agency initiated or sponsored distribution of information to the public").

The Draft CWG Report should be considered a "highly influential scientific assessment" (HISA) subject to external peer review *before* dissemination to the public. The OMB Bulletin specifies that agencies should conduct peer review before releasing both "influential scientific information" (ISI), scientific information that "the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions," 70 Fed. Reg. at 2675, and "highly influential scientific assessments" (HISA), assessments where "the agency or the OIRA Administrator determines that the dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest." 70 Fed. Reg. at 2671. Peer review requirements for HISA are more rigorous than some forms of journal peer review because the reviewer should be provided with access to underlying data or models. *Id.* at 2671. It must also, "wherever possible, provide for public participation." *Id.* at 2672. Finally, the agency is required to "disseminate the peer review report and the agency's response to the report on the agency's Web site" and, "[i]f the scientific information is used to support a final rule then, where practicable, the peer review report shall be made available to the public with enough time for the public to consider the implications of the peer review report for the rule being considered." *Id.*

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[472] *Available at* https://www.energy.gov/cio/articles/2019-final-updated-version-doe-information-quality-guidelines.

Both EPA and DOE issued guidance responsive to the OMB Information Quality Bulletin. DOE's IQA guidelines were initially published in 2002, *see* 67 Fed. Reg. at 8452, and more recently updated to incorporate additional best practices, *see* 84 Fed. Reg. 53,124 (Oct. 4, 2019). The current guidelines set forth data quality standards for "any public dissemination of information under the control of DOE." DOE IQA Guidelines at 13, *see also id.* ("'Information' means any communication or representation of knowledge such as facts or data.").

Following the 2005 OMB Bulletin, EPA published a Peer Review Policy and Memorandum, which states that "for highly influential scientific assessments, external peer review is the expected procedure. For influential scientific information intended to support important decisions, or for work products that have special importance in their own right, external peer review is the approach of choice."[473] EPA also maintains a Peer Review Handbook, the fourth edition of which was published in October 2015.[474] EPA's guidance on the use of scientific information includes the currently applicable 2012 Scientific Integrity Policy;[475] Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency;[476] A Summary of General Assessment

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[473] *Peer Review and Peer Involvement at the U.S. Environmental Protection Agency*, EPA (Jan. 31, 2006), https://www.epa.gov/sites/default/files/2015-01/documents/peer_review_policy_and_memo.pdf.

[474] Science and Technology Policy Council, *Peer Review Handbook, 4th Edition*, EPA (Oct. 2015), https://www.epa.gov/scientific-leadership/peer-review-handbook-4th-edition-2015.

[475] *U.S. EPA Scientific Integrity Policy*, U.S. Environmental Protection Agency (2012), https://www.epa.gov/system/files/documents/2024-12/2012-scientific-integrity-policy.pdf. In January 2025, the EPA updated its Scientific Integrity Policy, which superseded the 2012 policy. Scientific Integrity Policy, U.S. Environmental Protection Agency (2025), https://www.epa.gov/system/files/documents/2025-01/us-epa-scientific-integrity-policy.pdf. However, in May 2025, President Trump signed the "Restoring Gold Standard Science" Executive Order revoking the 2025 Policy, stating that agencies "shall be governed by the scientific integrity policies that existed within the executive branch on January 19, 2021," and directing agency heads to "reevaluate and, where necessary, revise or rescind scientific integrity policies, procedures, or amendments . . . issued between January 20, 2021 and January 20, 2025." Exec. Order No. 14,303, Restoring Gold Standard Science, 90 Fed. Reg. at 22,604. In August, EPA removed the 2025 policy from its website, reverting to the 2012 standards. *See* Scott Dance, *Trump rolls back rules meant to keep politics out of climate research*, The Washington Post (Aug. 22, 2025), https://www.washingtonpost.com/climate-environment/2025/08/22/trump-epa-noaa-scientific-integrity-policies/.

[476] Office of Environmental Information, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency*, U.S. Environmental Protection Agency (Oct. 2002), https://www.epa.gov/sites/default/files/2017-03/documents/epa-info-quality-guidelines.pdf.

Factors for Evaluating the Quality of Scientific and Technical Information[477] (as well as an addendum[478] to that document); and the Peer Review Policy Memo and Peer Review Handbook.[479]

These documents lay out expectations for peer review and use of scientific information by DOE and EPA. Neither DOE nor EPA complied with these guidelines in their development of and use of the Draft CWG Report. The Draft CWG Report violates these information quality standards in myriad ways and EPA should not rely on the inaccurate and biased information in the CWG Report to support its regulatory proposal.

### *2. Violations of DOE guidelines.*

According to its own Guidelines, DOE must "maxim[ize] the quality, objectivity, utility, and integrity of information (including statistical information) disseminated to the public." DOE IQA Guidelines at 6; *see also* Memorandum from Russell T. Vought, Acting Director, OMB to the Heads of Executive Departments and Agencies, M-19-15, at 2 (Apr. 24, 2019) ("quality encompasses utility, integrity, and objectivity").[480] The Guidelines also require that all information disseminated to the public must comply with OMB's *Final Information Quality Bulletin for Peer Review*, 70 Fed. Reg. at 2664, and that such review "evaluates the clarity of hypotheses, the validity of the research design, the quality of data collection procedures, the robustness of the methods employed, the appropriateness of the methods for the hypotheses being tested, the extent to which the conclusions follow from the analysis, and the strengths and limitations of the overall product." DOE IQA Guidelines at 8. Furthermore, scientific information deemed "influential" is subject to heightened standards for "quality and transparency." DOE IQA Guidelines at 7.

The Draft CWG Report fails to adhere to applicable information quality standards in multiple respects. As discussed above in this and prior sections, the Draft CWG Report is riddled with

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[477] Science Policy Council, *A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information*, U.S. Environmental Protection Agency (June 2003), https://www.epa.gov/sites/default/files/2015-01/documents/assess2.pdf.

[478] Science and Technology Policy Council, *Guidance for Evaluating and Documenting the Quality of Existing Scientific and Technical Information, Addendum to: A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information*, U.S. Environmental Protection Agency (Dec. 2012), https://www.epa.gov/sites/default/files/2015-05/documents/assess3.pdf.

[479] *Peer Review and Peer Involvement at the U.S. Environmental Protection Agency*, EPA (Jan. 31, 2006), https://www.epa.gov/sites/default/files/2015-01/documents/peer_review_policy_and_memo.pdf; *Peer Review Handbook, 4th Edition*, EPA (Oct. 2015).

[480] *Available at* https://www.whitehouse.gov/wp-content/uploads/2019/04/M-19-15.pdf.

inaccuracies, tainted by bias, reliant on unreputable sources, and marked by transparency failures and undue influence, and it has not been appropriately peer-reviewed.

***The Draft CWG Report violates the DOE IQA Guidelines' standards regarding utility***. The DOE IQA Guidelines specify that "when transparency of information is relevant for assessing the information's usefulness from the public's perspective, DOE Elements should take care to ensure that transparency has been addressed in its review of the information." DOE IQA Guidelines at 20. DOE and the CWG have failed to disclose all materials made available to and prepared by the CWG in connection with the Report. *See also* 5 U.S.C. § 1009(b) (FACA's records disclosure requirements). And from the CWG's inception, the committee's work has been shrouded in secrecy and marked by procedural and transparency failures. *See infra* Comment VIII.B. The failures of DOE and the CWG to disclose materials related to the development of the Draft CWG Report, as well as information regarding the CWG's establishment and operations, hinder the public's ability to assess the Report and to respond to DOE's request for comments on it, and diminishes the Report's quality and utility, in violation of DOE's IQA Guidelines.

***The Draft CWG Report violates the DOE IQA Guidelines' standards regarding objectivity and peer review.*** The DOE IQA Guidelines state that disseminated information should be "presented in an accurate, clear, complete and unbiased manner" and as a matter of substance, must be "accurate, reliable, and unbiased." DOE IQA Guidelines at 12. Specifically, in a "scientific ... context," as is the case for the Draft CWG Report, "the original and supporting data should be generated, and the analytical results developed, using sound statistical and research methods." *Id.* at 17; *see also id*. (clarifying that if the information has been subjected to "formal, independent, external peer review," it "may generally be presumed to be of acceptable objectivity"). As noted above, the Guidelines also require that all information disseminated to the public must comply with OMB's *Final Information Quality Bulletin for Peer Review*, 70 Fed. Reg. at 2664. DOE IQA Guidelines at 8.

The Draft CWG Report violates the DOE IQA Guidelines' standards regarding objectivity because its conclusions are wrong, misleading, or incomplete. As detailed above, there are systematic and pervasive errors across multiple chapters in the report, including misrepresentations or misleading framing of findings that are designed to obfuscate. Overall, the Draft CWG Report does not accurately reflect the overwhelming scientific evidence of the causes and harms of climate change. The Draft CWG Report also violates the DOE IQA Guidelines' standards regarding objectivity because the CWG is not fairly balanced and its findings were inappropriately influenced by Secretary Wright, who hand-picked the members.[481] In addition, the Draft CWG Report fails to comply with OMB peer review standards, which

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[481] Ella Nilsen, *Energy chief suggests Trump administration is altering previously published climate reports*, CNN (Aug. 7, 2025), https://www.cnn.com/2025/08/07/climate/wright-national-climate-assessments-updating ("Wright told CNN that he hand-picked the four researchers and one economist who authored the Trump administration report. . . . 'I made a list of about a dozen of them that I thought were very senior and very well respected. I called the top five, and everyone said yes.'").

constitutes an additional violation of the DOE IQA Guidelines. Because the Draft CWG Report has not "been subjected to formal, independent, external peer review," it is not entitled to any presumption of "acceptable objectivity" under the DOE IQA Guidelines. DOE IQA Guidelines at 17.

***The Draft CWG Report violates the DOE IQA Guidelines' standards regarding influential information.*** OMB's IQA guidelines state that certain types of "influential" information are subject to heightened standards of quality and transparency. *See* DOE IQA Guidelines at 7. OMB defines influential information as "scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions." 70 Fed. Reg. at 2667. DOE's definition of "influential information" includes "information on which a regulatory action with a $100 million per year impact is based." DOE IQA Guidelines at 7.

The Draft CWG Report clearly constitutes "influential information," since EPA relied on the Draft CWG Report as a critical basis of its proposal to rescind the Endangerment Finding, citing the CWG Report no fewer than 22 times. If finalized, in addition to rescinding the Endangerment Finding, EPA's proposed rule would repeal all greenhouse gas emissions regulations for motor vehicles and engines. In Secretary Wright's own words, EPA's final action would have "monumental" impact.[482] It is therefore crucial that the Draft CWG Report reflects the best available science, which it does not. It is also foreseeable that DOE, EPA, and other agencies will rely on the Draft CWG Report in future actions relating to climate change. Given the Draft CWG Report's status as "influential information," DOE must take extra care to ensure that it not only meets routine information quality standards but is of the highest quality and transparency. The Draft CWG Report abjectly fails to comply with the DOE IQA Guidelines for information generally, let alone heightened standards for "influential information."

### *3. Violations of EPA guidelines.*

EPA's guidelines emphasize the importance of scientific integrity and quality to the policymaking process. EPA's 2012 Scientific Integrity Policy[483] acknowledges that "it is

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[482] *See* EPA, Press Release, *EPA Releases Proposal to Rescind Obama-Era Endangerment Finding, Regulations that Paved the Way for Electric Vehicle Mandates* (July 29, 2025), https://www.epa.gov/newsreleases/epa-releases-proposal-rescind-obama-era-endangerment-finding-regulations-paved-way.

