Columbia Law School | COLUMBIA CLIMATE SCHOOL
SABIN CENTER FOR CLIMATE CHANGE LAW

September 19, 2025

U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC. 20460

Re: Proposed Rule – Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards (EPA-HQ-OAR-2025-0194; FRL-12715-01–OAR)

To Whom It May Concern:

The Sabin Center for Climate Change Law (Sabin Center) at Columbia Law School submits these comments in response to the Environmental Protection Agency (EPA)'s proposal to rescind the 2009 endangerment finding for greenhouse gases (GHGs) and all resulting emission standards for new motor vehicles.[1] EPA has not provided a reasonable legal or scientific justification for the proposed action. In this comment letter, we focus on the analytical errors underpinning EPA's assessment of climate science in Section IV.B of the Proposed Rule.[2] As detailed below, EPA's scientific conclusions are directly refuted by a large body of scientific evidence demonstrating a clear causal link between anthropogenic GHG emissions and pervasive harms to human health and welfare.

I. Introduction

EPA is proposing to find that it does not have statutory authority to regulate GHG emissions under Section 202(a) of the Clean Air Act or, alternatively, that there is "insufficient reliable information" to support the conclusion that GHG emissions from U.S. motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health and welfare.[3] EPA's legal rationale for revocation is clearly incorrect: the Supreme Court held in *Massachusetts v. EPA* that GHGs "unambiguous[ly]" qualify as "air pollutants" under the Clean Air Act, and therefore "EPA has statutory authority to regulate emission of such gases from new

[1] EPA, Proposed Rule: Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards, 90 Fed. Reg. 36,288 (Aug. 1, 2025) [hereinafter "Proposed Rule"]. *See also* Endangerment and Cause or Contribute Finding for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009).
[2] Although our focus is on the scientific arguments in Section IV.B, we believe that there are many other errors in EPA's analysis, including the legal arguments in Sections IV.A and V. The Sabin Center is also submitting a separate comment letter on the harmful impacts that cities would experience were EPA to adopt this proposal.
[3] Proposed Rule at 36,310.

motor vehicles."[4] Moreover, in subsequent cases, the Supreme Court has consistently affirmed EPA's authority to regulate GHG emissions under the Clean Air Act, even where it found that EPA's choice of regulatory mechanism exceeded its statutory authority.[5] EPA also cites the Supreme Court's decision in *Loper Bright Enterprises v. Raimondo*, claiming that the 2009 endangerment finding relied on *Chevron* deference which has now been overturned. Again, there is no basis for this assertion, as the 2009 endangerment finding was a purely factual determination, not a question of statutory interpretation, and it was upheld by the D.C. Circuit without *Chevron* deference.[6] Finally, EPA argues that the rescission is warranted in light of the Supreme Court's discussion of the major questions doctrine in *West Virginia v. EPA*, but in that case, the Court made it clear that the "major question" was not whether EPA had authority to regulate GHG emissions, but rather whether EPA could require generation shifting.[7] Like other Supreme Court precedent, *West Virginia v. EPA* confirmed EPA's authority to regulate GHG emissions.[8]

As for EPA's scientific justification: EPA asserts that there have been "intervening…scientific developments that appear to undermine the assumptions, methodologies, and conclusions" of the 2009 endangerment finding, and that the current scientific record "includes too many analytical gaps, uncertainties, and speculative predictions to reach an affirmative endangerment finding and promulgate corresponding emission standards based on such a finding."[9] More specifically, EPA claims the 2009 endangerment finding was flawed because it relied on "pessimistic assumptions [that] have not been borne out in empirical data and peer-reviewed studies through 2025" and it did not adequately account for "beneficial impacts from climate change."[10]

EPA's assessment of endangerment is inconsistent with the scientific consensus on climate change as well as EPA's prior endangerment findings for motor vehicles and other source categories. To reach its conclusions, EPA has relied almost exclusively on a single study commissioned by the current administration to justify this action, and has essentially ignored a vast body of scientific evidence that does not support its position. EPA has an obligation to review all of the available scientific information and reach a rational determination on endangerment in light of that information. We summarize some of the relevant scientific research below, and have included many of the cited reports and studies as attachments to this comment letter.[11]

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[4] Massachusetts v. E.P.A., 549 U.S. 497, 529 (2007).
[5] *See* West Virginia v. EPA, 597 U.S. 697 (2022); Utility Air Regulatory Group v. EPA, 573 U.S. 302 (2014).
[6] *See* Coalition for Responsible Regulation, 684 F.3d 102, 117-18 (D.C. Cir. 2012) (emphasizing that the endangerment finding is a purely scientific judgment, and deferring only to EPA's technical and scientific expertise).
[7] West Virginia v. EPA, 597 U.S. at 724-25.
[8] The decision in *West Virginia v. EPA* was premised on the understanding that EPA had authority to regulate GHG emissions, with the Court holding that the choice of regulatory mechanism was beyond the scope of EPA's authority. The Court was also explicit about other contexts in which EPA lacked authority to regulate GHG emissions. *See, e.g., id.* at 722.
[9] Proposed Rule at 36,310.
[10] *Id.* at 36,399, 36,303.
[11] We were unable to submit the full reports for IPCC AR6 and NCA5 as these exceeded the file limitations for attachments, but these are available at: https://www.ipcc.ch/assessment-report/ar6/ (IPCC AR6) and

II. Scientific Consensus on Harms Attributable to Climate Change

There is a near universal scientific consensus that GHG emissions cause climate change, and that climate change is causing pervasive harm to human health and welfare.[12] These findings are based on many independent lines of evidence. These include physical principles and understanding of the climate system and its interaction with other systems; observational datasets consisting of hundreds of different climate variables monitored by thousands of different instruments and different organizations; and a wide assortment of climate models and statistical techniques that are used to evaluate patterns, trends, causal relationships, variability, and uncertainty within the climate system. These different lines of evidence all converge on the same conclusions about the causes and impacts of climate change.[13]

