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Re: Technical Comments and Request for Correction regarding *A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate,* 90 Fed. Reg. 36150 (Aug. 1, 2025), Docket No. DOE-HQ-2025-0207

Environmental Defense Fund submits the following technical comments on the Department of Energy's ("DOE") Climate Working Group ("CWG") Report, *A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate* ("Report"). The CWG Report is fundamentally and irredeemably flawed. It was crafted in secret by a group of scientists that Secretary Wright deliberately selected for their extreme, undue skepticism of the mountain of scientific evidence regarding the dangers of climate change. That process plainly violated the Federal Advisory Committee Act ("FACA"), which includes detailed requirements related to public transparency and fair balance when agencies convene advisory committees like this one. DOE's ongoing operation of and reliance on the CWG continues to violate FACA. The CWG also fails to meet basic data quality requirements, including standards that this administration recently proclaimed.

With such a thoroughly compromised and unlawful development process, it is unsurprising that the CWG Report's substantive analysis and conclusions are deeply flawed as well. As described more fully below, the Report fails to engage with the vast body of scientific evidence documenting the clear harms associated with climate change and the direct role that the burning of fossil fuels has played in causing them. It instead focuses on a heavily distorted and cherry-picked presentation of a small subset of the scientific literature, as well as stale theories that the scientific community has already thoroughly considered and refuted, to wrongly downplay the pace and scale of the harms associated with climate change. And despite DOE's

claims to the contrary, were DOE actually interested in subjecting the Report to the searching scrutiny its many flaws warrant, the agency would have given the public more than a severely truncated thirty-two-day comment period. Because the CWG Report is unlawful in its development and utilization and arbitrary in its conclusions, DOE must immediately withdraw it.

With this letter, EDF also submits to DOE a Request for Correction under the Information Quality Act ("IQA") and DOE's guidelines for information quality and corrections. The IQA requires that information disseminated to the public by federal agencies meet standards of "quality, objectivity, utility and integrity." Pub. L. No. 106-554, § 515(a), 114 Stat. 2763 (2000); *see also* DOE, *Final Report Implementing Updates to the Department of Energy's Information Quality Act Guidelines* (2019).[1] The IQA further requires agencies to allow "affected persons to seek and maintain correction of information" that fails to comply with information quality standards. Pub. L. No. 106-554, § 515(b)(2)(B). The bases for EDF's Request for Correction regarding the CWG Report are described below.

COMMENTS

For all of the reasons detailed below, the CWG Report is deeply and incurably flawed, and any reliance on it by federal agencies is arbitrary and unlawful. EDF urges DOE to withdraw the Report immediately.

Section I of these comments provides a brief description of the current state of the science on the impacts of greenhouse gas emissions on public health and welfare, which contrasts with the selective and misleading representations of the CWG Report. Section II identifies numerous ways that the process for developing the CWG Report violated legal and scientific standards. Section III addresses the substance of each chapter of the CWG Report, cataloguing ways in which each is incomplete, inaccurate, or otherwise flawed. Section IV explains why reliance on the CWG Report as a basis for any agency action would be arbitrary, capricious, and unlawful. EDF's Request for Correction follows Section IV.

I. The Science is Clear That Climate Pollution Is Harmful

The CWG Report does not reflect "the state of climate science today" (CWG Report, page viii). 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. Over time, scientific advances and longer observational records have served to reduce uncertainties about 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

[1] *Available at* https://www.energy.gov/cio/articles/2019-final-updated-version-doe-information-quality-guidelines.

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; and have expanded the range of diseases. 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.

A. 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 system (Arias et al. 2021; page 41). Levels of carbon dioxide are higher now than they have been for at least 800,000 years (Lüthi et al. 2008). The United States, since the pre-industrial era, has contributed more climate pollution to the atmosphere than any other country (U.S. EPA 2025). The observational record as of 2020 shows an increase of approximately 1ºC since the period 1850-1900 (when industrial activity started) (Pörtner et al. 2022, p. 58) – and since 1970, the continental U.S. has warmed 60% faster than the global average (U.S. EPA 2025).

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 to worsening air quality and an increase in the spread of diseases (Pörtner et al. 2022). Climate change has already affected the severity of many extreme weather events – like making the 2021 Pacific Northwest heatwave eight times more likely (Leach et al. 2024) and fostering more dangerous conditions for wildfires across the western United States (Abatzoglou & Williams 2016) exposing millions of Americans to unhealthy air associated with heart and lung disease deaths. Extreme heat exposure now causes thousands of deaths (Howard et al. 2024), over 100,000 emergency room visits (Vaidyanathan et al. 2023), and approximately $100 billion anually in lost labor productivity across the U.S. (AA-RFRC 2021).

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 (Gergel et al. 2017; Wheeler et al. 2022; Xiao et al. 2018). 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 (van Vliet et al. 2023; Heil & Muni-Morgan

2021). Sea level rise is worsening flooding, causing some U.S. coastal communities to have to relocate and others to spend billions of dollars to remain in place (Shrestha et al. 2023; Oppenheimer et al. 2019). Increased disaster costs are disrupting insurance markets, raising costs for Americans and, in some areas, making it difficult to obtain coverage (Kousky et al. 2024).

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 (Pörtner et al. 2022, p. 50). 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 (Pörtner et al. 2022, p. 116 Fig. TS.AII.2).

Contrary to what the CWG Report 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 (Arias et al. 2021, p. 52). The evidence rests on longer 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 (Arias et al. 2021, p. 63).

For instance, since the Environmental Protection Agency ("EPA") issued its 2009 finding that greenhouse gas pollution endangers human health and welfare ("Endangerment Finding"): atmospheric CO_2 levels are up 10.5 percent; sea level rise, globally (compared to 1993-2008 average), is up 2.13 inches; 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. has increased 34 percent and 17 percent, respectively (*See* EDF 2025, p. 2 (citing data from NOAA and EPA)).