[483] In January 2025, the EPA under the Biden Administration updated its Scientific Integrity Policy, which superseded the prior policy from 2012. Scientific Integrity Policy, U.S. Environmental Protection Agency (2025), https://www.epa.gov/system/files/documents/2025-01/us-epa-scientific-integrity-policy.pdf. However, in May 2025, Trump signed the "Restoring Gold Standard Science" Executive Order revoking the 2025 Policy, stating that agencies "shall be governed by the scientific integrity policies that existed within the executive branch on January 19, 2021," and directing agency heads to "reevaluate and, where necessary, revise or rescind scientific integrity policies, procedures, or amendments . . . issued between January 20,

essential that EPA decision makers involve scientists with appropriate expertise on scientific issues and that the scientific information and processes relied upon in policymaking manifest scientific integrity, quality, rigor, and objectivity." Scientific Integrity Policy at 5. This includes "ensuring that scientific studies used to support regulatory and other policy decisions undergo appropriate levels of independent peer review" and do not "knowingly misrepresent, exaggerate, or downplay areas of scientific uncertainty associated with policy decisions." *Id.* at 7-8. It notes that "[i]ndependent peer review of Agency science is a crucial aspect of scientific integrity." *Id.* at 12. EPA's Peer Review Handbook,[484] requires that work products designated as ISI or HISA "should be peer reviewed."[485] The Handbook defines ISI as work product that "[w]ill have or does have a clear and substantial impact on important public policies or private sector decisions."[486] Factors to consider when determining whether something is ISI include that it "[e]stablishes a significant precedent;" is "likely to adversely affect in a material way the economy; a sector of the economy; . . . jobs; the environment; public health or safety; or state, tribal or local governments or communities;" "[a]ddresses significant controversial issues;" has "significant cross-Agency/interagency implications; and "[c]onsiders an innovative approach for a previously defined problem/process/methodology."[487] The Handbook defines HISA as a "scientific assessment" that 1) either meets the ISI criteria and "could have a potential impact of more than $500 million in any year; or 2) [i]s novel, controversial or precedent-setting or has significant interagency interest."[488] "The more far-reaching or significant the impacts of a scientific assessment, the more appropriate it is to categorize the product as a HISA."[489] HISAs "are expected to undergo rigorous external peer review with opportunities for public participation," with external panels preferred.[490]

The Draft CWG Report, which undergirds a proposed policy reversal with wide-ranging consequences for public health and welfare, and the growing climate-impacts on communities and businesses across the country, clearly qualifies as HISA. Despite this, as is discussed above, the Draft CWG Report underwent no such peer review, and its purpose appears to have been to

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2021 and January 20, 2025." Exec. Order No. 14,303, Restoring Gold Standard Science, 90 Fed. Reg. at 22,604. In August, EPA removed the 2025 policy from its website, reverting to the 2012 standards. *See* Scott Dance, *Trump rolls back rules meant to keep politics out of climate research*, The Washington Post (Aug. 22, 2025), https://www.washingtonpost.com/climate-environment/2025/08/22/trump-epa-noaa-scientific-integrity-policies/.

[484] Science and Technology Policy Council, *Peer Review Handbook, 4th Edition*, EPA (Oct. 2015).

[485] *Id.* at 15.

[486] *Id.* at 16.

[487] *Id.*

[488] *Id.* at 16.

[489] *Id.* at 43.

[490] *Id.* at 55.

misrepresent and exaggerate areas of scientific uncertainty. This "climate working group" of climate science skeptics was convened with the specific intention of challenging prevailing scientific consensus.[491] In selecting only five individuals to author the report, rather than scientific experts with the appropriate levels of expertise,[492] the process was flawed from the start. EPA failed to follow its own stringent guidelines regarding the creation and use of scientific information in policymaking by relying on the Draft CWG Report in this proposal.

EPA's *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency* state that the "principles of information quality should be integrated into each step of EPA's development of information, including creation, collection, maintenance, and dissemination."[493] The Guidelines describe external peer review as the "procedure of choice" for work products "intended to support the most important decisions."[494] The Guidelines recommend a "'weight-of-evidence' approach that considers all relevant information and its quality, consistent with the level of effort and complexity of detail appropriate to a particular risk assessment."[495] Under this approach, "a well-developed, peer-reviewed study would generally be accorded greater weight than information from a less well-developed study that had not been peer-reviewed."[496] When disseminating "influential scientific information regarding human health, safety or environmental risk assessments, EPA will ensure, to the extent practicable and consistent with Agency statutes and existing legislative regulations, the objectivity of such information," including ensuring "the information is accurate, reliable and unbiased," using "the best available science and supporting studies conducted in accordance with sound and objective scientific practices, including, when available, peer reviewed science and supporting studies."[497] The Guidelines also require EPA to specify "peer-reviewed studies known to the Administrator that support, are directly relevant to, or fail to support any estimate of risk and the methodology used to reconcile inconsistencies in

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[491] *See* Travis Fisher, *Why I Helped Organize the Department of Energy's Climate Report*, CATO at Liberty (Aug. 6, 2025, 10:25 AM), https://perma.cc/CQ87-WCYF *and* Benjamin Storrow, *How Chris Wright Recruited a Team to Upend Climate Science*, E&E News (Aug. 11, 2025, 6:15 AM), https://perma.cc/TNJ5-J4M4.

[492] *See* IPCC, *Structure of the IPCC* (2025) ("Hundreds of Contributing Authors provide specific knowledge or expertise in a given area in the form of text, graphs or data, and help ensure that the full range of views held in the scientific community is reflected in the report."), https://www.ipcc.ch/about/structure/.

[493] Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency, U.S. Environmental Protection Agency (Oct. 2002), 3-4, https://www.epa.gov/sites/default/files/2017-03/documents/epa-info-quality-guidelines.pdf.

[494] *Id.* at 11.

[495] *Id.* at 21.

[496] *Id.* at 26.

[497] *Id.* at 22.

the scientific data."[498] Yet, despite significant reliance on the Draft CWG Report in this proposal, EPA did not subject it to peer review, nor did DOE, and did not properly account for its shortcomings under a "weight-of-evidence" approach as the guidelines require.

EPA's 2003 *A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information* lists factors to consider when assessing the quality of scientific information including 1) soundness—"[t]he extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application;" 2) applicability and utility—"[t]he extent to which the information is relevant for the Agency's intended use;" 3) clarity and completeness—"[t]he degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented;" 4) uncertainty and variability—[t]he extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized;" and 5) evaluation and review—"[t]he extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models."[499] It provides a list of questions to consider in evaluating whether information meets the General Assessment Factors such as:

- "To what extent are the procedures, measures, methods, or models employed . . . consistent with sound scientific theory or accepted approaches?"[500]
- "How do the study's design and results compare with existing scientific or economic theory and practice?"[501]
- "To what extent does the documentation clearly and completely describe the underlying scientific or economic theory and the analytic methods used?"[502]
- "If novel or alternative theories or approaches are used, how clearly are they explained and the differences with accepted theories or approaches highlighted?"[503]
- "To what extent has there been independent verification or validation of the study method and results?"[504]

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[498] *Id.* at 23.

[499] Science Policy Council, *A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information*, U.S. Environmental Protection Agency at 4 (June 2003), https://www.epa.gov/sites/default/files/2015-01/documents/assess2.pdf.

[500] *Id.* at 5.

[501] *Id.*

[502] *Id.* at 6.

[503] *Id.* at 7.

[504] *Id.* at 8.

- "To what extent has independent peer review been conducted of the study method and results?"[505]
- "Are the results consistent with other relevant studies?"[506]

A 2012 addendum to this guidance also specifically stated that EPA should use these general assessment factors when evaluating whether outside information meets EPA's quality requirements and complies with EPA's information quality guidelines.[507]

As has been clearly demonstrated in this and prior sections of these comments, the Draft CWG Report fails to live up to the expectations of scientific rigor, quality, and integrity outlined in these EPA guidance documents. And EPA failed to properly assess and account for these failures as directed in its own guidance documents. The Draft CWG Report's methodology and analysis fail to meet the standards of high quality scientific and technical information and EPA's heavy reliance on it in this proposal is arbitrary and capricious.

### B. DOE and EPA's secretive establishment and use of the CWG violates FACA.

DOE and EPA jointly established and utilized the CWG with the express purpose of calling the established science into question and undermining EPA's Endangerment Finding. In doing so, the agencies violated the Federal Advisory Committee Act's (FACA) requirements regarding public transparency and fair balance, as discussed below and illustrated in a recent lawsuit filed by the Environmental Defense Fund and the Union of Concerned Scientists.[508] In addition to the numerous ways described above that DOE and EPA violated established guidelines for the development and use of scientific information by federal agencies, the FACA violations would render any utilization of the CWG Report, or other fruit of the CWG's illegal work, by EPA arbitrary and unlawful.

Congress enacted FACA to ensure public transparency, accountability, and balanced representation whenever federal agencies establish advisory committees. *See, e.g.*, 5 U.S.C. § 1002(b)(4); *Pub. Citizen v. Dep't of Justice*, 491 U.S. 440, 459 (1989). But instead of promoting transparency and fair balance, as FACA requires, DOE and EPA quietly arranged for

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[505] *Id.*

[506] *Id.*

[507] Science and Technology Policy Council, Guidance for Evaluating and Documenting the Quality of Existing Scientific and Technical Information, Addendum to: A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information, U.S. Environmental Protection Agency (Dec. 2012), 1, https://www.epa.gov/sites/default/files/2015-05/documents/assess3.pdf.

[508] EDF, together with Union of Concerned Scientists, has filed a federal lawsuit to compel DOE. EPA, and the CWG to follow FACA and to enjoin DOE and EPA from relying on the Draft CWG Report. *See* Compl., *Environmental Defense Fund et al. v. Wright et al.,* No. 1:25-cv-12249 (D. Mass. filed Aug. 12, 2025).

five hand-picked skeptics of the effects of climate change to form the CWG and to work under a veil of secrecy for months to provide justification for this Administration's predetermined goal of rescinding the Endangerment Finding.

The CWG is plainly a federal advisory committee subject to FACA. FACA broadly defines an "advisory committee" as any "committee, board, commission, council, conference, panel, task force, or other similar group . . . established or utilized to obtain advice or recommendations for the President or one or more agencies or officers of the Federal Government and that is . . . established or utilized by one or more agencies." 5 U.S.C. §§ 1001(2)(A)(iii), 1003(a). The CWG Report itself clearly "constitute[s] advice or recommendations for a renewed approach to climate policy."[509] DOE and EPA also established and utilized the CWG in assigning it a specific task and managing its work, which DOE and EPA intended to use and ultimately did use to justify EPA's proposed rescission of the Endangerment Finding.[510]

A federal district court recently rejected arguments that the CWG fell within the exemption outlined in 41 C.F.R. § 102-3.40(e) for groups merely assembled to exchange facts or information with a federal official, finding instead that "[n]o reasonable jury could find" that the statements in the report "do not constitute advice or recommendations" regarding the government's approach to climate policy.[511]

The CWG likewise does not fall within any other statutory exemptions from FACA's requirements. It is neither "a committee that is composed wholly of full-time, or permanent part-time, officers or employees of the Federal Government," nor "a committee that is created by the National Academy of Sciences or the National Academy of Public Administration." 5 U.S.C. § 1001(2)(B). There is no indication that any of the five committee members held a position with the federal government at the time the CWG began its work. And there is no indication that Drs. Curry or McKitrick have held any position or title within the federal government since the CWG

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[509] Order, Doc. 57, at 9, *EDF v. Wright*, No. 25-12249-WGY (D. Mass. Sept. 17, 2025); *see also, e.g.*, Draft CWG Report at 130 ("The risks and benefits of a climate changing under both natural and human influences must be weighed against the costs, efficacy, and collateral impacts of any 'climate action'"); *id.* at 25, 48, 116, 125.

[510] *See* Complaint, *EDF v. Wright*, No. 25-12249-WGY (D. Mass. Aug. 12, 2025); Department of Energy Issues Report Evaluating Impact of Greenhouse Gasses on U.S. Climate, Invites Public Comment, July 29, 2025, https://perma.cc/GTD9-CK9Z (stating that DOE published the report "as part of the U.S. Environmental Protection Agency's (EPA) proposed rule repealing the 2009 Endangerment Finding").

[511] Order, Doc. 57, *EDF v. Wright*, No. 25-12249-WGY (D. Mass. Sept. 17, 2025) (noting that any suggestion that the report was a "mere 'review' of the literature . . . borders on sophistry" and finding the CWG "was not assembled to 'exchange facts or information' in a manner that would bring it into the claimed exception.").

Report was convened. Consequently, there is no exception to FACA's bulwark requirements—DOE and EPA have a statutory duty to follow FACA.

FACA mandates fair balance and transparency in the establishment and operation of federal advisory committees, including requiring disclosure of the group's formation that meetings, emails, and records be open to the public. Yet DOE and EPA abjectly failed to comply with these statutory requirements.

### *1. The Climate Working Group was created in secret, violating the transparency requirements of FACA.*

FACA's implementing regulations require any agency establishing an advisory committee to first consult with the General Service Administration's Committee Management Secretariat and then, once the Secretariat has completed its review, publish a notice announcing its establishment in the Federal Register, *before* forming a new advisory committee. *See* 5 U.S.C. § 1008(a)(2), (c); 41 C.F.R. § 102-3.60(a), (b)(1)-(2). Every advisory committee must also have filed a charter before it meets or takes any action. 5 U.S.C. § 1008(c)(1).

The CWG was formed in March 2025 without public notice and without complying with any of the requirements of FACA—including, *e.g.*, the requirements to consult with GSA, to publish a notice announcing the committee in the Federal Register, and to file a charter. *See, e.g.*, 41 C.F.R. §§ 102-3.60(b)(1)-(2); *id.* § 102-3.65(a); *id.* § 102-3.70. The public did not learn of the CWG's existence or what it was doing until DOE released the report "as part of" EPA's proposal to rescind the Endangerment Finding, which relied on the Draft CWG report, on July 29, 2025.[512] Consequently, every action the CWG has taken—including drafting the Draft CWG Report, transmitting it or causing it to be transmitted to EPA, and publishing it—has been unlawful. And every future action the CWG may take will be illegal, unless and until the group is reestablished and reconstituted in accordance with FACA.