The Intergovernmental Panel on Climate Change (IPCC) recognized in its Sixth Assessment Report (AR6) that anthropogenic GHG emissions were "unequivocally" causing climate change, resulting in pervasive and harmful impacts across the world, many of which have been attributed to climate change with high or very high scientific confidence.[14] For example, AR6 found that it is an "established fact" that anthropogenic GHG emissions are causing changes in the frequency and/or intensity of some weather and climate extremes, particularly extreme heat events.[15] AR6 also found that climate-related hazards are increasingly contributing to adverse health impacts such as increases in food-, water-, and vector-borne diseases; increases in air quality problems and exacerbation of respiratory diseases; and disruption to natural and human systems that are essential to the provision of food, water, sanitation, healthcare, and other human needs.[16]

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https://repository.library.noaa.gov/view/noaa/61592 (NCA5). We did attach the IPCC AR6 synthesis report, which summarizes all key findings.

[12] *See* IPCC, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE SIXTH ASSESSMENT REPORT OF THE IPCC (Valérie Masson-Delmotte et al. eds. 2021) [hereinafter IPCC AR6 WGI]; NATIONAL ACADEMY OF SCIENCES, CLIMATE CHANGE: EVIDENCE AND CAUSES: UPDATE 2020 (National Academies Press, 2020); U.S. GLOBAL CHANGE RESEARCH PROGRAM, FIFTH NATIONAL CLIMATE ASSESSMENT (A.R. Crimmins et al., eds., 2023) [hereinafter NCA5]; U.S. GLOBAL CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT, VOL. 1, CLIMATE SCIENCE SPECIAL REPORT (Donald J. Wuebbles et al. eds., 2017).

[13] This is not to suggest that all climate datasets, models, and studies converge on the *exact same* conclusions about climate change and its impacts. As with all scientific endeavors, climate science is a process whereby researchers are constantly acquiring new information, gaining new insights, and revising their understanding. There are still many areas of uncertainty that are being explored. But the existing body of evidence clearly supports the conclusion that climate change is adversely affecting human health and welfare. *See* IPCC AR6 WGII, Technical Summary (describing the many different pathways through which climate change is adversely affecting people and communities).

[14] *See* IPCC AR6 WGI at 4 ("it is unequivocal that human influence has warmed the atmosphere, ocean, and land" and "widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred"); *Id.* at 204 (finding that there are "multiple lines of evidence that unequivocally establish the dominant role in human activities in the growth of atmospheric CO_2"). *See also* IPCC, Climate Change 2022: Impacts, Adaptation, and Vulnerability, Contribution of Working Group II to the Sixth Assessment Report of the IPCC (2022) [hereinafter IPCC AR6 WGII].

[15] IPCC AR6 WGI at 42.

[16] IPCC AR6 WGII, Ch. 7. *See also* Jessica Wentz, *Climate Change and Human Health: A Synthesis of Scientific Research and State Obligations Under International Law* (Sabin Center for Climate Change Law May 2024) (summarizing key scientific findings regarding the effects of climate change on health).

The U.S. Global Change Research Program (USGCRP) reached similar conclusions about the "unequivocal" evidence of anthropogenic climate change in the Fifth National Climate Assessment (NCA5).[17] With regards to U.S. impacts, NCA5 noted that that the "effects of human-caused climate change are already far-reaching and worsening across every region of the United States" and that "each additional increment of warming is expected to lead to more damage and greater economic losses" across the country.[18] For example, NCA5 concluded, with *very high confidence*, that the frequency and intensity of extreme heat events are increasing, consistent with expected physical responses to a warming climate.[19] NCA5 also found "robust evidence" that anthropogenic climate change has contributed to increases in the frequency and severity of the heaviest precipitation events across nearly 70 percent of the United States.[20] Other physical hazards identified in NCA5 as affecting U.S. interests included increases in wildfires, river floods, crop failures, tropical cyclones, drought, infectious and vector-borne diseases, and sea level rise. Based on these and other hazards, NCA5 concluded that climate change is already having significant adverse effects on mental, spiritual, and community health and other aspects of human well-being across the United States.[21]

In addition, IPCC AR6 and NCA5 both found that climate change is rapidly intensifying and that each additional increment of global warming will cause additional harm.[22] There is a near-linear relationship between increases in cumulative carbon dioxide (CO_2) emissions and increases in global surface temperatures, and thus every ton of CO_2 that is released into the atmosphere will contribute to global warming and the harmful impacts of warming.[23] However, the relationship between emissions and impacts is not always linear, and there are potential tipping points, feedback cycles, and cascading impacts that may result in acceleration of certain trends such as sea-level rise.[24] Studies from the IPCC and others document that there are significant risks associated with surpassing these thresholds.[25]