B. 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 CWG Report largely ignores.

Ocean. Greenhouse gases in the atmosphere have led to warmer ocean temperatures (Bilbao et al. 2019; Eyring et al. 2021, p. 478), increased stratification (Bindoff et al. 2019), and more frequent marine heatwaves (Frölicher & Laufkötter 2018; Collins et al. 2019). In addition, warmer temperatures in the ocean lead to decreases in oxygen availability (Bindoff et al. 2019). 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 place over the last 50 million years (Gulev et al. 2021). These trends in temperature, oxygen, and pH cause displacement and disruption to ocean ecosystems and to the food webs that people depend on (Pörtner et al. 2022, p. 48).

Ice and Permafrost. Greenhouse gases in the atmosphere have led to reduction in land glaciers and Arctic sea ice (Arias et al. 2021, p. 76). 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 (Arias et al. 2021, p. 63). In addition, permafrost is unfreezing, compromising the structural integrity of pipelines, roads, and buildings that have been built assuming frozen ground (Hjort et al. 2022). Ice cover 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 (Huntington et al. 2023; Pörtner et al. 2022, p. 116 Fig. TS.AII.2). Transportation is also adversely impacted, with fewer days available for travel on ice roads (Hicke et al. 2022, pp. 1975, 1977).

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 (Arias et al. 2022, p. 80). 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 mean that proportionately more of the anthropogenic emissions will stay in the atmosphere and contribute to climate change (Canadell et al. 2021, p. 677). CO_2 fertilization effects (i.e., effects on plant growth from increased CO_2 levels) in terrestrial ecosystems are increasingly limited by drought and warming (Pörtner et al. 2022, p. 47).

Land. Land surface temperatures are rising faster than the global average temperature (Arias et al. 2021, p. 82). Heatwaves and hot extremes have been more common and more intense and are attributable to greenhouse gas emissions (Seneviratne et al. 2021, p. 1552). The combination of heatwaves and droughts is also becoming more common (Mukherjee & Mishra 2021). The IPCC has "high confidence" that the five years of 2016-2020 were the hottest five years in the instrumental record (Arias et al. 2021, p. 41). Observations show that the number of heavy precipitation events has increased, and those events are also more intense (Arias et al. 2021, p. 84; Pörtner et al. 2022, p. 49).

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, for all three biomes in North America (Pörtner et al. 2022, p. 46 Fig. TS-3). Biological changes in physiology, range, seasonal timing, growth, and abundance have been observed in response to climate change, and these shifts have often not been sufficient to stave off species losses, susceptibility to disease and mass mortality of plants and animals (Pörtner et al. 2022, p. 45). Along with increasing temperatures there has been a shift in terrestrial and marine species, with half to two-thirds of species shifting to higher latitudes and two-thirds shifting toward earlier spring life events (Ibid.). 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 (Pörtner et al. 2022, p. 45). 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 (Pörtner et al. 2022, p. 47). 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) (Pörtner et al. 2022, p. 45). 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 (Pörtner et al. 2022, pp. 45, 47). Coral reefs are experiencing global declines (Eddy et al. 2021). Changes in species composition fueled by CO_2 fertilization has led to woody shrub invasion and reduced grazing land, and invasive grasses fueled by increasing CO_2 have led to increased fire risk (Pörtner et al. 2022, p. 47). Climate driven changes to ecosystems have caused economic damage and losses to livelihoods (Pörtner et al. 2022, p. 48).

Agriculture and Food. Climate change has affected the productivity of the agriculture (Ortiz-Bobea et al. 2021), forestry, and fishery sectors of the economy, with droughts, wildfires, floods, and land and marine heatwaves contributing to food insecurity and increased food prices (Pörtner et al. 2022, p. 48). For example, marine heatwaves have led to the collapse of local fisheries along the west coast of North America and east coast of Australia (Frölicher & Laufkötter 2018), and higher temperatures increase the occurrence of toxigenic fungi on food crops (Avery et al. 2019). 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 (Avery et al. 2019).

Water. Climate change has intensified the extremes of the water cycle, leading to more droughts, water scarcity, and floods (Arias et al. 2021, p. 85). Extreme precipitation events and extended droughts are increasing in the United States (Payton et al. 2023). 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) (Pörtner et al. 2022, p. 49). 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 (Horsley-Witten Group 2015; Washington State 2025). Droughts have reduced hydropower production, impacting energy supplies and increasing competition for scarce water resources (Wasti et al. 2022).

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 (Caretta et al. 2022, p. 570). 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 (Musselman et al. 2021). Increased temperatures lead to less snowpack, which means less runoff from melting snow and less water available overall. Higher temperatures are also causing spring runoff to

occur earlier in the year, resulting in even less water availability through the dry summer season (Bolinger et al. 2024).

Human Health. Globally, increasing temperatures and heatwaves have increased mortality and morbidity (Pörtner et al. 2022, p. 51), 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 (Id.). In the United States, higher temperatures not only affect direct mortality (Sarofim et al. 2016, pp. 43-68; Vaidayanathan et al. 2020; Shindell et al. 2020; Marvel et al. 2023, pp. 2-4) 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 (Hayden et al. 2023). While increasing temperatures could reduce cold-related deaths, such reductions "are expected to be smaller than the increase in deaths from heat in the United States" (Sarofim et al. 2016, p. 51). Higher temperatures also worsen air quality and increase the spread of diseases like Lyme and West Nile (Analitis et al. 2014; Semenza et al. 2022; Dumic et al. 2018; Harrigan et al. 2014). Exposure to wildfire smoke has also increased (Pörtner et al. 2022, p. 51), with climate change greatly increasing the area susceptible to large forest fires in the western U.S. (Abatzoglou et al. 2016). Wildfire smoke exposes millions to unhealthy air, resulting in heart and lung disease deaths (Pörtner et al. 2022, p. 51; Xie et al. 2022; Ma et al. 2024).