### *2. DOE and EPA also did not comply with FACA's fair balance requirements for an advisory committee.*

FACA also imposes procedural and substantive requirements on an agency "to maintain a fair balance on its committees and to avoid inappropriate influences by both the appointing authority and any special interest." *Union of Concerned Scientists v. Wheeler*, 954 F.3d 11, 20 (1st Cir. 2020). For instance, committee membership must be "fairly balanced in terms of the points of view represented and the functions to be performed by the advisory committee." 5 U.S.C. § 1004(b)(2). The agency forming a committee also must make "appropriate provisions to assure that the advice and recommendations of the advisory committee will not be inappropriately influenced by the appointing authority or by any special interest." *Id.* § 1004(b)(3).

[512] Department of Energy Issues Report Evaluating Impact of Greenhouse Gasses on U.S. Climate, Invites Public Comment, July 29, 2025, https://perma.cc/GTD9-CK9Z.

Agencies must submit a "Membership Balance Plan" describing how the agency will "attain fairly balanced membership, as appropriate based on the nature and functions of the advisory committee." 41 C.F.R. § 102-3.60(b)(3). The plan "must be uploaded to the FACA database when the agency files the Federal advisory committee charter with [GSA]." *Id*. The plan "shall describe the agency's conclusions regarding the points of view that would promote fairly balanced committee membership," and "shall describe the agency's intended selection criteria and approach." *Id*. § 102-3.60(b)(3)(i). Once the agency "identifie[s] the points of view that would promote a fairly balanced advisory committee membership," the agency must "conduct broad outreach, using a variety of means and methods, to ensure that the call for nominees reaches the interested parties and stakeholder groups likely to possess those points of view." *Id.* § 102-3.60(b)(3)(ii). The membership balance plan "shall describe the agency's intended outreach efforts to accomplish these goals." *Id.*

DOE's own manual on advisory committees emphasizes these requirements.[513] The manual requires that the proposal package for a new advisory committee include an "Action Memorandum" addressed to the Secretary of Energy, which "must include," among other things, "[a] description of the plan for ensuring a fairly balanced committee membership in terms of the viewpoints represented and the functions to be performed." DOE Manual at 20. Proposal packages for advisory committee appointments must likewise include "a matrix/table presenting the members' attributes (*e.g.*, geographic location; residential, or commercial consumer) to demonstrate that balance criteria have been met." *Id*. at 40.

The CWG clearly violates FACA's fair balance requirements. No membership balance plan was submitted and no agency management officer was designated for the CWG. The group lacks any balance in terms of viewpoints on climate change. Conspicuously, the CWG does not include a single member who concurs in the prevailing scientific consensus regarding the causes and effects of climate change. All five members of the group have a history of questioning the impacts of human-caused greenhouse gas emissions on climate change and asserting that leading scientific assessments have overstated the impacts of climate change on human health and welfare and that the costs of climate change mitigation exceed the benefits.[514] The express purpose of the CWG is "to write a report on issues in climate science relevant for energy policymaking, including evidence and perspectives that challenge the mainstream consensus." Draft CWG Report at x.[515] And its members were selected precisely because of their bias in order to stack the committee with skeptics of the effects of climate change.[516] Secretary Wright

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[513] *See* DOE, Advisory Committee Management Program Manual ("DOE Manual") at 20 (2007), https://perma.cc/FVE9-BZ9D.

[514] Compl., *Environmental Defense Fund et al. v. Wright et al.,* No. 1:25-cv-12249, ¶¶ 29-37 (D. Mass. filed Aug. 12, 2025).

[515] *See also* Draft CWG Report at ix (stating the group's purpose was "to write a report on issues in climate science relevant for energy policymaking, with particular focus on the question of whether carbon dioxide emissions endanger the U.S. public").

[516] The Secretary asked Travis Fisher, the director of energy and environmental policy studies at the Cato Institute, to assemble Drs. John Christy, Judith Curry, Steven Koonin, Ross McKitrick,

also "inappropriately influenced" the CWG in violation of FACA, 5 U.S.C. § 1004(b)(3), by expressly tasking the CWG with a predetermined goal to provide "balance" against the "media coverage [that] distorts the science" of climate change.[517] CWG Report at viii. The CWG members reportedly view this report as "a precursor to a sustained assault on mainstream global warming research" as they intend to expand their efforts to review and challenge prior governmental climate reports.[518]

In addition, expert members of advisory committees are subject to ethical requirements. For advisory committees established or jointly established by DOE, "[m]embers serving as experts" rather than representatives of a group "must be appointed as SGEs," meaning special government employees. DOE Manual at II-3. Under federal law, SGEs may not "participate[] personally and substantially," including through "the rendering of advice," in any "particular matter in which, to his knowledge, he, his spouse, minor child, general partner, organization in which he is serving as officer, director, trustee, general partner or employee, or any person or organization with whom he is negotiating or has any arrangement concerning prospective employment, has a financial interest." 18 U.S.C. § 208(a). The DOE Manual likewise provides that "[a]dvisory committee members must not participate in particular matters before the committee, such as grants or contracts, that might have a direct and predictable impact on the companies, organizations, or agencies with which they are associated or in which they have a financial interest." DOE Manual at IV-7. DOE requires individuals to disclose financial and other interests *prior* to their becoming advisory committee members. *Id.*

It is not apparent that any of the CWG members complied with these ethical requirements.

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and Roy Spencer, to serve as members of the working group. Wright personally called the members to ask them to serve on the working group. Benjamin Storrow, *How Chris Wright Recruited a Team to Upend Climate Science*, E&E News (Aug. 11, 2025, 6:15 AM), https://perma.cc/TNJ5-J4M4. *See also*, Ella Nllsen, *Energy chief suggests Trump administration is altering previously published climate reports*, CNN (Aug. 7, 2025), https://www.cnn.com/2025/08/07/climate/wright-national-climate-assessments-updating ("Wright told CNN that he hand-picked the four researchers and one economist who authored the Trump administration report. . . . 'I made a list of about a dozen of them that I thought were very senior and very well respected. I called the top five, and everyone said yes.'").

[517] *See also* Scott Waldman and Ben Storrow, *DOE reframes climate consensus as a debate*, E&E News (July 31, 2025) (quoting Sec. Wright as indicating the report is meant to push back on the "cancel culture Orwellian squelching of science."), https://eenews/2025/07/31/doe-reframes-climate-consensus-as-a-debate-00485867.

[518] Scott Waldman, *Trump team readies more attacks on mainstream climate science*, E&E News (Aug. 18, 2025) ("Koonin said he expects to carefully scrutinize and challenge every paragraph of the National Climate Assessment, a long-running report mandated by Congress that identifies the threats that global warming poses to the United States."), https://www.eenews.net/articles/trump-team-readies-more-attacks-on-mainstream-climate-science/.

### *3. DOE, EPA, and the CWG violated FACA's public meeting and records disclosure requirements.*

Once a committee begins its work, FACA imposes important transparency requirements. With limited exceptions, all "meetings" of the advisory committee members must be open to the public. 5 U.S.C. § 1009(a); *see also id*. § 1009(a)(2)-(3); 41 C.F.R. § 102-3.150(a). This includes both in person or virtually held gatherings. 41 C.F.R. § 102-3.25. They must be noticed in the Federal Register and the public must be able to attend, appear before, and file statements with the advisory committee. 5 U.S.C. § 1009(a); 41 C.F.R. § 102-3.150(a). And all "records, reports, transcripts, minutes, appendixes, working papers, drafts, studies, agenda, or other documents which were made available to or prepared for or by each advisory committee shall be available" to the public, subject only to limited exceptions. 5 U.S.C. § 1009(b); *see also Food Chem. News v. HHS*, 980 F.2d 1468, 1469 (D.C. Cir. 1992) (disclosure requirement extends to "all materials that were made available to or prepared for or by an advisory committee"). Agencies cannot delay; they must ensure "contemporaneous availability of advisory committee records." 41 C.F.R. § 102-3.170; *see also* 5 U.S.C. § 1007(b)(2)-(3).

DOE, EPA, and the CWG have failed to perform any of those affirmative duties regarding public meetings and records disclosure. They did not publish notice of CWG meetings or permit any public participation; indeed, members of the public were not notified that the CWG even existed before the Draft CWG Report was published. Nor have the agencies satisfied their duty to disclose all records "made available to or prepared for or by" the CWG. 5 U.S.C. § 1009(b). No records of any kind nor minutes or transcripts of meetings were made available to the public. (And because the agencies have not disclosed the records required to be disclosed under FACA, those records cannot be used to inform these comments regarding EPA's reliance on the CWG's work in its rulemaking proceeding.) In fact, DOE and EPA reportedly intentionally concealed the CWG's work in order to limit public participation in its development, delaying its release months after it was submitted to EPA and Secretary Wright "to coincide with the release of EPA's proposal" to rescind the Endangerment Finding.[519]

## C. Courts will not defer to EPA's reliance on the Draft CWG Report.

DOE and EPA's failures to comply with accepted scientific integrity and peer review practices, including their own well-established and detailed internal guidance for doing so, and the substantial scientific and procedural shortcomings of the Draft CWG Report, make EPA's heavy reliance on the document arbitrary and capricious. EPA proposes to reverse course on a major policy decision based on a flimsy record compiled by a biased panel of discredited scientists who set out to misrepresent the extensive body of scientific evidence that runs counter to the Agency's preferred policy outcome. In doing so, it ignores long-standing internal guidelines designed to ensure that EPA relies on quality science untainted by politically driven outcomes and violates FACA.

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[519] Benjamin Storrow, *How Chris Wright Recruited a Team to Upend Climate Science*, E&E News (Aug. 11, 2025, 6:15 AM), https://perma.cc/TNJ5-J4M4.

Any utilization of the legally and analytically flawed and biased Draft CWG Report by EPA—including in this and other rulemaking proceedings, environmental review documents, permit proceedings, or other agency action—would be arbitrary and capricious and unlawful. An agency action is unlawful if it relies on faulty[520] or biased data,[521] fails to appropriately consider countervailing evidence,[522] or "rests upon a factual premise that is unsupported by substantial evidence," *Ctr. for Auto Safety v. Federal Highway Admin.*, 956 F.2d 309, 314 (D.C. Cir. 1992). Here, where the overwhelming majority of scientific evidence contradicts the Draft CWG Report's findings, any agency action that relies in significant part on the Draft CWG Report would lack a rational foundation and thus be unlawful.[523] While courts often defer to agencies in the evaluation of scientific information, they are unlikely to do so in the face of such flagrant disregard for established practices and scientific integrity guidance. *See K N Energy, Inc. v. FERC*, 968 F.2d 1295, 1303 (D.C. Cir. 2000) ("It most emphatically remains the duty of [the] court to ensure that an agency . . . conduct a process of *reasoned* decisionmaking."); *see also National Ass'n of Clean Water Agencies v. EPA*, 734 F.3d 1115, 1145 (2013) ("*NACWA*") (similar).

Indeed, where, as here, the Agency has failed entirely to use its expertise—as evident from its reliance on this overtly flawed report and its total failure to engage with its extensive previous

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[520] *See, e.g.*, *Flyers Rights Education Fund, Inc. v. Federal Aviation Administration*, 864 F.3d 738, 741 (D.C. Cir. 2017) ("[T]he Administrative Procedure Act requires reasoned decisionmaking grounded in actual evidence."); *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 935 (5th Cir. 1998) (finding action arbitrary and capricious where it had a "flawed, inaccurate, or misapplied" basis); *New Orleans v. SEC*, 969 F.2d 1163, 1167 (D.C. Cir. 1992) ("[A]n agency's reliance on a report or study without ascertaining the accuracy of the data ... is arbitrary."); *Humana of Aurora, Inc. v. Heckler*, 753 F.2d 1579, 1583 (10th Cir. 1985) (finding that flaws in a study "render reliance by the agency on this 'evidence'" arbitrary and capricious); *Almay, Inc. v. Califano*, 569 F.2d 674, 682 (D.C. Cir. 1977) (finding decision arbitrary and capricious where agency acted "on the basis of a flawed survey").

[521] *See, e.g.*, *American Petroleum Institute v. EPA*, 706 F.3d 474, 475-76 (D.C. Cir. 2013) (agency action unlawful where underlying analysis "did not take neutral aim at accuracy," as allowing biased analysis to guide agency action would "let the wish be father to the thought").

[522] *See, e.g.*, *Am. Radio Relay League, Inc. v. FCC*, 524 F.3d 227, 233 (D.C. Cir. 2008) (finding agency decisions unlawful where agencies "refus[ed] to consider empirical evidence" supporting a different approach); *Genuine Parts Co. v. EPA*, 890 F.3d 304, 308 (D.C. Cir. 2018) ("Because EPA 'entirely failed to consider an important aspect of the problem' by failing to address evidence that runs counter to the agency's decision, we hold [EPA's action] is arbitrary and capricious.").