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[17] NCA5 at 2-4 ("[t]he evidence for warming across multiple aspects of the Earth system is incontrovertible, and the science is unequivocal that increase in atmospheric greenhouse gases are driving many observed trends and changes").
[18] *Id.* at 1-5.
[19] *Id.* at 2-38; *See also* NCA4 Vol. I at 19; IPCC AR6 WGI at 8 (finding that it is "*virtually certain* that hot extremes (including heatwaves) have become more frequent and more intense across most land regions since the 1950s" and there is "*high confidence* that human-induced climate change is the main driver of these changes").
[20] See NCA5 at 2-18.
[21] *See* NCA5, Ch. 15 ("Human Health").
[22] *See, e.g.,* NCA5 at 1-5.
[23] *See* IPCC AR6 WGI at 28.
[24] Some critical tipping point thresholds may have already been surpassed, although the full effects have not yet manifested (e.g., the near complete melting of the Greenland ice sheet may already be inevitable due to existing warming). David I. Armstrong McKay et al., *Exceeding 1.5° Global Warming Could Trigger Multiple Climate Tipping Points*, 377 Sci. 1171 (2022), https://doi.org/10.1126/science.abn7950; Niklas Boers & Martin Rypdal, *Critical Slowing Down Suggests that the Western Greenland Ice Sheet is Close to a Tipping Point*, 118 PNAS e2024192118 (2021), https://doi.org/10.1073/pnas.2024192118 (finding that the Greenland Ice Sheet melt tipping point is between 0.8°C and 3.2°C of warming above pre-industrial levels).
[25] *See, e.g.,* Timothy M. Lenton et al., *Climate Tipping Points—Too Risky to Bet Against*, 575 NATURE 592 (2019), https://doi.org/10.1038/d41586-019-03595-0.

Many other scientific authorities, including the National Research Council (NRC), the World Meteorological Organization (WMO), and the American Meteorological Society (AMS), have reached similar conclusions about the increasing severity of climate change and the pervasive nature of the harms attributable to climate change.[26] The National Academies of Sciences, Engineering, and Medicine also recently issued a consensus report in response to this rulemaking, which concluded that EPA's 2009 endangerment finding was "accurate, has stood the test of time, and is now reinforced by even stronger evidence" including "longer observational records and multiple new lines of evidence" and "research that has uncovered additional risks that were not apparent in 2009."[27] The National Academies report identifies many different pathways through which anthropogenic GHG emissions and resulting climate change are adversely affecting the health and welfare of people in the United States.[28] The scientific conclusions in the National Academies report and the other reports cited herein are based on a synthesis of climate datasets, climate model outputs, and a vast body of peer reviewed research documenting the many different ways in which climate change is affecting human and natural systems. Although there are many areas of nuance and uncertainty in the research, there is unassailable support for the overarching conclusion that climate change is endangering public health and welfare.[29]

The reports published by these expert bodies are widely viewed as authoritative and credible sources of climate science. In particular, the IPCC's rigorous, transparent, and extensive assessment process has given it unique standing in both scientific and legal settings.[30] The International Court of Justice recently found that the IPCC reports constitute the "best available science on the causes, nature, and consequences of climate change."[31] Many other courts, including the U.S. Supreme Court, the European Court of Human Rights, and the Inter-American Court of Human Rights, have relied on IPCC reports as credible and definitive sources of climate science.[32] The IPCC reports have also been treated as definitive sources of climate data by government agencies in the United States and around the world. [33] Similarly, the NCA reports have special

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[26] See, e.g., NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE: EVIDENCE AND CAUSES: UPDATE 2020 (2020); American Meteorological Society, *State of the Climate in 2024,* Special Supplement to the Bulletin of the American Mereological Society, Vol .106, No. 8 (August 2025); WORLD METEOROLOGICAL ORGANIZATION, STATE OF THE GLOBAL CLIMATE 2024 (March 19, 2025).

[27] NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE, EFFECTS OF HUMAN-CAUSED GREENHOUSE GAS EMISSIONS ON U.S. CLIMATE, HEALTH, AND WELFARE (2025) at 1.

[28] *See, e.g.*, *id.* at Ch. 5, Ch. 6.

[29] *See* IPCC AR6 WGII Summary for Policymakers.

[30] The IPCC assessment process spans multiple years and involves thousands of scientific authors and expert reviewers, all working together to evaluate and synthesize an extensive body of peer-reviewed research. The draft reports undergo multiple rounds of review, with opportunities for input from external advisors, governments, and the public. *See* IPCC, *Procedures,* https://www.ipcc.ch/documentation/procedures/.

[31] International Court of Justice, Obligations of States in Respect of Climate Change, Advisory Opinion (July 23, 2025) at 1.

[32] *See* Massachusetts v. EPA, 549 U.S. at 508-511; European Court of Human Rights, Verein KlimaSeniorinnen v. Switzerland, No. 53600/20, Judgment (April 9, 2024), Part II©; Inter-American Court of Human Rights (IACtHR), *Climate Emergency and Human Rights,* Advisory Opinion AO 32/25 (May 29, 2025), para 33; International Tribunal for the Law of the Sea, *Climate Change and International law,* Advisory Opinion No. 31 (May 21, 2024), Part II(A).

[33] *See, e.g.,* U.S. EPA, Statement on the Publication of the IPCC Synthesis Report of the Sixth Assessment Cycle (March 20, 2023), https://www.epa.ie/news-releases/news-releases-2023/epa-statement-on-the-publication-of-the-

standing as sources of information about climate impacts within the United States due to the robust and transparent assessment process undertaken by the USGCRP when preparing those reports.[34]

EPA asserts that it has "considered" the IPCC and NCA reports and "the most recently available science" in its analysis.[35] However, in its assessment of climate science, EPA does not discuss or acknowledge any of the key findings from the IPCC, USGCRP, or other scientific authorities regarding the harmful effects of climate change. Instead, EPA relies almost exclusively on a single DOE study that was commissioned by the current administration for the express purpose of supporting the repeal of the GHG endangerment finding,[36] was written on a very short timeline by only five authors, and which has been widely condemned and thoroughly refuted by a large number of climate scientists.[37] As noted in a letter signed by over 85 scientists, the DOE report "exhibits pervasive problems with misrepresentation and selective citation of the scientific literature, cherry-picking of data, and faulty or absent statistics."[38]

These problems are also evident in EPA's analysis; EPA has cherry-picked data and made misleading claims in order to downplay and instill doubt about the harmful effects of climate change.[39] For example, EPA asserts that "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 others."[40] EPA erroneously relies on the DOE report as its sole source of support for these findings. The DOE report did not conclude that sea level rise was "minimal" in the United States; to the contrary, the DOE report found that aggregate sea levels have risen across almost all of the United States, with larger rates of sea level rise on the Atlantic

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ipcc-synthesis-report-of-the-sixth-assessment-cycle.php; U.S. Department of Interior, Department Manual, Part 526 ("Climate Change Science") (Sept. 28, 2023), https://www.doi.gov/sites/doi.gov/files/elips/documents/526-dm-1_1.pdf; European Commission, *Climate Change Science,* https://research-and-innovation.ec.europa.eu/research-area/environment/climate-change-science_en.