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) (Pörtner et al. 2022, p. 54). Approximately 130 million people live in coastal counties in the U.S. (Office for Coastal Management, NOAA, *Economics and Demographics*, https://coast.noaa.gov/states/fast-facts/economics-and-demographics.html), and 20 million coastal U.S. residents could be at risk of inundation due to sea level rise and/or storm surge by 2030 (Best et al. 2023). 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 (Pörtner et al. 2022, p. 62). 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 (Chen et al. 2017).

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 (Pörtner et al. 2022, p. 53). 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 systems (Neumann et al. 2015) and natural gas infrastructure (Moftakhari & AghaKouchak 2019), 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 (Stone et al. 2021) or other lifesaving infrastructure (Wong-Parodi 2020).

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.

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II. The CWG Report Suffers Fatal Flaws in How It Was Developed and the Scientific Information It Considered.

Notwithstanding this mountain of clear scientific evidence, which has been systematically vetted by multiple panels of independent scientific experts over decades using established protocols of transparency and peer review, DOE convened the CWG in secret with the express purpose of calling that science into question and undermining EPA's Endangerment Finding and the vital pollution controls EPA has established. Below, EDF describes how the establishment and operation of the CWG plainly violates FACA's requirements regarding public transparency and fair balance, and appends for further reference the lawsuit that EDF and the Union of Concerned Scientists recently filed setting forth these claims.[2] We also discuss how the CWG failed to adhere to information quality standards, including the Trump Administration's own.

A. DOE's Secretive Establishment and Operation of the CWG Violates FACA

The CWG is plainly a federal advisory committee subject to FACA; yet DOE abjectly has failed to comply with statutory requirements for establishing and utilizing such committees. 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, Secretary Wright quietly arranged for 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

[2] EDF, together with Union of Concerned Scientists, has filed a federal lawsuit to compel DOE to follow FACA and to enjoin DOE and EPA from relying on the CWG Report. *See* Compl., *Environmental Defense Fund et al. v. Wright et al.,* No. 1:25-cv-12249 (D. Mass. filed Aug. 12, 2025).

rescinding the Endangerment Finding. These flagrant statutory violations are alone reason to immediately withdraw the CWG Report. Unless and until DOE brings transparency and balance to the CWG's work, as the law requires, the continued operation of this secret and unaccountable group is illegal. Furthermore, any utilization of the CWG Report, or other fruit of the CWG's illegal work, by DOE, EPA, or other federal agencies would be arbitrary and unlawful.

1. The CWG Is an Advisory Committee Subject to FACA

The CWG is plainly an advisory committee under FACA. FACA 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). Here, the CWG Report itself makes clear that Secretary Wright "commissioned" the CWG, "chose" its members, and tasked the committee with "critically review[ing] the current state of climate science, with a focus on how it relates to the United States." CWG Report at viii. DOE and EPA also "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. *See Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards*, 90 Fed. Reg. 36288 (Aug. 1, 2025) (citing the CWG Report 22 times). Furthermore, the CWG Report is replete with advice and recommendations for federal policymakers. *See, e.g.,* 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.

The CWG does not fall within any of the 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 Report was convened. Consequently, there is no exception to FACA's bulwark requirements—DOE has a statutory duty to follow FACA.

2. DOE Has Violated FACA by Secretly Establishing and Utilizing the CWG

Any agency establishing an advisory committee subject to FACA must follow that statute's clear procedural and transparency requirements—including, e.g., publishing notice of the committee's establishment in the Federal Register and filing a charter containing specific information *before* the committee meets or takes any action. *See* 5 U.S.C. § 1008(a)(2), (c); 41 C.F.R. § 102-3.65. DOE failed to comply with any of those requirements; consequently, every action the CWG has taken—including drafting the CWG Report, transmitting it or causing it to

be transmitted to EPA, and publishing it—has been unlawful. And every future action the CWG takes will be illegal, unless and until the group is reestablished and reconstituted in accordance with FACA.

3. DOE and the CWG Have 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)-1(3). 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. *Id.* § 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 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 CWG Report was published. Nor has DOE satisfied its duty to disclose all records "made available to or prepared for or by" the CWG. 5 U.S.C. § 1009(b). DOE's failure to provide essential records and information to the public regarding the CWG's work prior to the close of this comment period on the CWG Report only further evidences that this comment period is little more than a Potemkin village—DOE is seeking to evade public accountability for its illegal scheme and thwart meaningful public engagement with the Report's findings.

4. DOE Has Violated FACA's Fair Balance and Influence Requirements

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).

The CWG clearly violates FACA's fair balance requirement. 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. 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." CWG Report at x. And Secretary Wright hand-picked its members precisely because of their bias in order to stack the committee with skeptics of the effects of climate change. Secretary Wright 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. CWG Report at viii.

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DOE's blatant violations of FACA's transparency and fair balance requirements render the CWG's work illegal. More broadly, the corruption at the core of the CWG's establishment has violated foundational principles of administrative law, scientific integrity, and good governance, as well as the public's trust. DOE must immediately withdraw the CWG's irredeemably flawed Report and halt all further CWG work until it complies with FACA.

B. The CWG Report Violates Federal Standards for Data Quality and Scientific Integrity

DOE must withdraw the CWG Report for the further reason that it flagrantly violates relevant federal standards for the quality and integrity of scientific data.

First, the 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 foundational health and environmental protections[3]—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. 14,303 § 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

[3] *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.

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 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 CWG Report's shortcomings are numerous. As explained in Section II.A.4, *supra*, although DOE describes the CWG as "five independent scientists...with diverse expertise in physical science, economics, climate science and academic research,"[4] CWG members—appointed by Energy Secretary Chris Wright in a process lacking the required transparency, *see* Section II.A, *supra*—are universally known "climate skeptics" with contrarian views regarding climate change science,[5] 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 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 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 for which the Trump Administration took offline shortly before releasing the CWG Report[6]—was prepared with input from 14 federal agencies, nearly 500 authors, and 250 contributors.[7] 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.[8]

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[4] U.S. Dep't of Energy, *Climate*, https://www.energy.gov/topics/climate.