[523] *Cf. Ethyl Corp. v. EPA*, 541 F.2d 1, 37-38 (D.C. Cir. 1976) ("By its nature, scientific evidence is cumulative: the more supporting, albeit inconclusive, evidence available, the more likely the accuracy of the conclusion.... Thus, after considering the inferences that can be drawn from the studies supporting the Administrator, and those opposing him, [courts] must decide whether the cumulative effect of all this evidence... presents a rational basis" for his actions.").

findings—the usual deference to an expert agency's scientific determinations does not attach. *Pub. Citizen Health Rsch. Grp. v. Tyson*, 796 F.2d 1479, 1505 (D.C. Cir. 1986) ("While we acknowledge our deference to the agency's expertise in most cases, we cannot defer when the agency simply has not exercised its expertise."). Courts "defer[] to the agency's expertise so long as its decision is *supported by substantial evidence in the record and reached by reasoned decisionmaking*, including an examination of the relevant data and a reasoned explanation supported by a stated connection between the facts found and the choice made." *Stingray Pipeline Co., L.L.C. v. FERC*, 124 F.4th 19, 25 (D.C. Cir. 2024) (quoting *Turlock Irrigation Dist. v. FERC*, 786 F.3d 18, 25 (D.C. Cir. 2015)) (emphasis added). Here, EPA has failed both premises necessary to secure deference to the "expert" agency.

This is illustrated by EPA's acceptance of the conclusions of the Draft CWG Report over decades of scientific consensus. EPA does not adequately explain why it prioritizes the Draft CWG Report despite the serious flaws described above, including the fact it (1) has never received independent peer review, (2) does not comply with EPA, DOE, or OMB guidance on the use and evaluation of scientific information, and (3) was created in violation of FACA's bedrock transparency and fair-balance requirements. In particular, EPA's failure to adequately explain its technical findings is arbitrary and capricious. *NACWA*, 734 F.3d at 1145 (EPA failed to explain use of statistical methodology on small dataset). Nor could it explain them, as the Draft CWG Report simply lacks the scientific rigor and broad consensus enjoyed by mountains of other conflicting evidence on the effects of climate change. Simply put, EPA's reliance on the Draft CWG Report bears all the hallmarks of unreasoned and arbitrary decision-making. *See id.* ("We are hesitant to rubber-stamp EPA's invocation of statistics without some explanation of the underlying principles or reasons . . . particularly when the facts found . . . demonstrate flaws."). The lack of scientific rigor of the Draft CWG Report contrasts starkly with the scientific information relied upon for the 2009 Endangerment Finding EPA now proposes to reverse. Before proposing that finding, EPA issued an advance notice of proposed rulemaking accompanied by a technical support document detailing extensive scientific support upon which EPA planned to—and did—rely in making the Endangerment Finding. *Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions under the Clean Air Act*, 73 Fed. Reg. 44,353 (July 30, 2008). 74 Fed. Reg. at 66,500, 66,503.

Should EPA rely on any version of the Draft CWG Report in a final rule, it must consider and respond to all comments submitted in the DOE docket for the Draft CWG Report.[524] As of the time of the close of the comment period for EPA's proposal, only 345 of 59,563 comments submitted to regulations.gov on the Draft CWG Report were publicly available. Thus, commenters on EPA's proposal have been unable to review and refer to the vast majority of comments submitted on the Draft CWG Report upon which EPA so heavily relies. It is unclear whether those comments will otherwise be reviewed or a final CWG Report that takes them into account will be produced. Either way, EPA has to conduct its own evaluation of the public input in both this and the DOE docket if relying on the report in a final rule.

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[524] Docket DOE-HQ-2025-0207, https://www.regulations.gov/document/DOE-HQ-2025-0207-0001 (last visited Sept. 22, 2025, https://perma.cc/LSH5-6ULN).

In sum, DOE and EPA flouted FACA and their own rules for developing, assessing, and using scientific information in rulemaking in order to support a pre-ordained policy outcome that is not well-supported in the body of serious scientific work on the subject. A rule finalized based on this record should be considered arbitrary and capricious, and the Agency's evaluation of the scientific information before it, and its surrounding factual and scientific conclusions, should not receive any deference from a court when challenged.

## IX. The proposed reconsideration of the Endangerment Finding violates fundamental principles of administrative law and is therefore arbitrary and capricious and must be rescinded.

The proposed reconsideration of the Endangerment Finding violates multiple fundamental principles of administrative law and is thus arbitrary and capricious and must be rescinded. Among its many flaws, the proposal fails to meet the requirements for agency policy change, unlawfully disregards relevant data before the Agency, and depends on internal inconsistencies. Each of these failures is enough on its own to render the entire proposal arbitrary and capricious, and together each failure compounds the others into a complete mess that EPA cannot resolve in this rulemaking. This section discusses these overarching failures of the proposal to comply with basic tenets of administrative law, and specifics of these failures are discussed throughout the comment.

Clean Air Act rulemakings are governed by the statute and basic principles of administrative law. *See* 42 U.S.C. § 7607(d)(9); 5 U.S.C. § 706(1); *Catawba County v. EPA*, 571 F.3d 20, 41 (D.C. Cir. 2009) (discussing Clean Air Act and Administrative Procedure Act review standards). Among other requirements, the Clean Air Act requires a notice of proposed rulemaking to "be accompanied by a statement of its basis and purpose" that includes a summary of "(A) the factual data on which the proposed rule is based; (B) the methodology used in obtaining the data and in analyzing the data; and (C) the major legal interpretations and policy considerations underlying the proposed rule." 42 U.S.C. § 7607(d)(3).

The Clean Air Act and Administrative Procedure Act prohibit EPA from finalizing a rule that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," "in excess of statutory jurisdiction, authority, or limitations, or short of statutory right," or "without observance of procedure required by law." 42 U.S.C. § 7607(d)(9); 5 U.S.C. § 706(2)(A). Under this standard, "an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *State Farm*, 463 U.S. at 43. An agency must establish a "rational connection between the facts found and the choice made." *Id.* at 52.

The proposed reconsideration fails to meet the standards of the Clean Air Act and the Administrative Procedure Act, and if finalized, would be arbitrary and capricious.

### A. EPA fails to meet the standard for agency policy change.

Importantly, EPA is not here writing on a blank slate—it is proposing to repeal a policy supported by extensive scientific evidence developed over decades. When reversing a policy, as EPA proposes to do so here, it must provide a "more detailed justification than would suffice for a new policy written on a blank slate" if the "new policy rests upon factual findings that contradict those which underlay its prior policy." *Fox*, 556 U.S. at 515. As the Supreme Court has held, it "would be arbitrary and capricious to ignore such matters." *Id.* That is why a "reasoned explanation is needed for disregarding facts and circumstances that underlay … the prior policy." *Id.* at 516.

The proposed reconsideration falls woefully short of the legal requirement for an agency policy change. Whereas the Endangerment Finding found a likelihood of adverse health impacts from increased frequency and severity of hurricanes, flooding, and wildfire, EPA now states that "extreme weather events have not demonstrably increased relative to historical highs." 90 Fed. Reg. at 36,309. Yet EPA does not state that it has determined this to be true, rather that the empirical bases of the Endangerment Finding "appear" to be generalized and unsupported and thus "no longer inspire the same degree of confidence." *Id.* Less confidence does not mean the bases for the Endangerment Finding are unfounded, nor can the mere specter of concern provide the necessary detailed justification for reversing years of peer-reviewed analysis. Furthermore, the proposed reconsideration does not engage at all with the mountain of scientific evidence since 2009 supporting the Endangerment Finding's conclusions on extreme weather events.[525]

The Endangerment Finding also identified impacts to public health and welfare from rising sea levels and related weather and climatic events. However, EPA now cites the Draft CWG Report for *decreased* sea level in some areas and faults the Endangerment Finding for a supposed lack of analysis of adaptation efforts. 90 Fed. Reg. at 36,309. But the proposed reconsideration's description of global sea level rise is wildly misleading and relies on cherry-picked tide gauges rather than the clear evidence from satellite altimeters.[526] Not only does the proposed reconsideration ignore this body of more robust scientific evidence, but even for tide-gauge observations, those have supported sea-level projections.[527] Specific to the United States, sea-level rise is faster and accelerating faster than global averages.[528]

On sea level rise and adaptation, the proposed repeal's description of the Endangerment Finding as disregarding adaptation is incorrect—EPA's approach in the Endangerment Finding was to answer "the question of what are the risks to public health and welfare from air pollution if we do not take action to address it," not "how much risk will remain assuming some projection of how people and society will respond." 74 Fed. Reg. at 66,513. Specific to sea level rise, EPA

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[525] *See supra* Comment VI.

[526] *See* https://www.science.org/content/article/contrarian-climate-assessment-u-s-government-draws-swift-pushback.

[527] https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024GL112940.

[528] *See* https://tamino.wordpress.com/2025/08/11/sea-level-rise-in-the-u-s-a/.

explained adaptation "would not change the degree of sea level rise" even as it "has the potential to reduce the adversity of effects that do occur from these impacts." *Id.* Not only does the proposed reconsideration not display an awareness of the Agency's earlier policy on this question, but EPA here provides no new analysis of adaptation and its potential influence on the Endangerment Finding. Again, a mere assertion of reduced confidence without analysis cannot form the basis for a reversal of a prior policy.

The proposed reconsideration's description of uncertainties described in the Endangerment Finding is misleading. The proposed reconsideration falsely alleges EPA "papered over" those uncertainties and that developments since 2009 demonstrate acknowledged uncertainties are more significant. 90 Fed. Reg. at 36,299. As an initial matter, the proposed reconsideration makes this point by taking a quote from a section in the Endangerment Finding acknowledging that "*some* aspects of climate change science and the projected impacts are *more* certain than others" to imply falsely that the endangerment finding depended on uncertain analysis. 74 Fed. Reg. at 66,524 (emphasis added); *see also* 90 Fed. Reg. at 36,308 (selectively quoting subsequent phrase in the Endangerment Finding preamble out of context). And for each of the specific uncertainties noted in the proposed reconsideration, those are misleadingly presented without context or explanation.

The proposed reconsideration also misrepresents each of the uncertainties it identifies as discussed in the Endangerment Finding:

- On cold-related mortality, the Endangerment Finding identified a "risk that projections of cold-related deaths, and the potential for decreasing their numbers due to warmer winters, can be *overestimated* unless they take into account the effects of season and influenza, which is not strongly associated with monthly winter temperature." 74 Fed. Reg. at 66,525 (emphasis added). Thus, even with this acknowledged uncertainty of overestimation of reduced deaths, EPA previously correctly determined that "the net impact on mortality is more likely to be adverse," and the proposed reconsideration offers no evidence to undermine that conclusion. *See id.* at 66,526.
- On increases in allergenic illnesses and pathogen-borne disease vectors, the evidence "provide[d] *directional* support for an endangerment finding." 74 Fed. Reg. at 66,526, 66,498 (emphasis added). Considering that the scientific literature was not as definitive on these areas, EPA also did "not plac[e] primary weight on these factors." *Id.* at 66,526. Thus, even acknowledging uncertainty, the Endangerment Finding properly concluded there was directional evidence, and the Endangerment Finding did not depend on this evidence in any event.
- On food production and crop yields, the Endangerment Finding noted uncertainty over whether any potential near-term *beneficial* effects for *certain* crops due to increased carbon dioxide concentrations would occur due to the "various potential diverse impacts of climate change on crop yield," and EPA also concluded, based on the "body of evidence," that there was an "increasing risk of net adverse impacts on U.S. food production and agriculture over time, with the potential for significant disruptions and crop failure in the future." 74 Fed. Reg. at 66,498; *see also id.* at 66,535. The proposed reconsideration does not reference the extensive discussion in the Endangerment Finding on the multiple factors of climate change

affecting food production and crop yields, *see id.* at 66,531-32, and the proposed repeal's own discussion on crop yield suffers from the same tired myopic disregard of climate change's effects on crop yield and food production that EPA rightly rejected as insufficient in the Endangerment Finding.

- On temperature at the end of the twenty-first century, the Endangerment Finding found that the future "warming over the course of the 21st century, even under scenarios of low emissions growth, is very likely to be greater than observed warming over the past century." 74 Fed. Reg. at 66,519. The only "uncertainty" described for temperature projections was the "uncertainty range" of temperature increases from various emissions scenarios, *id.*, but that description both demonstrated the robustness of EPA's approach to use a sensitivity analysis and also showed an uncertainty range with a *low end* projection of 1.1 degrees Celsius, therefore indicating no uncertainty about the directionality of temperature change.
- On the temperature record prior to 1600 A.D., the Endangerment Finding's description of uncertainty included a reference to the response to comments document for more information. 74 Fed. Reg. at 66,523. In that document, EPA explained that that uncertainty involved regional gaps in historic temperature reconstruction. EPA relied on reports, including the National Research Council report *Surface Temperature Reconstructions for the Last 2,000 Years*, that "review[ed] hundreds of relevant studies."[529]
- On estimates of future aerosol emissions and their relative effects, the uncertainty described was due to "assumptions about future [aerosol] emissions because of their short atmospheric lifetimes compared to the six well-mixed greenhouse gases." 74 Fed. Reg. at 66,519. That short-term effects are more uncertain is hardly surprising, and, in any event, any cooling effects of aerosols are roughly a quarter of the warming associated with greenhouse gases,[530] and aerosols contribute to poor air quality and are harmful to human health.[531]
- The proposed reconsideration's reference to uncertainty on extreme weather events cites not uncertainty about those events, but rather uncertainty about the degree of climate impacts on crop yields due to studies not including extreme weather events in their projections. *See* 74 Fed. Reg. at 66,531. On extreme weather, the Endangerment Finding was unequivocal and concluded that the "evidence concerning how human- induced climate change may alter extreme weather events also clearly supports a finding of endangerment, given the serious adverse impacts that can result from such events and the increase in risk, even if

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[529] Response to Comments Vol. 2, at 41-43. https://www.epa.gov/sites/default/files/2021-05/documents/rtc_vol_2.pdf.