[34] *See* MIT Climate Portal, The National Climate Assessment, https://climate.mit.edu/explainers/national-climate-assessment. *See also, e.g.,* 350 Montana v. Haaland, 50 F.4th 1254, 1274 -75 (9th Cir. 2022); U.S. EPA, Climate Indicators 2024 (relying on and cross-referencing NCA findings); U.S. National Oceanic and Atmospheric Administration, *Climate change impacts are increasing for Americans* (Nov. 14, 2023), https://www.noaa.gov/news-release/climate-change-impacts-are-increasing-for-americans.

[35] Proposed Rule at 36,292.

[36] *See* U.S. Department of Energy, Climate Working Group, A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate (July 23, 2025) [hereinafter "DOE Climate Report"]; U.S. Department of Energy, *Press Release: Department of Energy Issues Report Evaluating Impact of Greenhouse Gasses on U.S. Climate, Invites Public Commen*t (July 29, 2025), https://www.energy.gov/topics/climate (acknowledging that the DOE climate report was prepared "as part of [EPA's] proposed rule repealing the 2009 Endangerment Finding").

[37] *See, e.g.,* Climate Expert's Review of the DOE Climate Working Group Report (August 2025), https://sites.google.com/tamu.edu/doeresponse/home (last visited Sept. 3, 2025).

[38] *Id.*at 4. There are stark differences between the DOE report and the IPCC and NCA reports discussed above: the DOE report was prepared by a small team of five authors on a very short timeframe (less than 2 months) with no public inputs, whereas the assessment process for IPCC AR6 spanned approximately eight years and drew on the expertise of 721 scientific authors and approximately 500 expert reviewers, and the assessment for NCA5 spanned approximately four years and involved nearly 500 authors and 260 contributors. The DOE report was briefly open for public comments, but that appears to be a formality, as EPA issued this proposal before the comment period had even opened.

[39] Proposed Rule at 36,308-10.

[40] Proposed Rule at 36,309.

and Gulf coasts.[41] Moreover, EPA's sole reliance on the DOE report is improper. EPA should be engaging with the large body of evidence compiled by the IPCC, USGCRP, National Academies and other scientific institutions regarding the effects of sea level rise globally and in the United States.[42] These other scientific authorities have all concluded that sea level rise is already causing harm – for example, by increasing flood frequency – and that there are significant risks associated with ongoing sea level rise.[43] The DOE report, in contrast, is a questionable information source for reasons discussed above, and its chapter on sea level rise has been criticized for failing to conduct a balanced assessment of scientific literature, utilizing cherry picked data, misrepresenting sources, failing to substantiate claims, and reaching erroneous conclusions with regards to sea level rise acceleration.[44] Finally, unlike the more comprehensive assessments published by the IPCC and USGCRP, the DOE report contains *no discussion whatsoever* of the effects of sea level rise in the United States (e.g., flooding, damage to infrastructure, inundation of drinking water sources, ecological impacts, and economic impacts) and thus EPA has absolutely no basis for its conclusion that the effects of sea level rise have been "minimal" in the United States.[45]

EPA also ignores many of the consequences of climate change in its analysis. For example, EPA does not acknowledge or discuss the effects of climate change in relation to floods, droughts and water security, wildfires and wildfire smoke, disease vectors, ecosystem health and ecosystem services, fisheries, forests, and much more. With regards to flooding and wildfires, EPA asserts that "recent data and analyses suggest… that such extreme weather events have not demonstrably increased relative to historical highs" (also citing the DOE report as its sole support for this conclusion).[46] Again, EPA's reliance on the DOE report is improper and erroneous, as the DOE report does not provide a balanced or comprehensive assessment on extreme events, and EPA should not be relying on this one report as its only source of information. Some of the problems with the DOE report's assessment of floods and droughts are: (i) the report ignores regional increases in peak streamflow and flooding; (ii) the report selectively cites (and miscites) IPCC findings related to flood risk, omitting findings about increasing flood risk in the northeast United States and other regions; (iii) the report does not account for sea level rise and coastal flooding in its discussion of flood risk; (iv) the report intentionally uses a narrow definition of drought and cherry-picks studies and quotes in order to support a conclusion that there has been ono observed trend in the frequency or intensity of droughts; and (v) the report ignores a proliferation of detection and attribution studies on how climate change has exacerbated drought.[47]

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[41] The DOE report found that sea levels were decreasing in parts of Alaska and a few select locations in Northern Washington, but sea levels were rising in every other location in the United States. DOE Climate Report at 75-76.
[42] *See, e.g.,* IPCC AR6 WGI, Ch. 9; NCA5, Ch.9; National Academies (2025), *supra* note 27, at 31-34;
[43] *See, e.g.,* National Academies (2025), *supra* note 27, at 32; NCA5 at 9-8–9-9.
[44] E.g., the report asserts that U.S. tidal gauge measurements reveal no obvious acceleration beyond the historical average rage of sea level rise, but the report contains no analysis of U.S. tide gauge measurements in the aggregate. *See* Climate Expert's Review of the DOE Climate Working Group Report, *supra* note 37, at 244.
[45] *Id.* at 250.
[46] Proposed Rule at 36,309.
[47] Climate Expert's Review of the DOE Climate Working Group Report, Sections 6.6 and 6.7.