[5] *See, e.g.*, Molly Taft, *Scientists Say New Government Climate Report Twists Their Work*, Wired (July 30, 2025); Eric Niiler & Scott Patterson, *Climate Skeptics Are Tapped by Trump Administration to Justify Regulatory Rollback*, Wall St. J. (Aug. 1, 2025).

[6] 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.

[7] 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.

[8] *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).

Moreover, the CWG Report has undergone no peer review other than what appears to be, at best, a minimal review by undisclosed individuals internal to DOE.[9] DOE has provided no details regarding this "internal" review—no details on who participated, what feedback they provided, or whether the 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 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, 2665 (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)[10] 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 CWG Report. *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, *Principles 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); 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

[9] See 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").

[10] *Available at* https://www.whitehouse.gov/wp-content/uploads/2025/03/OSTP-Guidance-for-GSS-June-2025.pdf.

multiple rounds of public, expert, and interagency review, including by the National Academies). The 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.

This 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 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 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* Section I, *supra*, and Section III, *infra*. This is in stark contrast to other reputable scientific assessments of the impacts of greenhouse gases on climate, 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.[11] Rather than being communicative of uncertainty and structured for falsifiability of hypotheses, the 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* CWG Report at ix ("possibly detrimental to," "often overlooked," "might be underestimated," "could prove more detrimental to") *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").[12]

Second, numerous scientists cited in the CWG Report have explained that the Report's authors misrepresent, ignore, or downplay their findings, underscoring that the Report creates

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[11] *See, e.g.*, USGCRP, *Information Quality Guidance for the National Climate Assessment* (2023), https://toolkit.climate.gov/sites/default/files/2025-07/NCA5_IQ_Guidance.pdf; IPCC, *Principles Governing IPCC Work* (2013), https://www.ipcc.ch/site/assets/uploads/2018/09/ipcc-principles.pdf.

[12] *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.").

just the type of highly misleading framing that EO 14303 purports to discourage.[13] And finally, the CWG Report's own language—repeatedly and irrelevantly criticizing the mainstream media rather than focusing on serious science[14]—is itself suggestive of the politically and ideologically motivated nature of the CWG's endeavor. Rather than enhancing scientific integrity, transparency, and evidence-based policymaking, the CWG Report runs counter to Executive Order 14303, the OSTP guidance implementing it, and to the broader foundational principles of good scientific research.

For many of the same reasons described in this Section II and in further detail in the Request for Correction accompanying these comments, *infra*, the CWG Report violates the Information Quality Act, Pub. L. No. 106-554, § 515, 114 Stat. 2763 (2000), and DOE's guidelines implementing the IQA.

III. The Conclusions in the CWG Report are Wrong, Misleading, and Incomplete

The 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. 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. For instance, the Report fails entirely to consider several of the lines of evidence described more fully in Section I of this comment letter, *supra*,[15] 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 warming, species range shifts, and phenology shifts, among others (see Section I, *supra*, and Section III response to Chapter 3, *infra*).

For the topics that the report does address, it 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 (see, e.g., Section III response to Chapter 3, *infra*), 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

[13] *See, e.g.*, Molly Taft, *Scientists Say New Government Climate Report Twists Their Work*, Wired (July 30, 2025).
[14] *E.g.*, CWG Report at 15 (stating there is "misleading coverage in prominent media outlets"); *id.* at 47 ("It has become routine in media coverage...to make generalized assertions..."); *id.* at 56 (noting that temperature extremes "attract a great deal of media attention"); *id.* at 95 (referencing "media narratives"); *id.* at viii ("media coverage distorts the science").
[15] Unless otherwise indicated, throughout this comment letter, "Chapter" refers to the referenced chapter of the CWG Report and "Section" refers to the referenced section of this comment letter.

and model representations (see, e.g., Section III response to Chapter 8, *infra*), and the uncertainty of climate sensitivity and its significance for climate projections (see, e.g., Section III response to Chapter 4, *infra*), and using selectively chosen geographies to obfuscate trends in Atlantic hurricanes (see, e.g., Section III response to Chapter 6, *infra*) and selectively chosen metrics to inaccurately claim a lack of trends (e.g., extreme precipitation and heatwaves in Chapter 6).

In places the 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 Section III response to Chapter 3, *infra*; RCP 8.5 discussion in Section III response to Chapter 3, *infra*), or already taken into account by climate models and projections (see, e.g., discussion of CO_2 fertilization in Section III responses to Chapters 2 and 9, *infra*; discussion of Urban Heat Island effect in Section III response to Chapter 3, *infra*; discussion of variability in local sea level rise and its drivers in Section III response to Chapter 7, *infra*).

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 on the overwhelming scientific evidence that climate change is happening and is primarily caused by fossil fuel emissions. However, the Report does not draw explicit conclusions from this information, presumably because it has no bearing upon the existence or impacts of climate change.

Ultimately, the Report does not fundamentally engage with, let alone call into question, the mountain of scientific evidence that climate pollution harms human health. 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.

EPA's Denial of Petitions Relating to the Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, at 4.

In the following paragraphs of this Section III, we discuss in further detail some of numerous flaws in each of the CWG Report's chapters.

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Chapter 1: Carbon dioxide as an air pollutant (pages 1-2)

The CWG Report claims that carbon dioxide is unlike other criteria air pollutants and therefore implies that it should not be treated as one under the Clean Air Act. However, in *Massachusetts v. EPA*, the Supreme Court already decided that greenhouse gases are clearly air pollutants under the Clean Air Act, and in doing so rejected arguments similar to those the CWG Report advances. That decision and the plain text of the Clean Air Act are controlling and any contrary views expressed in the CWG Report are wrong and have no relevance for or bearing on that question.