[530] NAS Study, *supra* n.1, at 19.

[531] *See* NASA, *Aerosols: Small Particles with Big Climate Effects* (June 13, 2023), https://science.nasa.gov/science-research/earth-science/climate-science/aerosols-small-particles-with-big-climate-effects/.

small, of the occurrence and intensity of events such as hurricanes and floods. *Id.* at 66,497. The impacts of extreme events were across sectors, and these impacts provided "strong support" for the endangerment finding. *Id.* at 66,498. EPA does not display an awareness of what its actual previous conclusions were on extreme weather, and the proposed reconsideration does not address these facts.

- On emissions from future fleet motor vehicles, EPA simply explained in the Endangerment Finding that the Agency was using its "traditional[]" approach of using "recent emissions from the entire current fleet of motor vehicles as a reasonable surrogate." 74 Fed. Reg. at 66,543. Although that consistent approach "introduces some limited degree of uncertainty, the difference between recent actual emissions from the fleet and projected future emissions from the fleet is not expected to differ in any way that would substantively change the decision made concerning cause or contribution." *Id.* EPA does not now explain why it is departing—or if it even is departing—from this consistent agency practice in the proposed reconsideration.

As explained in these bullet points, the proposed reconsideration's descriptions of uncertainties in the Endangerment Finding are either misleading mistakes due to a lack of understanding of EPA's previous conclusions or intentional obfuscations. EPA does not display awareness that it is changing position on these uncertainties, nor does it provide a more detailed justification for disregarding the facts regarding these areas of support for the Endangerment Finding. *See Fox*, 556 U.S. at 515-16.

EPA also does not explain its departure from the scientific findings in the 2022 denial of petitions for reconsideration of the Endangerment Finding.[532] In the decision document supporting those denials, EPA explained that the Endangerment Finding had "been strongly affirmed by recent scientific assessments."[533] That document explained that "recent scientific assessments continue to document observed changes in the climate of the planet and of the United States, and present clear support regarding the current and future dangers of climate change" based on evaluations of "the findings of numerous individual peer-reviewed studies."[534] EPA does not explain its departure from any of the issues discussed in that denial or the scientific facts that underlay that policy, and its failure to do so is arbitrary. *See Fox*, 556 U.S. at 515-16.

### B. EPA unlawfully disregards evidence before the Agency.

EPA has also unlawfully disregarded evidence before the Agency. EPA "cannot ignore evidence that undercuts its judgment." *See Inteliquent, Inc. v. FCC*, 35 F.4th 797, 802 (D.C. Cir. 2022);

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[532] EPA only cites to this denial when explaining the history of the Endangerment Finding and subsequent agency actions. *See* 90 Fed. Reg. at 36,295-96. The Agency does not engage with its substance.

[533] EPA 2022 Denial of Petitions Decision Document at 1.

[534] *Id.* at 13.

*see also Comcast Corp. v. FCC*, 579 F.3d 1, 8 (D.C. Cir. 2009) (explaining the court has "not hesitated to vacate a rule when the agency has not responded to empirical data or to an argument inconsistent with its conclusion"); *State Farm*, 463 U.S. at 43 (holding an agency action is arbitrary and capricious if the agency has "offered an explanation for its decision that runs counter to the evidence before the agency"). However, that is exactly what the proposed reconsideration does.

The proposed reconsideration blatantly disregards the congressionally mandated National Climate Assessments and IPCC reports reflecting scientific consensus on climate change. These reports, however, are high quality sources of scientific information that reflect overwhelming consensus. In the Endangerment Finding, EPA included a copy of the National Climate Assessment's guidance to agency leads on preparation of synthesis and assessment products (SAPs), which explained that each agency lead must follow OMB's information quality procedures.[535] EPA concluded that the "process was robust, objective, transparent, and complete and ensured that the USGCRP and CCSP reports … were consistent with the [OMB Information Quality Act] Guidelines."[536] The proposed reconsideration does not even display awareness that EPA previously reached that conclusion—based on this factual information about how the National Climate Assessments were developed—and is therefore arbitrary and capricious. *See Fox*, 556 U.S. at 515-16.

The only reason EPA provides now to purportedly justify its unlawful disregarding of the National Climate Assessments and IPCC reports is an unspecified concern raised by unnamed "watchdog organizations." 90 Fed. Reg. at 36,310. The only stakeholder concern in the record, from the Protect the Public Trust and CO2 Coalition, does not provide any valid reason to disregard this scientific evidence.[537] That supposed critique relies on an attached paper by Drs. Richard Lindzen and Will Happer, who have long cast doubt on climate science and humans' role in contributing to climate change.[538] This supposed critique is patently absurd and must be disregarded. For instance, it includes the ridiculous claim that "Peer-reviewed climate science publications should not be viewed as reliable science and do not determine scientific validity."[539] To the contrary, "the peer review process and the discipline provided by competing research

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[535] Endangerment Finding Request for Comments Vol. 1, App. B, at 106. https://www.epa.gov/sites/default/files/2021-05/documents/rtc_volume_1_app_b.pdf.

[536] Endangerment Finding Request for Comments Vol. 1, at 60-61, https://www.epa.gov/sites/default/files/2021-05/documents/rtc_volume_1.pdf.

[537] *See* Request for Correction under EO 14303 and the Information Quality Act Concerning the 5th National Climate Assessment Published by the U.S. Global Change Research Program, EPA-HQ-OAR-2025-1094-0019 (June 11, 2025).

[538] *See, e.g.*, https://www.eenews.net/articles/meet-the-scientists-trump-could-tap-to-undermine-climate-regulations/.

[539] CO2 Coalition Comment, Exh. A at 7.

studies guard against cherry-picking or poor design by forcing scientists to identify, explain, and submit for public scrutiny the discretionary choices that are inevitable in research design."[540]

The other supposed violations of OMB guidelines raised in the CO2 Coalition letter involve misreading charts, misunderstanding how scenario-based analysis works, cherry-picking data points that do not undermine scientific conclusions, or objecting to the exclusion of irrelevant data. Much of the criticism, for instance, is leveled at the National Climate Assessment for ignoring that there were higher carbon dioxide levels during the Jurassic period—a time when dinosaurs, not humans, roamed the Earth—despite the fact that the National Climate Assessment used paleoclimatatic data and analysis to analyze historical concentrations of greenhouse gases.[541] Another supposed deficiency is an alleged reliance on a single climate scenario, whereas the assessment actually advised authors "to assess the full range of scenarios available."[542] The criticisms leveled in this comment about the National Climate Assessment either reflect a complete misunderstanding of what the assessment actually includes or a willful attempt to undermine the assessment through inaccurate and spurious accusations. In either instance, none of the supposed criticism actually indicates deficiencies in the National Climate Assessment, and it is unlawful for EPA to completely disregard the evidence from this assessment.

Furthermore, EPA completely disregards a number of other reports by the federal government on the effects of human-caused greenhouse gas emissions on the climate, public health, and welfare. Among the EPA reports that the Agency fails to consider here are *Climate Change Indicators in the United States*, which was independently peer reviewed and concluded "[c]limate change is affecting the environment in ways that have significant impacts on the health and well-being of people and ecosystems"[543]; a report on *Climate Change and Children's Health and Well-Being in the United States*, which was independently peer reviewed and concluded that "children are vulnerable to a variety of health effects from climate change due to biological and developmental factors" and that "[t]here is an urgency to act to reduce emissions of greenhouse gases that cause climate change"[544]; and the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022*, which found "transportation activities accounted for 28.5 percent of U.S. greenhouse gas

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[540] *N.M. Cattle Growers' Ass'n v. U.S. Fish & Wildlife Serv.*, 2025 U.S. App. LEXIS 21482, at *19 (D.C. Cir. Aug. 22, 2025).

[541] *See, e.g.*, NCA5 at 2-38 (explaining paleoclimate evidence); *id.* at 3-12 (comparing to paleoclimate data); *id.* at 3-36 (inferring climate sensitivity from paleoclimatic changes).

[542] NCA5 at xxvi.

[543] Climate Change Indicators at 81.

[544] EPA, Climate Change and Children's Health and Well-Being in the United States (2023), at 76, https://www.epa.gov/system/files/documents/2023-04/CLiME_Final%20Report.pdf.

emissions in 2022."[545] EPA has also failed to consider reports from the Department of Defense (DOD), such as the 2019 *Report on Effects of a Changing Climate to the Department of Defense*, which presented a "high-level assessment of the vulnerability of DoD installations to five climate/weather impacts" and found over half of the installations analyzed were vulnerable to future or future recurrent flooding, current or future drought, or wildfire, with "changes likely to be more pronounced" beyond the study's 20-year horizon[546]; the 2019 training and doctrine command pamphlet on *The Operational Environment and the Changing Character of Warfare*, which explained "a changing climate, which likely will become a direct security threat"[547]; the 2019 *Implications of Climate Change for the U.S. Army*, which was prepared by the U.S. Army War College and noted not only the "strength of scientific arguments in favor of significant warming projections" but also that it "is useful to remind ourselves regularly of the capacity of human beings to persist in stupid beliefs in the face of significant, contradictory evidence"[548]; and the *Department of Defense Climate Adaptation Plan*, which explained that the "consequences of failing to adapt to climate change compound over time and are measured in terms of lost military capability, weakened alliances, weakened international stature, degraded infrastructure, and missed opportunities for technical innovation and economic growth."[549]

EPA has no valid reason to disregard the evidence and conclusions of the National Climate Assessments or IPCC reports, and it has also failed to consider other government reports on human-caused greenhouse gas emissions, climate change, and their impacts on public health and welfare. In doing so, EPA has acted arbitrarily and capriciously.

### C. The proposed reconsideration's reasoning is internally inconsistent.

Furthermore, the proposed reconsideration's reasoning is internally inconsistent at multiple points. For instance, EPA accepts unfounded and unspecified stakeholder "concerns" that the National Climate Assessment may not meet certain information quality requirements—which is

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[545] EPA, EPA 430-R-24-004, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022 (2024), at 2-37, https://www.epa.gov/system/files/documents/2024-04/us-ghg-inventory-2024-main-text_04-18-2024.pdf.

[546] DOD, Office of the Under Secretary of Defense for Acquisition and Sustainment, Report on Effects of a Changing Climate to the Defense Department (2019), at 16, https://climateandsecurity.org/wp-content/uploads/2019/01/sec_335_ndaa-report_effects_of_a_changing_climate_to_dod.pdf.

[547] DOD TRADOC Pamphlet 525-92, The Operational Environment and the Changing Character of Warfare (2019), at 9, https://climateandsecurity.org/wp-content/uploads/2019/11/tradoc-2019.pdf.

[548] Col. Max Brosig, et al., U.S Army War College, Implications of Climate Change for the U.S. Army (2019), at 6, 44, https://climateandsecurity.org/wp-content/uploads/2019/07/implications-of-climate-change-for-us-army_army-war-college_2019.pdf.

[549] DOD Climate Adaptation Plan (2024), at 8, https://www.sustainability.gov/pdfs/dod-2024-cap.pdf.

an incorrect claim, *see supra* Comment IX.B—but does not evaluate the DOE Draft CWG Report against these same standards. As courts have held, "EPA's actions must also be consistent; an internally inconsistent analysis is arbitrary and capricious." *Nat'l Parks Conservation Ass'n v. EPA*, 788 F.3d 1134, 1141 (9th Cir. 2015) (citing *Gen. Chem. Corp. v. United States*, 817 F.2d 844, 857 (D.C. Cir. 1987) (per curiam)). EPA has made no attempt to reconcile that internal inconsistency. *See ANR Storage Co. v. FERC*, 904 F.3d 1020, 1026–28 (D.C. Cir. 2018) (agency action arbitrary and capricious where its "analysis . . . was internally inconsistent").

### D. EPA unlawfully disregards pertinent findings, recommendations, and comments by the National Academy of Sciences.

Section 307(d) of the Clean Air Act, which includes the Clean Air Act's requirements for endangerment findings, emissions standards, and other specified rulemakings, provides that the statement of basis and purpose supporting a proposed rule

> shall ... set forth or summarize and provide a reference to any pertinent findings, recommendations, and comments by … the National Academy of Sciences, and, if the proposal differs in any important respect from any of these recommendations, an explanation of the reasons for such differences. All data, information, and documents referred to in this paragraph on which the proposed rule relies shall be included in the docket on the date of publication of the proposed rule.