To provide yet another example of EPA's imbalanced analysis: EPA asserts that projections of heat-related mortality from climate change are unduly pessimistic because "mortality risk from cold temperatures remains by far the greater threat to public health" and "the net health impacts of a temperature increase" may be offset by "decrease in cold-related mortality."[48] In making these assertions, EPA fails to acknowledge research indicating that the projected increases in heat related mortality attributable to climate change may be significantly larger than projected decreases in cold related mortality.[49] EPA makes similar comments about other "beneficial impacts" from climate change (e.g., on agricultural production and plant growth) and the benefits of adaptation – essentially claiming that existing assessments of climate-related risks are too pessimistic because they do not account for purported benefits.[50] But the IPCC, USGCRP, and other expert bodies *do* account for those considerations in their assessments, and they still conclude that climate change will cause substantial harm that significantly outweighs any beneficial impacts.[51]

EPA erroneously concludes that "the data since 2009 suggest that the balance of climate change as a whole appears to skew substantially more than previously recognized by the EPA in the direction of net benefits, or is at least too uncertain to establish a credible and reliable finding of actionable risk."[52] This conclusion is in direct opposition with findings from the IPCC, USGCRP, NRC, WMO, AMS, and essentially every other scientific authority on the subject of climate change. It also stands in direct opposition to the weight of judicial opinion assessing the legal and policy salience of the science. EPA's approach to its scientific assessment – and the conclusions drawn on the basis of that assessment – are simply indefensible. EPA's obligation under Section 202(a) is to make a neutral scientific judgment based on the best available scientific information. EPA has failed in that regard.

III. EPA's Reversal from Prior Endangerment Findings

In this proposal, EPA is also reversing course from all of its prior assessments of GHG endangerment, including the 2009 endangerment finding for motor vehicles, the 2015 and 2021 endangerment findings for GHG emissions from the power sector, and the 2024 endangerment finding for GHG emissions from the oil and natural gas sector.[53] EPA claims that these prior

[48] Proposed Rule at 36,308.
[49] *See, e.g.,* IPCC AR6 WGII, Ch. 14 (existing evidence suggests that there will be significant increases in heat-related mortality but relatively small reductions in cold-related mortality in the U.S. and North America).
[50] Proposed rule at 36,308-10.
[51] *See, e.g.,* IPCC AR6 Synthesis Report, Summary for Policymakers (finding that climate change will have both negative and positive effects on agricultural yields and fishery yields, but the net effects on food security are overwhelmingly negative); IPCC AR6 WGII, Ch. 14 (discussing potential reductions in cold-related mortality); NCA5 at 2-18 (discussing observed and projected decreases in extreme cold); NCA5 at 25-37 (recognizing that the net effect of climate change on specific crop yields is uncertain, as there may be both negative and positive impacts from different climate-related drivers); NCA5 at 29-17 (recognizing that climate change may have some positive impacts on agricultural yields in Alaska).
[52] Proposed Rule at 36,309.
[53] Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 89 Fed. Reg. 16,820, 16,852 (March 8, 2024); Pollutant-Specific Significant Contribution Finding for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary

assessments were "unduly pessimistic," but EPA's primary support for this conclusion is the flawed DOE study that was commissioned by the current administration to support this proposal. Contrary to EPA's assertions, the prior endangerment findings were based on a substantial body of evidence that has grown stronger over time, including but not limited to the IPCC and USGCRP reports.

For the 2009 endangerment finding, EPA published a technical assessment which contained several hundred pages of information about the relationship between GHG emissions and climate change and the ways in which climate change affects public health and welfare.[54] The assessment identified many harmful impacts that were attributable to climate change, including sea level rise, increases in the severity and frequency of extreme events, agricultural impacts, ecosystem impacts, and more. The assessment also highlighted many areas of uncertainty (e.g., regarding the attribution of hurricanes to climate change) as well as examples of beneficial impacts (e.g., reductions in cold mortality and increases in agricultural production in some regions). At that time, EPA recognized that the existence of uncertainty or beneficial impacts did not undermine the ultimate conclusion that GHG emissions endanger public health and welfare. This was because there were many different lines of evidence all pointing towards the likelihood of pervasive harm from climate change. EPA ultimately concluded that the evidentiary support for the endangerment finding was "compelling" even though there were some scientific uncertainties.[55]

In its decision upholding the 2009 endangerment finding, the D.C. Circuit noted that EPA had amassed a "substantial" body of evidence in support of its determination.[56] Specifically, the court found that EPA had supported its determination through three primary lines of evidence: (i) "basic physical understanding" of the greenhouse effect, (ii) observational evidence of past climate change, and (iii) models predicting how the climate will respond to GHG concentrations in the future.[57] The court also held that it was proper for EPA to refer to, and incorporate findings from, scientific assessments published by the IPCC, USGCRP, and NRC. The court expressly rejected the argument that the existence of some scientific uncertainty would warrant invalidation of the endangerment finding. To the contrary, the court held that the Clean Air Act language requiring EPA to determine whether emissions "may reasonably be anticipated to endanger public health or welfare" requires a "precautionary, forward-looking scientific judgment" about the risks of GHG emissions.[58]

Sources: Electric Generating Units, and Process for Determining Significance of Other New Source Performance Standards Source Categories, 86 Fed. Reg. 2542 (Jan. 13, 2021); Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,510 (Oct. 23, 2015); Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496 (Dec. 15, 2009).

[54] U.S. Environmental Protection Agency, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act (Dec. 7, 2009).