Chapter 2: Direct impacts of CO_2 on the environment (pages 3-10)

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 (see, e.g., Jay et al. 2023). As described above, the CWG report ignores 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 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 these 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 (Grossiord et al. 2020). These stresses can further compound (Flores et al. 2024). 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 CWG 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.

In addition, studies have found CO_2 fertilization is limited by other factors, including increasing vapor pressure deficit (Barningham, 2023), or nutrient limitations in many areas (Fleischer & Terrer 2022). 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." Moreover, CO_2 fertilization effect may be increasingly limited by increasing water demands in a warmer world (Li et al. 2023).

The 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 (Bezner Kerr et al. 2022). To single out one effect to the absence of others does not give an accurate understanding of the impacts and misrepresents the scientific literature.

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 (Arora & Scinocca 2016; Felzer 2025) and was highlighted in the technical summary of the AR6 WGI IPCC report (Arias et al. 2021).

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 (Ripple et al. 2023). 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 impact*s* of CO_2 on the oceans are largely related to ocean warming including ocean heatwaves as well as stratification and deoxygenation (Cooley et al. 2022). 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 the Great Barrier Reef (AIMS 2022). According to that report, which is cited in the 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 (AIMS 2025).

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 (Cooley et al. 2022). Still Chapter 2.2 of the 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 (Kiessling & Simpson 2011; Wignall & Bond 2024). 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 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 (Wilkinson & Scrutton 2000). Modern Scleractinian coral reefs did not arise for another 20-25 million years (Veron et al. 2016). Millions of people globally depend on coral reefs for food and livelihoods (Cinner et al. 2012) 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 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 (Sutton et al. 2019; Turk et al. 2019)."

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Chapter 3: Human influences on climate (pages 11-23)

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 CWG Report's suggestion to the contrary is wrong.

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 important variables are aerosols, total solar irradiance, energy distribution, and continental configuration (Forster et al. 2021).

Climate change over time can occur at different rates, with rapid changes in the past resulting in multiple mass extinctions (Song et al. 2021). 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 (Nogues-Bravo et al. 2018). However, the rapid rate of increase in today's CO_2 levels presents significant challenges with differential impacts on biota and ecosystems on Earth today (Catullo et al. 2019). 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 (Gingerich 2019). 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 (e.g. Canteri et al. 2025, Warren et al. 2018).

The 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 (Petit et al. 1999; Brovkin et al. 2016; Da et al. 2019) due to known orbital changes and earth system feedbacks (Van Nes et al. 2015).

Total Solar Irradiance and Urban Heat Island Effect. The Report also mischaracterizes the magnitude of other impacts on the Earth's climate, overestimating their influence. First, the magnitude of observed warming cannot be reproduced based only on the role of Total Solar Irradiance ("TSI") without accounting for the dominant factor, anthropogenic greenhouse gas forcing (Ziskin & Shaviv 2012; Meehl et al. 2004). The alternative TSI record (Connolly et al. 2021) that the report's authors claim has been overlooked was in fact examined in scientific literature and not found plausible (Chatzistergos 2024). 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 (e.g., Hansen et al. 2001; Jones et al. 2008; Parker 2010; Dienst et al. 2019). Moreover, the fastest warming areas of the world are remote, not urban (i.e., the Arctic and Antarctic) (Serreze et al. 2009; England et al. 2021; Symon 2005), 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 temperatures and static air temperature show a clear trend in warming over the past several decades (Huang et al. 2024). These factors demonstrate how the overall warming of the Earth is plainly robust beyond the UHI effect.

Emissions Scenarios. The chapter also includes a lengthy discussion of emissions scenarios, though the CWG's conclusions in this area are both irrelevant and wrong. 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 CWG's criticisms based on its assertion that RCP8.5 has been treated as a "business as usual" scenario are wrong. In the paper detailing the creation of the RCP8.5 scenario, the authors note that it is a "high business as usual scenario" (Riahi et al. 2011) that reflects "assumptions of high population and slow technological progress on the higher end of the range of possible baseline scenarios." 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 (Jay et al. 2023). The CWG Report suggests that actual emissions trajectories are on the low end of the SRES scenarios, but that too is wrong. In fact:

> 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. (Hausfather 2025)

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Chapter 4: Climate sensitivity to CO_2 forcing (pages 25-30)

The 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 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 (Forster et al. 2021). The 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 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 refined 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.

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Chapter 5: Discrepancies between models and instrumental observations (pages 31-45)

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 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 (e.g., Po-Chedley et al. 2015; Santer et al. 2017; Santer et al. 2023). Contrary to 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. 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.

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 CWG Report authors themselves recognize in Chapter 3. None of the information presented in Chapter 5 refutes this conclusion.

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Chapter 6: Extreme weather (pages 46-74)

The consensus of peer-reviewed literature, including the IPCC reports, 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 data and arguments that the CWG relies on to make its incorrect claim of "no statistically significant long-term trends over the available historical record" for most 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 (Seong et al. 2021; Dunn et al. 2020). Human-induced greenhouse 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 (Keellings & Moradkhani 2020). 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 (Rogers et al. 2023).

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 (Gilford et al. 2024, Kishtawal et al. 2012; Hall & Kossin 2019; Kossin 2019; Kossin et al. 2020; Bhatia et al. 2019). These factors can increase the severity of damages to society. As mentioned above in Section II, the authors cherry-pick specific geographies and time domains to support misleading statements. For example, although (as the CWG Report notes) no clear trend exists so far in the frequency of landfalling hurricanes specifically affecting the United States, hurricane activity in the North Atlantic basin has increased since the 1970s (Vecchi et al. 2021). 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 (Sobel & Emmanuel 2025).