42 U.S.C. § 7607(d)(3)(C).[550] The proposed rule fails to satisfy these statutory requirements.

#### *1. EPA unlawfully disregards decades of pertinent work by the National Academies.*

As discussed above in Comment VIII.B, the proposal claims that EPA has critically evaluated leading climate science assessments including the National Climate Assessments, and measured them against the Administration's own standards for scientific integrity. But if the Administrator wishes to issue a proposed rule predicated in any part on a reassessment and rejection of

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[550] With respect to final rules, Section 307(d)(6) of the Act provides:

(A) The promulgated rule shall be accompanied by (i) a statement of basis and purpose like that ... with respect to a proposed rule and (ii) an explanation of the reasons for any major changes in the promulgated rule from the proposed rule.

(B) The promulgated rule shall also be accompanied by a response to each of the significant comments, criticisms, and new data submitted in written or oral presentations during the comment period.

(C) The promulgated rule may not be based (in part or whole) on any information or data which has not been placed in the docket as of the date of such promulgation.

*Id.* § 7607(d)(6).

mainstream climate science that has been subject to meticulous review by the National Academy of Sciences ("NAS") and other leading scientific institutions, it needs to withdraw the proposal and issue a new one that complies with the express requirements of the Clean Air Act, including 42 U.S.C. § 7607(d)(3)(C). The NAS has published a great volume of work on climate science and climate methodology. For example, and directly relevant to the Administration's purported desire to weigh the accuracy of the National Climate Assessments, the NAS published a "comprehensive, independent review" of the draft NCA5 report in 2023.[551]

While this massive document contains numerous specific proposals for improvements on the NCA5 draft—many of which are reflected in the NCA's final report—it robustly confirms the fundamental soundness of the NCA5's work and the draft's consistency with the underlying scientific literature. For example, the NAS Review concludes:

> The Committee applauds the Fifth National Climate Assessment (NCA5) authors for an impeccably researched, assembled, and interpreted vast body of literature on an extremely complex and rapidly changing topic—climate change impacts, adaptation, and mitigation in the United States. This is no easy task and is increasingly challenging as the knowledge base on climate change (*e.g.*, the literature, action on climate change mitigation and adaptation) has dramatically expanded in recent decades, particularly since the last National Climate Assessment (NCA) report was released in 2018. The Committee also commends the NCA process for the inclusion of traceable accounts sections at the end of each chapter to describe the process and rationale authors used to develop the chapter and reach consensus on key messages. These sections support the ability of the draft NCA5 report to accurately document the state of knowledge—including recent additions and remaining gaps in knowledge—regarding the impacts of climate change.

Review of the Draft Fifth National Climate Assessment at 9.

EPA's proposal does not so much as cite the NAS's careful review of the most recent National Climate Assessment; nor does the proposal so much as "provide a reference to," 42 U.S.C. § 7607(d)(3)(C), any of the NAS reports that are directly relevant to EPA's proposal to reconsider and rescind the Endangerment finding.[552] This failure to comply with clear Clean Air

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[551] National Academies of Sciences, Engineering, and Medicine, Review of the Draft Fifth National Climate Assessment 9 (National Academies Press 2023), https://doi.org/10.17226/26757.

[552] *See, e.g.*, National Academies of Science and Royal Society, Climate Change Evidence and Causes: Update 2020, Foreward (2020) ("It is now more certain than ever, based on many lines of evidence, that humans are changing Earth's climate. The atmosphere and oceans have warmed, which has been accompanied by sea level rise, a strong decline in Arctic sea ice, and other climate-related changes. The impacts of climate change on people and nature are increasingly apparent. Unprecedented flooding, heat waves, and wildfires have cost billions in damages. Habitats are undergoing rapid shifts in response to changing temperatures and

Act requirements is particularly serious given the central role that NAS/NRC research has played in supporting the 2009 Finding.[553]

In short, EPA has plainly not complied with the Clean Air Act's express requirement that EPA's proposal must "set forth or summarize and provide a reference to any pertinent findings, recommendations, and comments by … the National Academy of Sciences, and, if the proposal differs in any important respect from any of these recommendations, an explanation of the reasons for such differences." 42 U.S.C. § 7607(d)(3)(C). Because that information must go in the proposal—allowing the public to assess EPA's reasons for departing from prior NAS research and analysis, *see id.* § 7607(d)(6)—it is not enough for EPA to address these shortcomings in a final rule. Accordingly, the proposal must be withdrawn or reissued in a form that complies with the statute.

### *2. The National Academies' most recent consensus report highlights that EPA has utterly failed to incorporate the best science by ignoring expert research.*

On September 17, 2025, the National Academies of Sciences, Engineering, and Medicine released its report *Effects of Human-Caused Greenhouse Gas Emissions on U.S. Climate, Health, and Welfare*.[554] The consensus study report was conducted in response to EPA's request for public input on the proposed reconsideration of the endangerment finding and in consideration of the Clean Air Act's role for the NAS, followed the NAS's standard "processes for managing

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precipitation patterns."); National Academies of Sciences, Engineering, and Medicine, *Accomplishments of the U.S. Global Change Research Program* (Washington, DC: The National Academies Press 2017). https://doi.org/10.17226/24670; National Research Council, *Advancing the Science of Climate Change* (The National Academies Press 2014). https://doi.org/10.17226/12782; National Academies of Science and Royal Society, Climate Change Evidence and Causes: (2014).

[553] *See* EPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. at 66,497 (noting that the National Research Council of the National Academy of Science's climate science assessment served, with assessments from the USGCRP and IPCC, as the "the primary scientific basis supporting the Administrator's endangerment finding."); *id.* at 66,510-11; Technical Support Document for the Endangerment and Cause or Contribute Findings for Greenhouse Gases Under 202(a) of the Clean Air Act, at 8 (2009) (citing five "key reference documents" from the NRC, namely, Climate Change Science: Analysis of Some Key Questions (2001); NRC Radiative Forcing of Climate Change (2005); NRC Surface Temperature Reconstructions for the Last 2,000 Years (2006); NRC Potential Impacts of Climate Change on U.S. Transportation (2008)). *See also Massachusetts v. E.P.A*., 549 U.S. 497, 508 (2007) (discussing the National Research Council of the National Academy of Science's 1978 finding that relationship between increased carbon dioxide concentrations and climate changes was "unequivocal").

[554] NASEM 2025 Climate Report, *supra* note 1.

conflicts of interest, inviting public comment on the committee members, and thorough peer review of the draft report," and supported by funding from endowments.[555]

In this report, the NAS concluded that "EPA's 2009 finding that the human-caused emissions of greenhouse gases threaten human health and welfare was accurate, has stood the test of time, and is now reinforced by even stronger evidence."[556] The authors reached that overarching conclusion based on five further conclusions:

1. Emissions of greenhouse gases from human activities are increasing the concentration of these gases in the atmosphere.
2. Improved observations confirm unequivocally that greenhouse gas emissions are warming Earth's surface and changing Earth's climate.
3. Human-caused emissions of greenhouse gases and resulting climate change harm the health of people in the United States.
4. Changes in climate resulting from human-caused emissions of greenhouse gases harm the welfare of people in the United States.
5. Continued emissions of greenhouse gases from human activities will lead to more climate changes in the United States, with the severity of expected change increasing with every ton of greenhouse gases emitted.[557]

Based on these conclusions, the NAS report concluded "that the evidence for current and future harm to human health and welfare created by human-caused GHGs is beyond scientific dispute."[558]

The NAS report considered multiple sources of evidence, considered conclusions stronger if supported by independent lines of evidence, and weighed evidence based on type, with observational evidence weighed most heavily.[559] The NAS study does not cite the draft DOE Climate Working Group report because it was not available in a final form, but it does cover many of the topics from that report.[560] The report authors considered more than 600 peer-reviewed articles, and many of them are cited throughout the report.[561]

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[555] *Id.* at xi (citing 42 U.S.C. § 7607(D)(3)(c)).

[556] *Id.* at 1.

[557] *Id.* at 1-2.

[558] *Id.* at 2.

[559] *Id.* at 6.

[560] *See id.*

[561] *Id.* at xiii; *see also id.* at 71-106 (references).

Human-caused emissions of greenhouse gases are the "primary driver of the imbalance in Earth's energy and resulting heating."[562] This imbalance is increasing over time.[563] The NAS report's understanding "of the effects of GHGs on the Earth's energy balance remains solidly grounded in physics and in laboratory measurements, which date back to the 19th century, as well as in surface and satellite measurements."[564] Considering these independent lines of evidence, the NAS found the "rapid rise in forcing continues the trend reported in EPA (2009) that 'the rate of increase in positive radiative forcing due to these three GHGs during the industrial era is very likely to have been unprecedented in more than 10,000 years.'"[565] Furthermore, "it is virtually certain that this increase [in atmospheric concentrations of greenhouse gases] is due to human activities."[566]

The NAS report clearly sets out the effects of human-caused energy imbalance due to the increase in atmospheric concentrations of greenhouse gases. These include scientific findings on these topics:

- **Average temperature**. "Global mean surface temperatures have increased by 2.23°F (1.24°C; range 2.00 to 2.43°F / 1.11 to 1.35°C) for approximately the last decade (2015–2024) relative average," and since "1970, annual mean temperatures in the contiguous United States have increased by 2.5°."[567] These increases are actually greater than those EPA considered in the Endangerment Finding, illustrating that the trend of the rate of warming is increasing.[568]
- **Extreme temperature.** Reflecting the comprehensive analysis of the NAS report, multiple "independent datasets concur that the frequency and intensity of record heat—hot days, hot nights, heat waves—have risen while record cold—cold days, cold nights, and frost—have diminished over most land areas across the globe, including the United States."[569]
- **Precipitation patterns.** Recent observations about changes to precipitation patterns—where "most of the world's dry regions are becoming drier and wet regions wetter," but with "water storage data show[ing] that the rate of drying now exceeds the rate of

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[562] *Id.* at 16.

[563] *See id.* and cited sources.

[564] *Id.* at 18 (citations omitted).

[565] *Id.* at 18 (quoting EPA, EPA-HQ-OAR-2009-0171-11683, Technical Support Document—Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. U.S. Environmental Protection Agency (2009)).

[566] *Id.* at 19.

[567] *Id.* at 22.

[568] *See id.*

[569] *Id.* at 22.

wetting—are "consistent with the findings from EPA (2009) that 'changes are occurring in the amount, intensity, frequency and type of precipitation.'"[570]

- **Extreme precipitation.** EPA's 2009 projection of "the potential for increases in regional heavy downpours and the occurrence of flooding … have now been confirmed by the observational record,"[571] including surface rain gauge data and decades worth of satellite observations.
- **Storms.** There is a trend of "more rapid intensification of hurricanes since the early 1980s," and along "the North American coast, observations have shown storms slowing down or stalling, bringing more heavy rainfall, wind damage, storm surge, and coastal flooding."[572]
- **Droughts.** Although there is geographic variation across the United States, drought conditions have increased in the southwestern and parts of the southeastern United States.[573]
- **Ocean heat.** "The evidence that the ocean has warmed as a result of excess GHGs has grown stronger since EPA (2009)."[574] Data on ocean temperatures has improved due to the more than 3,900 Argo floats that provide 140,000 temperature profiles per year at various depths of the ocean.[575] Increases to ocean temperatures "ha[ve] contributed to increases in rainfall intensity, rising sea levels due to thermal expansion, the destruction of coral reefs, declining ocean oxygen levels, and declines in ice sheets, glaciers, and ice caps in the polar regions," and have also been a factor in low-oxygen dead zones in many areas around the country.[576]
- **Marine heat waves.** Although not included in the endangerment finding, marine heat waves "have become more common in recent decades" and "have considerable and detrimental impacts on marine ecosystems and the services that they provide."[577]
- **Ocean acidification.** The "decline in pH in U.S. offshore waters tracks with the global average trends."[578] Observations from *in situ* measurements and satellites "confirm[] that the declining pH across the global ocean is attributable to the increase in the partial pressure of $CO_2$ from human-caused increases in atmospheric $CO_2$."[579]

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[570] *Id.* at 25.

[571] *Id.* at 25.

[572] *Id.* at 26.

[573] *Id.* at 26.

[574] *Id.* at 28.

[575] *Id.*

[576] *Id.* at 29.

[577] *Id.* at 29.

[578] *Id.* at 29.

[579] *Id.*

- **Physical and biological systems.** "The changes in physical and biological systems documented in 2009 have generally continued and in some cases become more clearly attributable to a human influence."[580]
- **Sea ice, glaciers, and permafrost.** Although in the endangerment finding EPA noted that Antarctic sea has had exhibited no significant change over the preceding three decades, "since that time, Antarctic sea ice has undergone a significant loss."[581] Other changes to sea ice, glaciers, and permafrost described by EPA in 2009 have generally continued.[582]
- **Sea level rise.** "Global mean sea level has risen about 7 inches (approximately 18 centimeters) since 1900, up from 6.7 inches reported in EPA (2009)."[583] Data on sea level rise include satellite altimetry and tide gauge records. Along the continental United States, regional relative sea level "rose on average by approximately 11 inches," with about half of that amount in the last three decades.[584] With new data, "longer observational records have increased confidence in estimates of human-caused sea level rise, and acceleration in the rate of increase" and the longer record "strengthens confidence since EPA (2009) to support the conclusion that 'global sea level gradually rose in the 20th century and is currently rising at an increased rate.'"[585]
- **Ground-level ozone.** "New studies further corroborate the effects of climate change on ground-level ozone reported in EPA (2009)."[586] These climate-driven increases "may put some areas of the United States into nonattainment with the ozone National Ambient Air Quality Standard."[587]
- **Wildfires.** "The evidence supporting the EPA (2009) discussion of impacts of climate on wildfires has strengthened greatly since 2009, as the occurrence of wildfires in the western United States has increased."[588] Increases in both "wildfire severity and area burned are linked to climate change," and, in addition to ecosystem harms, with "increased wildfires, substantial amounts of particulate matter are produced" that harm human health.[589]
- **Whiplash and compound events.** Many impacts of warming on climate are nonlinear, and increases in back-to-back occurrences of severe floods and droughts—or

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[580] *Id.* at 31.