[55] 74 Fed. Reg. at 66,497.

[56] Coalition for Responsible Regulation, 684 F.3d 102 (D.C. Cir. 2012).

[57] *Id.* at 120–21.

[58] Coalition for Responsible Regulation, 684 F.3d at 122.

When EPA promulgated the 2015 GHG emission standards for fossil-fuel fired power plants, EPA found that the evidentiary basis for the GHG endangerment finding had "only grown stronger and the potential adverse consequences to public health and environment more dire" in the years since 2009, and that fossil fuel-fired power plants (which generate similar quantities of GHG emissions as motor vehicles) represented a significant contribution to that harm "under any reasonable threshold or definition."[59] In *American Lung Association v. EPA*, the D.C. Circuit held that EPA had "sensibly" concluded that that power sector emissions contribute significantly to dangerous air pollution "under any reasonable threshold or definition" and that, in this case, the question of endangerment was "not even close."[60] EPA also found adequate evidence of endangerment to support the promulgation of the 2021 GHG emission standards for power plants[61] and the 2024 GHG emission standards for the natural gas and oil sector.[62]

EPA now claims that "intervening scientific developments" have undermined the scientific basis for the 2009 endangerment finding. The reality is precisely the opposite. The evidentiary basis for the endangerment finding has become much stronger over time due to advances in scientific research, improvements in climate datasets, and the fact that climate change is rapidly intensifying and its harmful impacts have become more apparent, widespread, and severe.[63]

EPA nonetheless asserts that the 2009 endangerment finding was "unduly pessimistic" for several reasons. First, EPA claims that it did not account for potential beneficial impacts of climate change – but that is simply untrue; these benefits were addressed in the technical assessment for the 2009 endangerment finding (and are also addressed in IPCC and USGCRP assessments, as noted above).[64] Second, EPA claims that the 2009 endangerment finding relied on "worst case" climate projections,[65] but that is also untrue. The finding was partially based on climate model data suggesting that global average temperature may increase by 1.8 to 4.0°C by the end of the century, and these projections are generally consistent with more recent climate model results, which suggest that global average temperature may increase by 1.0 to 5.7°C by 2100 (or 1.3 to 4.6°C when "very low" and "very high" GHG emission scenarios are excluded).[66] Finally, EPA suggests that the climate models relied upon in the 2009 endangerment finding were "based on inaccurate assumptions" because there are some aspects of the earth system that the models do not capture

[59] Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,510, 64,531 (Oct. 23, 2015).
[60] Am. Lung Ass'n v. Env't Prot. Agency, 985 F.3d 914, 976 (D.C. Cir. 2021), *rev'd and remanded sub nom. on other grounds,* W. Virginia v. Env't Prot. Agency, 597 U.S. 697 (2022). Because the D.C. Circuit held that EPA had made a sufficient significant contribution finding for GHG emission from the power sector, it concluded that it was unnecessary to reach the question of whether such a finding was required under Section 111(b)(1)(A).
[61] Pollutant-Specific Significant Contribution Finding for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units, and Process for Determining Significance of Other New Source Performance Standards Source Categories, 86 Fed. Reg. 2542 (Jan. 13, 2021).
[62] Standards of Performance for the Oil and Natural Gas Sector, 89 Fed. Reg. at 16,852.
[63] *See* Philip B. Duffy, *Strengthened scientific support for the Endangerment Finding for atmospheric greenhouse gases,* 363 SCIENCE 597 (2019). *See also* IPCC AR6 WGI; IPCC ARG WGII; NCA5.
[64] Proposed Rule at 36,308.
[65] *Id.*
[66] *See* IPCC AR6 WGI.

well.[67] This is another example of cherry-picking: although climate models cannot perfectly replicate all physical and climatological processes, there is considerable confidence in the ability of global climate models to provide credible estimates of key climate variables, including temperature increases caused by GHG emissions.[68] None of the rationales proffered by EPA for invalidating the 2009 endangerment finding withstand scrutiny.

IV. Attributing Harm to Motor Vehicle GHG Emissions

As detailed above, the existing scientific record provides unassailable support for the conclusion that GHG emissions endanger public health and welfare (i.e., the "endangerment finding"). It also provides unassailable support for the conclusion that GHG emissions from motor vehicles cause or contribute to endangerment in a significant way. The GHG emissions from U.S. motor vehicles comprise a large share of total global GHG emissions (approximately 3.75%).[69] This is, on its face, a significant contribution to climate change-related damages.

EPA has erroneously argued, as part of the legal justification for revoking the endangerment finding, that GHG emissions from new motor vehicles do not have a "sufficiently close connection to the adverse impacts [of climate change] to fit within the legal meaning of 'cause' or 'contribute.'"[70] EPA does not provide any supporting analysis for this claim apart from the assertion that GHGs do not endanger public health or welfare "through local or regional exposure."[71] But the fact that there are multiple steps in the causal chain linking GHG emissions to harmful impacts does not mean that the causal connection is inherently "weaker" or more "attenuated" than that which links other air pollutants to harmful effects. There are multiple links in the causal chain linking regional and local air pollutants to harmful effects as well. For example, nitrogen oxides (NOx) and volatile organic compounds (VOCs) first react in the presence of sunlight and heat to create ground-level ozone, a secondary air pollutant, which may then be transported long distances by wind to new locations where it may affect vegetation and ecosystems, or it may enter the respiratory tract where it causes inflammation and irrational of tissues lining human airways, potentially exacerbating underlying conditions such as asthma. The distinction that EPA attempts to draw between GHG emissions and other air pollutants does not provide an adequate basis for refusing to regulate air pollutants that clearly have an adverse effect on human health and welfare.