The frequency, intensity, and/or total amount of rainfall from extreme precipitation events have increased across North America (Sun et al. 2021; Paik et al. 2020, Dunn et al. 2020). There is robust evidence that human-caused warming has contributed to increased frequency and severity of the heaviest precipitation events over 70% of the United States (Diffenbaugh et al. 2018; Kirchmeier-Young & Zhang 2020). 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. This intensification of precipitation extremes is evident across various event durations as well as return intervals, particularly east of the Rocky Mountains (Dunn et al. 2020).

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 (Greve et al. 2014; Dai & Zhao 2017; Spinoni et al. 2019; Williams et al. 2020). 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 (Udall & Overpeck 2017; Milly & Dunne 2020). 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 (Jolly et al. 2015; Abatzoglou & Williams 2016; Williams et al.

2019; Abatzoglou et al. 2021). This trend toward more dangerous fire weather intersects with drought and temperature extremes to create heightened wildfire risk across multiple regions.

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 (Diffenbaugh et al. 2015; Zscheischler & Seneviratne 2017; Herrera-Estrada & Sheffield 2017, Sarhadi et al. 2018). Increasing frequency of events can compound deleterious effects. For example, mortality effects for each hurricane can persist for 15 years (Young & Hsiang 2024); 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 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 CWG Report selectively cite IPCC AR6 and National Climate Assessments NCA4 and NCA5 but ignore consensus in those reports as well as in the broader scientific literature. The CWG Report is self-contradictory: it argues that there are limitations of using short data records for analyses (e.g., p. 60, Box: Perils of short data records), but then presents analyses that rely on short datasets (e.g., p. 69, Fig. 6.8.1), even when there are longer relevant datasets available (e.g., Van Marle et al. 2017; Otón et al. 2021). 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 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 review 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 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. 63, Fig. 6.4.2, but precipitation and heat variability are generally large over such a wide spatial area (see, e.g., examples of regionally specific precipitation drivers along different parts of the Pacific Coast in Neiman et al. 2008 and Guirguis et al. 2020) so should not be evaluated as a mean, which would obscure relevant events. Similarly, on p. 68, 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 (Spinoni et al. 2019). On p. 69, Fig. 6.8.1 shows *global* statistics of wildfires, but observational records have shown that wildfires have increased in the western U.S. (Westerling et al. 2006; Dennison et al. 2014). 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 (O'Gorman et al. 2015).

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Chapter 7: Changes in sea level (pages 75-81)

Sea level rise is one of the most predictable and robust effects of warming temperatures, due to thermal expansion of seawater and melting of land-based ice. These processes are both acknowledged in the CWG Report. Observations confirm that with some local variability, sea levels are rising globally including in the United States (Kopp et al. 2016, Wang et al. 2021, Dangendorf et al. 2024). 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 (Fox-Kemper et al. 2021). The CWG Report's conclusion that "U.S. tide gauge measurements reveal no obvious acceleration beyond the historical average rate of sea level rise" is 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 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 level was 400 feet below current levels (Clark et al. 2020). 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 (Dumitru et al. 2019; Lisiecki & Raymo 2005). Furthermore, satellite altimetry and observations of land ice changes and ocean heat corroborate the conclusion of global mean sea level rise and acceleration (Guerou et al. 2023; Otosaka et al. 2023; Hugonnet et al. 2021).

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 (Santamaria-Gomez et al. 2017; Woppelmann et al. 2016; Hamlington et al. 2020; Harvey et al. 2021). 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 (Dangendorf et al. 2023). The lower rates of sea level rise and lack of acceleration on the west coast of the United States are not underreported, despite the 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 acceleration) (Harvey et al. 2021; Burgette et al. 2009; Hamlington et al. 2020). 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 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 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.

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Chapter 8: Uncertainties in climate change attribution (pages 84-102)

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 in Section I and the response in this section to Chapter 6 of the CWG Report, 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 (Eyring et al. 2021). As described in this comment section's response to Chapter 3, *supra*, 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 greenhouse gases (Ziskin & Shaviv 2012; Meehl et al. 2004). Overlaid on the warming trend are internal variabilities of the climate system such as Pacific Decadal Oscillation (PDO, Mantua et al. 2002), Atlantic Multidecadal Oscillation (AMO, Knight et al. 2006), 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 (Knight et al. 2006; Wang et al. 2016).

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 (Philip et al. 2022) and Hurricane Harvey's rainfall 15-20% heavier (Risser & Wehner 2017; Van Oldenborgh et al. 2017) 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 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 (Kimutai et al. 2025; Patino Arias et al. 2023; Philip et al. 2022; Ciavarella et al. 2021), including some that found little impact of climate change on particular individual extreme events (Harrington et al. 2022; Otto et al. 2016).

The 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. As described in this section's response to Chapter 6, *supra*, 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.

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Chapter 9: Climate change and U.S. agriculture (pages 104-109)

The CWG Report'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 CWG Report manages to erroneously conclude that climate change will be neutral or beneficial for U.S. agriculture.

Contrary to the broad statements in the CWG Report, CO_2 fertilization will not be universal across environments and crop photosynthetic systems (Ainsworth & Long 2021) and does not rise to the magnitude suggested in the CWG Report. Meta-analysis of three decades of field studies (Ainsworth & Long 2021) demonstrates that any realistic productivity increases from the CO_2 fertilization effect are roughly half the magnitude of increases stated in the 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 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. 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 (Ainsworth et al. 2025).

The 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 (Hultgren et al. 2025), the amount of precipitation, and the duration of droughts (Furtak & Wolinska 2023) 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 (Lobell & Di Tommaso 2025). The EU has thus far experienced more of this impact than the U.S. (Lobell & Di Tommaso 2025); 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 (Ting et al. 2021), and despite the current "warming hole," modeling of the total U.S. agriculture outputs to inputs under SSP2-4.5 predicts a loss of 5.6% in 2025, suggesting that climate change is already negatively impacting domestic productivity (Ortiz-Bobea et al. 2025). 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. 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 (Ainsworth et al. 2025). Water stress then exacerbates heat stress and loss, particularly for crops with the C_3 photosynthetic pathway (Ainsworth & Long 2021; Stella et al. 2021; Lobell & Di Tommaso 2025). 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 (Ainsworth & Long 2021). Increased heat stress during flowering, for example, can negatively impact fruit and seed production (Barnabas et al. 2008; Zhu et al. 2022).