[581] *Id.* at 31.

[582] *Id.*

[583] *Id.* at 31.

[584] *Id.* at 32.

[585] *Id.* at 31-32.

[586] *Id.* at 33.

[587] *Id.*

[588] *Id.* at 34.

[589] *Id.* at 34.

> "hydroclimate whiplash"—have increased.[590] Furthermore, the "combinations of climate drivers and hazards can result in significantly greater impact than occurs because of a single climate driver," such as when wildfires in California in 2017 were followed by intense rainfalls or when predecessor extreme rainfall contributed to the intense flooding in western North Carolina during Hurricane Helene in 2024.[591]

The NAS consensus study report also found that many of the endangerment finding's "projected changes have been observed since 2009 …, including increasing surface temperatures, higher sea levels, and regional variability across the United States in other physical and biological systems."[592] Current climate model projections "consistently project continued warming in response to future atmospheric greenhouse gas increases," and these projections "have advanced in spatial resolution, process representation, and evaluation since 2009, improving confidence in understanding the implications of future emissions."[593] Regarding EPA's 2009 finding that climate "warming may increase the possibility of large, abrupt regional or global climatic events," this conclusion "was and remains accurate, supported by more evidence on additional possible 'tipping elements' that could undergo abrupt change."[594] Indeed, since "2009, evidence has emerged for some abrupt changes underway," including rapid changes in Antarctica, sea ice reductions, biological system regime shifts, and ice sheet mass loss increases.[595]

These changes due to human-caused greenhouse gas emissions harm public health and welfare. On harm to human health of people in the United States, "[e]vidence since 2009 supports and strengthens EPA (2009) conclusions and has deepened the understanding of how these risks affect health. Climate-related illnesses and deaths are increasing in both severity and geographic range across the United States."[596] More recent "[s]tudies and assessments of human health consequences continue to support the EPA (2009) conclusion that changes in average temperatures and increased exposure to temperature extremes contribute to adverse health outcomes in many places in the United States."[597]

According to the NAS report, "Heat contributes to excess illness and death in the United States and globally," and "heat is associated with more weather-related deaths than any other extreme weather event."[598] There is more scientific evidence now than in 2009 of health risks from

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[590] *Id.* at 35.

[591] *Id.*

[592] *Id.* at 36.

[593] *Id.* at 36.

[594] *Id.* at 39.

[595] *Id.*

[596] *Id.* at 40.

[597] *Id.* at 41.

[598] *Id.* at 41-42.

climate change due to exposure to extreme heat; exposure to ground-level ozone; exposure to airborne particulate matter; exposure to extreme weather events; exposure to vector-borne diseases; development or exacerbation of chronic diseases; and exposure to airborne allergens. There is also evidence of other adverse health effects not considered in the endangerment finding, including effects on mental health; effects on pregnancy and birth outcomes; effects on nutrition; effects on immune health; effects on antimicrobial resistance; and effects on metabolic diseases.[599]

On exposure to ozone and airborne particulate matter, air pollutants that harm human health in a number of ways, recent evidence supports the 2009 endangerment finding's "conclusion on ground-level ozone and has expanded understanding of the health impacts," and evidence on particulate matter "now points to increases in increases in atmospheric concentrations under climate change in some U.S. locations, especially in areas prone to wildfires and dust," even though EPA's 2009 analysis identified uncertainty around particulate matter.[600]

The NAS report also identifies myriad impacts of human-caused climate change to welfare. These include negative impacts on agricultural crops and livestock, the composition of forests and grassland ecosystems and the services they provide, water availability and quality, and stress to U.S. energy systems, infrastructure, and communities.[601] The NAS report focused on these areas because they were each covered in the endangerment finding, but the report acknowledges that there are other impacts to welfare from human-caused climate change. According to the NAS, "across the public welfare areas discussed in EPA (2009), recent evidence has strengthened the 2009 conclusions. New evidence has also led to improved understanding of the complex interactions among climate and non-climate drivers that influence observed changes in ecosystems and the built environment, and public welfare they support."[602] The welfare impacts described in the NAS report include:

- **Crop production.** "Increases in temperatures and variability in precipitation amount and intensity have negatively affected agricultural production in the United States," and for "the period of 1991-2017, temperature related crop losses have resulted in $27 billion in crop insurance claims."[603] Among climate impacts to agriculture, "[e]xtreme heat, drought, and moisture excess are increasingly co-occurring within a single growing season since 2000, resulting in up to 30% yield losses globally, with the United States noted as a region of greatest losses."[604] Other impacts include extreme heat events, variability in temperature and precipitation effects, and increases in water deficits. These

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[599] *See id.* at 42 tbl. 5.1; *see generally id.* Chapter 5.

[600] *Id.* at 44-45.

[601] *Id.* at 57.

[602] *Id.* at 58.

[603] *Id.* at 60.

[604] *Id.* at 60.

negative impacts on crop yields are accompanied by "changes in the nutritional value of crops have been observed when grown under elevated $CO_2$ conditions."[605]

- **Livestock.** "The EPA (2009) discussion of livestock production is supported with new evidence and strengthened by recent research findings."[606] Harms include summer heat stress, variable precipitation, extreme events, increased susceptibility to livestock diseases, and decreases to weight gain, milk production, and reproduction rates.[607]
- **Fisheries.** "Climate change resulting from GHG emissions has impacted commercial marine fisheries in every coastal region of the United States," including through "losses in the abundance and quality of harvested species and fisheries-related revenue and job loss."[608]
- **Forests.** "Climate change, including increases in climate variability, is changing the community composition and function of forest ecosystems and the services they provide."[609] Temperature and precipitation changes are varied, with decreases in forest productivity in the West, and intensified impacts from pests and pathogens are driven by climate.[610]
- **Water.** Although impacts "of climate change on water resources, including water quality and water availability, droughts, and floods, are affected by regional hydroclimatology" and therefore vary, there are many effects of climate change on water quality, supply and availability, and water-related extreme events.[611] For instance, across "North America, the magnitude of extreme precipitation at the continental scale and at broad regional scales has increased."[612] And "maximum snowpack decreased significantly in the contiguous United States from 1982-2016, and the snow season shortened by about a month," with negative implications for soil moisture and water supplies.[613]
- **Built environment.** Climate change is increasing the demand for air conditioning, increasing the costs of generating power, and making energy transmission less efficient.[614] It is also negatively impacting specific communities, especially for the 40 percent of the U.S. population that live in coastal communities, and in some cases communities are being abandoned or relocated.[615] There are negative impacts on U.S.

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[605] *Id.* at 60.

[606] *Id.* at 61.

[607] *Id.* at 61.

[608] *Id.* at 61.

[609] *Id.* at 62.

[610] *See id.* at 62-63.

[611] *See id.* at 64-67.

[612] *Id.* at 66.

[613] *Id.* at 67.

[614] *Id.* at 67-68.

[615] *Id.* at 68.

highway infrastructure, increasing costs for insurance in wildfire-prone areas, and impacts to ports, militaries, and water infrastructure.[616]

Across the NAS study's pages—and in the scientific material it cites—the message is clear: the scientific evidence since 2009 has confirmed and even strengthened EPA's endangerment finding. EPA must provide substantial weight to these NAS conclusions. *See* 42 U.S.C. § 7607(d)(3). Considering the report's conclusions, any reconsideration of the endangerment finding would "run[] counter to the evidence before the agency" and be arbitrary and capricious. *State Farm*, 463 U.S. at 43.

## X. EPA's proposal fails to consider the reliance interests associated with the endangerment finding and the vehicles standards.

If an agency action represents a reversal in prior policy, the agency must additionally "provide a more detailed justification than what would suffice for a new policy created on a blank slate" when "its new policy rests upon factual findings that contradict those which underlay its prior policy; or when its prior policy has engendered serious reliance interests that must be taken into account." *Fox*, 556 U.S. at 515; *see also Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2126 (2016). In reversing pre-existing policy, the agency may not "simply disregard" prior contrary factual determinations or rely on unexplained inconsistencies and generalized conclusions. *Air All. Houston v. EPA*, 906 F.3d 1049, 1067 (D.C. Cir. 2018); *National Cable & Telecommunications Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005); *see also AEP Texas North Co. v. Surface Transp. Bd.*, 609 F.2d 432, 440–41 (D.C. Cir. 2010). Rather the agency must provide a "reasoned explanation . . . for disregarding facts and circumstances that underlay or were engendered by the prior policy." *Fox*, 556 U.S. at 515-16, 537 (Kennedy, J. concurring).

Specifically, in changing course, the agency "must be cognizant that longstanding policies may have engendered serious reliance interests." *Department of Homeland Security v. Regents of the University of California*, 591 U.S. 1, 30 (2020) (citing *Encino Motorcars,* 136 S. Ct. at 2126)). In evaluating reliance interests, the agency must "assess whether there were any reliance interests, determine whether they [are] significant, and weigh any such interests against competing policy concerns." *Id*. at 33 (citing *Vermont Yankee Nuclear Power Corp. v. Nat. Res. Defense Council, Inc.*, 435 U.S. 519, 551 (1978)). Importantly, any interested party can possess reliance interests, including those without a "legally cognizable reliance interest;" though the relative strength of the corresponding interests may vary. *Id.* at 31. A policy must be in place for a sufficient amount of time in order for a legitimate reliance interest to develop. *See e.g.*, *Food and Drug Administration v. Wages and White Lion Investments, L.L.C.*, 145 S. Ct. 898, 927 (2025) (citing *Fox*, 556 U.S. at 515). The 2009 Endangerment Finding represents one of the most thoroughly vetted scientific determinations in EPA's history, and in the intervening 16 years, the scientific evidence has only grown stronger.

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[616] *See id*.

Here, EPA's proposal would eliminate the 2009 Endangerment Finding and all motor vehicle greenhouse gas standards. While EPA briefly discusses the impacts of the proposed repeal on the automotive industry, it discusses those impacts purely in terms of avoided compliance costs. *See e.g.*, 90 Fed. Reg. at 36,290 ("GHG emission standards for new motor vehicles and engines . . . impose billions of dollars in compliance costs"). The proposal notes that "manufacturers, importers, and sellers have already expended resources complying with GHG emission standards," but claims that EPA possesses "adequate regulatory tools to address transitional compliance concerns." *Id.* at 36,297. But EPA fails to specify the "tools" it references and ultimately concludes that "reliance interests . . . would not justify retaining the GHG emission standards." This conclusory statement does not demonstrate that EPA has meaningfully engaged in determining whether these reliance interests are "significant" and "weigh[ing] any such interests against competing policy concerns." *Regents of the Univ. of California*, 591 U.S. at 33. As discussed in more detail in our coalition comments addressing the vehicle standards repeal, EPA neglects to address the significant reliance interests held by automakers and other industries throughout the car and truck supply chain who have made long-term investment decisions based on the existence of standards.[617]

In addition, EPA has failed to consider relevant reliance interests involving the U.S. economy, national security, global political impacts, and global trade impacts. EPA must account for these reliance interests, and its failure to do so renders the proposal arbitrary and capricious.

**A. U.S. economy.**

EPA must consider the impact on reliance interests associated with the domestic economy. EPA does not address the specific sectoral impacts of the proposed action, for example, with respect

[617] *See* Environmental and Public Health Organizations' GHG Vehicle Comments (filed to docket on Sept. 22, 2025), at Comment VII.D.

to industries such as tourism and recreation,[618] real estate,[619] agriculture and fisheries,[620] forests,[621] insurance and reinsurance,[622] and hazardous chemicals.[623] The impact of increased greenhouse gas emissions on these industries is significant.

EPA also neglects consideration of the consumer impacts associated with its proposal. Reducing greenhouse gas emissions benefits consumers by avoiding negative impacts associated with

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[618] *See e.g.*, Recreation and Tourism, U.S. Climate Resilience Toolkit, https://perma.cc/X65M-993C (last visited July 10, 2025) ("Climate change puts the ecosystems that support . . . recreational opportunities and other valuable goods and services at risk."); Christopher A. Monz et al., *Understanding and Managing the Interactions of Impacts from Nature-Based Recreation and Climate Change*, 50 Ambio 631 (2021) ("Disturbance to ecosystems in parks and protected areas from nature-based tourism and recreation is increasing in scale and severity, as are the impacts of climate change.").