There is a large body of research on climate change and harm attribution that provides insights on the contribution of specific emission sources to specific climate impacts. EPA could use this

[67] Proposed Rule at 36,309.
[68] IPCC AR6 WGI, Ch. 4. *See also* David A. Randall et al., "Climate Models and Their Evaluation," *in* IPCC, Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change 591 (Susan Solomon et al. eds.).
[69] *See* EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2022,* EPA 430-R-24-004 (2024), Table 3-11. EPA asserts that the "cause or contribute" finding should be based on emissions for only *new* motor vehicles,
[70] Proposed Rule at 36,301.
[71] *Id.*

research to gain additional insights on the nature and magnitude of the adverse impacts attributable to U.S. motor vehicle emissions. But EPA has essentially ignored this entire branch of climate science in the Proposed Rule.

There are several different areas of attribution research that are relevant but have, again, been ignored by EPA. First, with regards to **physical impacts:** researchers have developed end-to-end attribution techniques for quantifying the contribution of GHG emissions to physical phenomena such as sea level rise, ocean acidification, extreme heat, and increases in wildfire smoke.[72] In some cases, it is possible to estimate the physical impacts attributable to emissions on a per ton basis. For example, Notz and Stroeve (2016) estimate that every additional ton of CO_2 emitted into the atmosphere will cause a sustained loss of approximately 3 square meters of September sea ice in the Arctic.[73] Semken (2025) estimates the marginal impact of emission reductions on physical climate change outcomes, specifically finding that a one ton reduction in CO_2 in 2025 would result in 4,000 liters less of glacier ice melt, a 6 hour increase in aggregate life expectancy,[74] and a 5 square meter decrease in vegetation undergoing ecosystem change.[75]

Researchers have also developed techniques for estimating the **economic damages** attributable to GHG emissions. For example, Callahan and Mankin (2025) demonstrate how climate models and economic damage functions can be used to calculate heat-related losses attributable to GHG emissions.[76] Using this framework, Mankin et al. (2025) estimate that climate damages to the U.S. economy from its own transportation sector emissions totaled $68 billion from 1973 through 2023.[77] Damages will continue to accrue from the warming attributable to those historical emissions as well as any future emissions. Duke (2025) estimates that the U.S. transportation emissions will cause an additional $87.5 - $90.3 billion in cumulative U.S. damages from 2025 through 2035 (from historical emissions as well as projected emissions during that time period), and long-term damages may total approximately $300 billion from 2025 through 2050 without

[72] *See, e.g.*, David J. Frame et al., *Emissions and Emergence: A New Index Comparing Relative Contributions to Climate Change With Relative Climatic Consequences*, 14 ENVIRONMENTAL RESEARCH LETTERS 084009 (2019); Rachel Licker et al., *Attributing Ocean Acidification to Major Carbon Producers*, 14 ENVIRONMENTAL RESEARCH LETTERS 124060 (2019); Friederike E.L. Otto et al., *Assigning Historical Responsibilities for Extreme Weather Events*, 7 NATURE CLIMATE CHANGE 757 (2017); Brenda Ekwurzel et al., *The Rise in Global Atmospheric CO_2, Surface Temperature, and Sea Level from Emissions Traced to Major Carbon Producers*, 144 CLIMATIC CHANGE 579 (2017); Shaina Sadai et al., *Estimating the sea level rise responsibility of industrial carbon producers,* 20(4) ENVIRONMENTAL RESEARCH LETTERS 044012 (2025); Beverly E. Law et al., *Anthropogenic climate change contributes to wildfire particulate matter and related mortality in the United States*, 6 COMMUNICATIONS EARTH & ENVIRONMENT 336 (2025); Yann Quilcaille et al., *Systematic attribution of heatwaves to the emissions of carbon majors,* 645 NATURE 392 (2025).

[73] Dirk Notz & Julienne Stroeve, *Observed Arctic sea-ice loss directly follows anthropogenic CO_2 emission,* 354 SCIENCE 747 (2016).

[74] The "aggregate life expectancy" is defined as the life expectancy of everyone who lives until 2100 combined.

[75] Christoph Semken, *The Marginal Impact of Emission Reductions: Estimates, Beliefs, and Behaviors* (May 6, 2025).

[76] Christopher W. Callahan & Justin S. Mankin, *Carbon majors and the scientific case for climate liability,* 640 NATURE 893 (2025).

[77] Justin Mankin et al., *Climate damages to the U.S. economy from U.S. transportation emissions* (Dartmouth Climate Modeling & Impacts Group, September 2025).

emissions abatement.[78] There are other damage estimates available for comparison. Burke et al. (2023) provide a framework for estimating both past and future damages attributable to GHG emissions on a per ton basis (which can be used to estimate the contribution of a specific emitter to damages globally and within specific countries).[79] EPA could also use its 2023 social cost of CO_2 (SC-CO_2) to evaluate the potential costs of the emissions generated from U.S. motor vehicles.[80]

Importantly, the SC-CO_2, and other damage estimates only capture a portion of the harms attributable to GHG emissions, and thus these are conservative estimates that inevitably underestimate the total attributable damages. There may be variation in cost estimates due to differences in methodology and the scope of impacts included in the estimates. But even the most conservative estimates of the social costs attributable to U.S. motor vehicle emissions would provide support for the GHG endangerment finding.