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 agricultural footprint (Hanak et al. 2023; Deines et al. 2020). In California's Central Valley, for example, climate change contributed to 11% of the overall groundwater decline between 1980 and 2022 (Williams & Abatzoglou 2025). The warmer, drier climate results in greater evaporative demand (Overpeck & Bradley 2020), higher crop irrigation requirements (Zhang et al. 2025), lower mean precipitation (Partridge et al. 2023), and changes in snowmelt timing (Qin et al. 2020).

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 (Derner & Augustine 2016). Increased temperatures can result in heat stress on livestock, reducing their welfare and productivity (Thorton et al. 2022). 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 billion (Wankar et al. 2021). Other livestock species show similar sensitivity to temperature stress (Schauberger et al. 2019, Izar-Tenorio et al. 2020). The higher precipitation and flooding events that are exacerbated by climate change will also harm livestock health and productivity (Crist et al. 2020; Thorton et al. 2022).

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 (Jackson & Rosenberg 2010). 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 (Parsons et al. 2022). Other climate change impacts on human health, including for workers, are described in this comment's responses to Chapters 6 and 10.

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. 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 increased overwinter survival (e.g., corn earworm). 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. Changing plant tissue chemistry also influences pest responses. Pest damage can increase because of reduced plant defenses and higher consumption of lower nutrient tissue (Subedi et al. 2023). 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. Taub et al. 2008 conducted a metanalysis that revealed that protein and micronutrient density decreases in grains under higher CO_2 conditions. 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.

Even if plant breeding and genetic modification of crops could help mitigate nutritional losses, as suggested by the 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 (Ainsworth et al. 2025) 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 will be necessary will inevitably lag the climate impacts needing mitigation (Pixley et al. 2023). 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.

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% (Hultgren et al. 2025). Overall, the fertilization effect only diminished losses by 5 to 10% and pest and pathogen impacts are not incorporated into these numbers (Hultgren et al. 2025). Similar scale losses across many regions will mean global social and supply chain disruptions (He et al. 2020).

The 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 CWG Report relies. The CWG Report cites Ortiz-Bobea (2019 [*sic*] 2020) to suggest that climate change causes no decrease in U.S. farmland values, but the author of that paper also looked more directly at yield impacts of climate change in another publication (Ortiz-Bobea et al. 2019) and found that in fact climate change induced heat and water stress negatively impact yields of U.S. rain-fed crops. Reliance on selective, indirect land value data rather than studies on the direct impacts of climate change on agricultural yields suggests the CWG Report authors deliberately included only a subset of data supporting supposed climate change benefits.

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Chapter 10: Managing risks of extreme weather (pages 110-115)

The CWG Report's characterization of management of extreme weather risks 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 (Ara Begum et al. 2022). The Report relies solely on Billion Dollar Disasters as a metric for evaluating extreme weather impacts, disregarding the numerous other data sources and metrics used to estimate societal damage such as morbidity (Baker et al. 2021), mortality (Ebi et al. 2022), crop yields (Kuwayama et al. 2018), and satellite imagery of floods (Tellman et al. 2021). 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, additionally including cardiovascular, respiratory and mental diseases (Ma et al. 2020). And the CWG Report misleadingly cites a 2015 study regarding trends in cold- and heat-related deaths without including the follow-up study finding that absent deep and rapid emission reductions, increased heat-related deaths will outpace any reduction in cold-related deaths (Gasparrini et al. 2017).

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 renewable energy technologies in place of fossil fuel generation – thereby addressing the root cause of the increasing hazards. Adaptation focuses on measures that reduce people's vulnerability and exposure to the hazards – for example changing buildings to withstand flooding and fires or planting drought-resilient crops. Both strategies are necessary to address climate risks (Lawler et al. 2013; Gupta & Shukla 2024). Near-term harmful impacts will intensify through 2030 regardless of emissions reductions, with each U.S. region facing specific combinations of risks, from infrastructure damage and species shifts in the Northeast to sea level rise in the Southeast and diminished water supplies across the West (Jay et al. 2023).

The CWG Report 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 (Parker et al. 2020; Brown et al. 2019; Ebi 2024), 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 (Young & Hsiang 2024). 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 (Semenza et al. 2022). 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 temperatures over 35°C) that are intolerable to the human body (Raymond et al. 2020) and islands made uninhabitable due to sea level rise and lack of freshwater (Kane & Fletcher 2020).

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Chapter 11: Climate Change, the Economy, and the Social Cost of Carbon (pages 116-128)

The literature underpinning economic impacts of climate, 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 (National Academies 2017; Rennert et al. 2022; EPA 2023). By focusing on specific studies in isolation, the CWG Report 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.

11.1.1. 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 such measures. Regardless, recent studies quantify macroeconomic damages as

approximately six times larger than previously estimated (Carleton et al. 2022; EPA 2023; Bilal & Känzig 2025).

11.1.2. 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 (Burke et al. 2024; Carleton et al. 2022; Kalkuhl & Wenz 2020; Gould et al. 2025). Moreover, localized declines in cold-related deaths can mask substantial increases in heat-driven morbidity and health care demand (Moore et al. 2024). 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 (Rennert et al. 2022). No credible analysis finds that the optimal policy is inaction, a finding that has held from the Stern Review (2006) through to and including Tol's recent study (2024) cited in the CWG Report.

11.2.1. 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 methodologies (e.g., structural models, empirical studies, and expert elicitation) converge on consistent values (Moore et al. 2024; Rennert et al. 2022; EPA 2023; Howard and Sterner 2017).