[619] *See e.g.*, Andrew Freedman, *Climate Change Could Erase $1.4 Trillion in Real Estate Value: Report*, Axios (Feb. 3, 2025), https://www.axios.com/2025/02/03/climate-change-insurance-costs-real-estate ("Human-driven climate change could result in $1.47 trillion in net property value losses from rising insurance costs and shifting consumer demand."); Jeff Masters, *Bubble Trouble: Climate Change is Creating a Huge and Growing U.S. Real Estate Bubble*, Yale Climate Connections, (Apr. 10, 2023), https://perma.cc/ZP4B-RXC4 ("Homes constructed in flood plains, storm surge zones, regions with declining water availability, and the wild-fire prone West are overvalued by hundreds of billions of dollars, put[ting] the U.S. financial system at risk.").

[620] *See Climate Change Impacts on Agriculture and Food Supply*, U.S. Environmental Protection Agency, https://perma.cc/9TK8-FB7L (last updated Mar. 25, 2025) ("Agriculture is very sensitive to weather and climate."); Andrew Hultgren et al., *Impacts of Climate Change on Global Agriculture Accounting for Adaptation*, 642 Nature 644 (2025) (finding that US crop systems are optimized for high average yields but not robustness to climate change).

[621] *See Climate Change Impacts on Forests*, U.S. Environmental Protection Agency, https://perma.cc/E2YN-QAPS (last updated May 20, 2025) (explaining that climate change will impact forests through natural disturbances that threaten forest health, reduced carbon storage and associated ecosystem services, reduced moderation of extreme weather impacts on forest watersheds).

[622] *See e.g.*, Cong. Budget Off., Climate Change, Disaster Risk and Homeowner's Insurance (2024); Nils Röper & Sebastian Kohl, *Bookeepers of Catastrophes: The Overlooked Role of Reinsurers in Climate Change Debates*, 89 Glob. Env't Change 102931 (2024) (describing the role of reinsurance companies in producing and translating climate change knowledge).

[623] *See e.g.*, Jacob Carter & Casey Kalman, *A Toxic Relationship: Extreme Coastal Flooding and Superfund Sites*, Ctr. for Sci. & Democracy (2020) ("About 2,000 official and potential Superfund sites . . . are located within 25 miles of the East or Gulf Coast. As sea levels rise, many of these toxic sites are at risk of flooding. Millions of people live near these sites, and flooding could bring them into contact with these chemicals.").

emissions, including increased product, transportation, and health care costs; higher expenditures on utilities; and reduced employment benefits and earnings.[624] Additionally, consumers often prefer low-emission products, suggesting the fulfillment of personal preferences is served by regulation of greenhouse gas emissions.[625] Thus, reversal of the existing policy would be disruptive and would increase costs borne by consumers. Further, evidence in the factual record suggests that greenhouse gas regulations provide significant labor market benefits by stimulating economic growth, job creation, and emerging technologies.[626] Abatement of greenhouse gas emissions also improves worker health, safety, and compensation.[627] In considering reliance interests, EPA must account for the policy reversal's impact on significant aspects of the labor market and worker wellbeing.

### B. Global political impacts & global climate change.

EPA's brief analysis of global political impacts concludes that the Agency "now believe[s] that GHG emission standards for new motor vehicles and engines may [not] hav[e] any measurable impact on the global climate change concerns identified in the Endangerment Finding." 90 Fed. Reg. at 36,297-98. The Agency additionally seeks comment on reliance interests in greenhouse gas emission standards for global climate change concerns. *Id.* at 36,298. Because global political consequences flow from a reversal of domestic climate policy, EPA must adequately assess the impact on reliance interests.

Contrary to the Agency's conclusion that regulating greenhouse gas emissions from new vehicles under Section 202(a) is unimportant and futile, there is significant evidence that U.S. regulation influences global climate policy.[628] Foremost, domestic policy has a technology-diffusing effect by influencing the composition of technology exports, generating cost savings for certain technologies, and signaling to investors and producers the technologies that are most effective

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[624] *See* The Impact of Climate Change on American Household Finances, U.S. Dep't of the Treasury (2023) (outlining the impact of climate change on consumers).

[625] *See e.g.*, Jordan Bar Am, Vinit Doshi, Anandi Malik, Steve Noble & Sherry Frey, McKinsey, Consumers Care About Sustainability—And Back it up with Their Wallets (2023) (finding a shift towards consumer spending on products with ESG-related claims).

[626] *See The Impact of Climate Change on American Household Finances*, U.S. Dep't of the Treasury (detailing the positive impact on workers and the labor market from avoided greenhouse gas emissions).

[627] *Id.*

[628] *See* Jody Freeman, *The Environmental Protection Agency's Role in U.S. Climate Policy—A Fifty-Year Appraisal*, 31 Duke Env't L. & Pol'y F. 1, 64, 75 (2020) ("[EPA's] experience shows that domestic action can drive international climate progress rather than the other way around. … [U.S.] credibility internationally hinges on our ability to deliver meaningful emission reductions through domestic policies.").

and preferable. For example, the global diffusion and universal adoption of catalytic converters as a result of the Clean Air Act is well documented.[629]

The U.S.'s method and stringency of regulating emissions also influence regulation in other countries. Some countries base their regulatory policies on the those adopted by the United States, while others are indirectly influenced through signals communicated by United States policies.[630] Further, reversal of greenhouse gas regulations undermines the U.S.'s position as a global climate and economic leader. The country's retreat from emissions reduction commitments may weaken relationships with allies who are dedicated to climate action and allow competitors like China to strengthen their geopolitical influence by reaffirming investments in renewable energy and interest in global climate coordination efforts.[631] U.S. emissions regulation impacts the trajectory of global greenhouse gas emissions through technology diffusion and signaling of regulatory priorities.

EPA has failed to adequately consider these important global political consequences and associated reliance interests in proposing to rescind the Endangerment Finding and motor vehicle greenhouse gas standards.[632]

### C. National security.

Greenhouse gas emissions are directly related to national security, yet EPA does not analyze or consider the implications or reliance interests associated with greenhouse gas emissions in the proposal. *State Farm*, 463 U.S. at 43.

There are numerous national security impacts of greenhouse gas deregulation that warrant meaningful consideration. Increasingly, climate change exacerbates geopolitical tensions over climate responses, increases social and political unrest caused by climate-related displacement and resource scarcity, and erodes state legitimacy.[633] These impacts are more acute under

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[629] *See e.g.*, David Gerrard & Lester B. Lave, *Implementing technology-forcing policies: The 1970 Clean Air Act Amendments and the introduction of advanced automotive emissions controls in the United States*, 72 Tech. Forecasting & Soc. Change 761 (2005).

[630] *See e.g.*, *FDA Recognizes Canada as Having a Comparable Food Safety System to the U.S.*, U.S. State Dep't (May 4, 2016), https://www.fda.gov/food/hfp-constituent-updates/fda-recognizes-canada-having-comparable-food-safety-system-us.

[631] *See* Carlos Garcia-Soto, Reversing climate progress: consequences and solutions in the wake of U.S. policy rollbacks, 4 npj Climate Action 63 (2025) [hereinafter Garcia-Soto, Reversing Climate Progress].

[632] *See e.g.*, Charles F. Parker & Christer Karlsson, *The UN climate change negotiations and the role of the United States: assessing American leadership from Copenhagen to Paris*, 27 Env't Pol. 519, 528 (2018) (finding the US is one of the actors most frequently mentioned as leading in the field of climate change).

[633] *See* Nat'l Intelligence Council, Climate Change and International Responses Increasing Challenges to US National Security Through 2040, NIC-NIE-2021-10030-A (2021); Sherri

greenhouse gas deregulation, which will necessitate increased investment in national defense systems, diplomatic initiatives, and global development institutions.[634]

Deregulation of greenhouse gas emissions undermines global climate change amelioration efforts and threatens U.S. global strategic interests.[635] Specifically, a 2021 report by the National Security Council on the risks to U.S. interests due to climate change found that:

> Geopolitical tensions are likely to grow as countries increasingly argue about how to accelerate the reductions in net greenhouse gas emissions . . . Debate will center on who bears more responsibility to act and to pay—and how quickly—and countries will compete to control resources and dominate new technologies required for the clean energy transition.[636]

These concerns will be exacerbated by EPA's reversal of greenhouse gas emissions regulation, and the Agency must give adequate weight to this important aspect of its proposed action.[637]

**D. Global trade.**

EPA disregards how reversal of domestic greenhouse gas regulation affects global trade and associated reliance interests. While expanded reliance on fossil fuels may provide modest short-term benefits through increased energy exports, these gains are insufficient to offset foregone clean-energy investments and diversification.[638] Moreover, the volatility of global energy prices

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Goodman, Threat Multiplier: Climate, Military Leadership, and the Fight for Global Security 3–4 (2024); Natl. Acad. Sci., Engineering & Med., *Climate Security in Central America: Proceedings of a Workshop* (2024); Natl. Acad. Sci., Engineering & Med., *Climate Security in South Asia: Proceedings of a Workshop* (2023).

[634] *See* Nat'l Intelligence Council, Climate Change and International Responses Increasing Challenges to US National Security Through 2040, at 15.

[635] *See* Tom Kertscher, *US versus China: Which nation is doing more to address climate change?*, Politifact (Mar. 27, 2023), https://www.politifact.com/article/2023/mar/27/us-versus-china-which-nation-doing-more-address-cl/ (detailing expert consensus that "regardless of what China does, it is important for the U.S. to continue to reduce its emissions because of its impact on the climate and influence on other countries").

[636] *See* Nat'l Intelligence Council, Climate Change and International Responses Increasing Challenges to US National Security Through 2040, at 1-7.

[637] Fiona Harvey, *'Backsliding': most countries to miss vital climate deadline as Cop30 nears*, The Guardian (Feb. 8, 2025), https://perma.cc/FEG6-2LQQ (explaining how geopolitical tension and the devolving trade relationship between China and the United States is partially driven by a divergent view on the importance of climate policy: while the U.S. is backsliding, China has invested heavily in renewable technology and developed significant clean power generation capacity).

[638] *See* Garcia-Soto, Reversing Climate Progress.

and the lower cost of renewable power as compared to fossil fuels renders fossil-fuel expansion unlikely to result in economic gains.[639]

Importantly, EPA has ignored numerous economic dimensions of global trade that are implicated by greenhouse gas deregulation. First, the Agency has failed to consider how reversal of domestic greenhouse gas regulations will disadvantage U.S. producers. Research demonstrates that domestic climate policy via the Inflation Reduction Act provided the U.S. with a competitive business advantage on energy products as international companies prioritized U.S. production to capitalize on the resulting tax credits.[640] Additionally, because domestic climate policy reduced the overall price of electricity in the U.S., the country retained an edge over competitors in energy-intensive industries like chemical production.[641] Reversal of greenhouse gas regulation destroys this economic competitiveness by eliminating the global business benefits of U.S. emissions regulation.

EPA has not accounted for the cost of other countries' climate regulations, which will increase the more the U.S. backslides on emissions regulations. Some countries leverage economic policy mechanisms to force international producers to internalize the economic cost of carbon-intensive production and to prevent carbon leakage from areas with more stringent to more lax emissions policies.[642] For example, the European Union's carbon border adjustment mechanism (CBAM) functions by assessing the carbon emissions generated by production of a good and imposing a tariff proportional to those emissions upon importation.[643] Countries that independently internalize the carbon intensity of production via carbon pricing—for example, through an emissions trading scheme or a carbon tax—are exempt from the tariff so long as the exporting country's policy is equivalent to or more stringent than that of the importing county.[644] Then,

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[639] *Id.*

[640] Milan Elkerbout, Dallas Burtraw, Åsa Löfgren & Lars Zetterberg, Res. for the Future, Transatlantic Cues: How the United States and European Union Influence Each Other's Climate Policies 6–7 (2024).

[641] *Id.* at 6.

[642] *See* Garcia-Soto, Reversing Climate Progress; Goran Dominioni & Daniel C. Esty, Designing Effective Border Carbon Adjustment Mechanisms: Aligning the Global Trade and Climate Change Regimes, 65 Ariz. L. Rev. 1, 9–11 (2022); Ali Hasanbeigi and Aldy Darwili, Global Efficiency Intel., Embodied Carbon in Trade: Carbon Loophole 6, 25 (2022).

https://www.globalefficiencyintel.com/2022-embodied-carbon-in-trade-carbon-loophole

[643] Emily Benson et al., *Analyzing the European Union's Carbon Border Adjustment Mechanism*, Ctr. Strategic Int'l Stud. (Feb. 17, 2023), https://www.csis.org/analysis/analyzing-european-unions-carbon-border-adjustment-mechanism.

[644] *Id.*

economic mechanisms like CBAMs can be leveraged against U.S. imports because of the lack of a domestic carbon pricing mechanism.[645]

[645] *See* Garcia-Soto, *Reversing Climate Progress* (explaining how countries may elect to exert economic pressure on the U.S. as retribution for reversal of the country's climate policy).