There is also a growing body of research on impact attribution that can be used to assess **impacts on human health**. For example, a recent issue of *Nature Climate Change* featured multiple studies on the health effects of climate-driven changes in physical phenomena such as heat waves and wildfires.[81] These studies show that it is possible, in some instances, to quantify impacts such as mortality from increased smoke and extreme heat.[82] These estimates can be tailored to the United States – for example, Khatana et al. (2024) estimated that by mid-century (2036-2065), heat-related cardiovascular deaths in the U.S. could rise by up to 233 percent as

[78] The author notes that this figure is likely a "severe underestimate" as it does not include future damages that occur after 2050 from emissions generated between 2025 and 2050. The study includes a breakdown of the damages attributable to historical emissions vs. future emissions. E.g., the estimate of long-term climate damages from 2025-2050 ($300 billion) is comprised of $203.7 in damages from historical emissions (emitted before 2025) and $96.4 in damages from projected future emissions (emitted from 2025-2050).
Rick Duke, *Analysis: Calculating Near-Term and Long-Term U.S. Damages from U.S. Greenhouse Gas Transportation Sector Emissions* (September 2025).

[79] Marshall Burke et al., *Quantifying Climate Change Loss and Damage Consistent with a Social Cost of Greenhouse Gases,* NBER Working Paper 31658 (September 2023). *See also* Solomon Hsiang et al., *Estimating Economic Damage from Climate Change in the United States,* 356 SCIENCE 1262 (2017).

[80] EPA, *Supplementary Material for the Regulatory Impact Analysis for the Final Rulemaking, "Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review"*, EPA-HQ-OAR-2021-0317 (Nov. 2023). We recognize that the current administration has raised concerns about the technical validity of these estimates, and has issued guidance directing agencies to "limit their analysis and consideration of greenhouse gas emissions only to that plainly required in their governing statutes." OMB, Memorandum for Regulatory Policy Officers at Departments and Agencies and Managing and Executive Directors of Commissions and Boards (May 5, 2025). For the proposed rulemaking, EPA has a legal obligation to assess the magnitude of harm attributable to GHG emissions. EPA's 2023 social cost estimates continue to be a viable tool for quantifying such harms. These estimates incorporate dozens of peer-reviewed studies and reflect the best available science on GHG damage estimation. *See* Max Sarinsky & Kurt Weatherford, *The Social Cost of Greenhouse Gases: An Overview* (Institute for Policy Integrity May 2024).

[81] *Advances in Attribution,* 14 NATURE CLIMATE CHANGE 1108 (2024). *See also* Colin J. Carlson et al., *Health losses attributed to anthropogenic climate change,* NATURE CLIMATE CHANGE (2025).

[82] *See, e.g.,* Chae Yoen Park et al., *Attributing human mortality from fire $PM_{2.5}$ to climate change,* 14 NATURE CLIMATE CHANGE 1193 (2024).

climate change intensifies the frequency, duration, and severity of extreme heat.[83] Qui et al. (2025) project that the increase in wildfire smoke attributable to climate change could result in 71,420 excess deaths per year in the U.S by 2050 under a high warming scenario (a 73% increase relative to the 2011-2020 baseline).[84] Law et al. (2025) found that wildfire smoke attributable to climate change has caused approximately 15,000 deaths and a cumulative economic burden of $160 billion over 15 years.[85] Researchers have also published meta-assessments of health impacts attributable to climate change, including most notably the annual reports issued by the *Lancet Countdown on Climate Change and Human Health*.[86]

Our goal in this discussion is to highlight the fact that tools are available to quantify impacts and damages attributable to the GHG emissions at issue in this rulemaking. However, we are not suggesting that it is *necessary* to use these tools in order to arrive at the conclusion that the emissions from U.S. motor vehicles endanger public health and welfare. As noted above, this source category generates approximately 3.75% of total global GHG emissions. This is an exceedingly large share of global emissions. It is larger than the total GHG emissions attributable to most countries, with the exception of the top four emitters (U.S., China, India, and Russia).[87] It is equivalent to approximately half of the emissions attributable to the entire European Union, and it exceeds the emissions generated by the entire continent of Africa.[88]

Most importantly: the harms attributable to this 3.75% contribution are significant because the denominator (i.e., all harms attributable to climate change) is enormous. This is clear even when focusing only on damages that will occur within the United States. As detailed in NCA5, climate change is already causing pervasive adverse effects across the country, there are multiple climate impacts "of significant concern" in every U.S. region, climate-related damages "pose significant risks to the US economy", and every incremental increase in GHG emissions and fraction of a degree of additional warming will lead to increasing risks across essentially all U.S. regions and sectors.[89]

V. Conclusion

There is a vast body of scientific literature documenting the ways in which GHG emissions contribute to climate change and associated harms to public health and welfare. The available

[83] Sameed Ahmed M. Khatana et al., *Projections of Extreme Temperature-Related Deaths in the US,* 7(9) JAMA NETWORK OPEN: ENVIRONMENTAL HEALTH e2434942 (2024).
[84] Minghao Qui et al., *Wildfire smoke exposure and mortality burden in the US under climate change,* NATURE (2025). *See also* Junri Zhao et al., *Global warming amplifies wildfire health burden and reshapes inequality,* NATURE (2025).
[85] Law et al. (2025), *supra* note 72.
[86] *See, e.g.,* Marina Romanello et al., *The 2024 report of the Lancet Countdown on health and climate change: facing record-breaking threats from delayed action*, 404 THE LANCET P1847 (2024); The Lancet Countdown on Health and Climate Change, *Policy brief for the United States* (2024).
[87] Emissions Database for Global Atmospheric Research, https://edgar.jrc.ec.europa.eu/report_2023.
[88] *Id.*
[89] *See* NCA5 at Table 1.2 ("Climate Change is Already Affecting All US Regions and Will Continue To Have Impacts in the Near Term"); 1-32.

scientific data provides overwhelming support for the conclusion that GHG emissions from U.S. motor vehicles contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. EPA has ignored the best available scientific information on this topic, and has reached a conclusion that runs directly counter to that of all of the leading scientific authorities on climate change. In sum: EPA's proposal to revoke the GHG endangerment finding is indefensible, and EPA should not proceed with this action.

Sincerely,

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