11.2.2. 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 (OMB 2023; EPA 2023). 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.

11.2.3. 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 (Moore et al. 2024). 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 (Qiu et al. 2025), while another recent study suggests this impact may still be underestimated by more than 90% (Alari et al. 2025). This is one of many impacts not yet incorporated into mainstream SCC estimates (EPA 2023), reinforcing that these are lower-bound estimates.

11.2.4. 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. 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 (Weitzman 2014; Wagner & Weitzman 2018). 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 (Dong, Tol & Wang 2025).

11.2.5. 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 (Env. Canada 2025; OMB 2023; EPA 2023).

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Chapter 12: Global climate impacts of U.S. emissions policies (pages 129-131)

The last chapter of the CWG Report is not about climate science but rather climate policy, specifically the global effort to limit carbon dioxide emissions. The authors discuss what they term “the scale problem,” arguing that the United States alone cannot reduce emissions enough to halt the projected rise in global temperatures this century. This is a red herring: it ignores the significance of U.S. emissions not just currently but cumulatively, the role of U.S. action in influencing actions of other countries, and the real, significant impacts of incremental reductions (or increases) in emissions.

Contrary to the CWG Report’s Chapter 12 narrative summary, the United States currently contributes significantly to annual global carbon dioxide emissions: at a share of 12%, it was the second largest emitter globally in 2023 (Crippa et al. 2024, EDGAR database). Furthermore, as the CWG Report notes, carbon dioxide’s atmospheric lifetime means that emissions continue to contribute to warming for many years. In this light, the United States is cumulatively responsible for 21% of global CO_2 emissions (including the land sector) from 1851 to 2023 (Jones et al. 2024), more than any other country. U.S. motor vehicle emissions alone are larger than the carbon dioxide emissions of all but 5 countries. Using the same dataset as Buma et al. (2025) we calculate that 24% (0.33°C) of current warming above preindustrial temperature is a result of U.S. greenhouse gas and aerosol emissions. From any angle, it is clear that the United States is a major emitter and that U.S. actions to significantly and rapidly reduce greenhouse gas emissions

are essential to limiting global warming, including actions EPA has taken following its 2009 Endangerment Finding.

The CWG Report attempts to argue that carbon dioxide's long atmospheric lifetime means that action to reduce greenhouse gases now is futile because the benefits will occur too far in the future; this is invalid for at least two reasons. First, there is no justification for ignoring future impacts. Second, other greenhouse gases have varying atmospheric lifetimes. Pursuing currently available measures to mitigate Short Lived Climate Forcers (SLCFs) would have the near-term benefits of avoiding a quarter of a degree of warming by midcentury and more than half a degree by 2100 (Ocko et al. 2021). The immediate measurability of the impact of emissions reductions is an irrelevant criterion, and is inconsistent with measures to reduce other types of emissions. For example, controls for NAAQS compliance are based on model outputs, and only in the aggregate of all controls implemented are the actual results known.

To halt the progression of warming, global net greenhouse gas emissions must reach zero (Canadell et al. 2021). This is widely acknowledged and understood. It was a driving factor towards the development of the Paris Agreement, which for the first time held all countries to account for their greenhouse gas emissions and to provide nationally determined contributions (NDCs) outlining their commitments to reduce emissions in efforts to limit warming to 1.5°C (Article 2.1a of the Paris Agreement). Keeping this goal within reach, or at least limiting overshoot, means that nations, including the United States, must rapidly enact policies to reduce and eventually eliminate emissions of greenhouse gases by increasing deployment of clean energy resources, phasing out uncontrolled sources of fossil fuel emissions, and taking other steps. As we outline below, parties to the Paris Agreement have committed to reduce their emissions, and efforts to implement these commitments have progressed much further than what is outlined in the CWG Report. These realities underscore, rather than diminish, the importance of U.S. actions to reduce emissions.

There is already evidence that the authors' premise of the ineffectiveness of U.S. climate policy is incorrect. The description of the impact of the Paris Agreement in Lomborg 2016, cited in the CWG Report, is highly out of date and fails to reflect the significant market and policy developments of the last decade. Under the Paris Agreement and prior initiatives under the United Nations Framework Convention on Climate Change, Parties have made significant progress in limiting global emissions of carbon dioxide. In 2010, projections of the global temperature increase were between 3.7-4.8°C (IPCC 2018). Under initial commitments made in advance of the Paris Agreement's adoption in 2015, temperature projections in 2100 were reduced to 3.0-3.2°C (UNEP 2015). By 2021, these projections were reduced to 2.6-2.7°C if the NDCs and long-term plans announced under the Paris Agreement are fully implemented (UNEP 2021). Projections based on current policies show an estimated warming of 2.4°C in 2100 (IEA 2024). In fact, if all countries follow through with additional policies to achieve their stated long-term net-zero goals, projections for the temperature increase in 2100 reach as low as 1.7-2.1°C (UNEP 2022). These shifts over time in temperature projections demonstrate that the

combination of efforts by individual countries and other actors to reduce emissions are making a meaningful difference in global emissions and resulting warming.

U.S. participation in successful efforts to reduce other harmful pollutants underscores the interconnection of domestic efforts and international collective action. For example, Chlorofluorocarbons (CFCs) are limited both on international (via Montreal Protocol) and domestic levels (via the Clean Air Act) due to their destruction of stratospheric ozone (Metz et al. 2005) and the resulting consequences for ultraviolet radiation at the earth's surface. The United States contributes a portion of the global emissions, and as a result of international agreement on the Montreal Protocol and corresponding domestic policies, CFC emissions have remained essentially constant and may even have decreased slightly in the southern hemisphere where effects of ozone depletion were larger. Without this agreement, ultraviolet index values would have increased by approximately 20% between the early 1990s and 2015, and would approximately quadruple by 2100 (McKenzie et al. 2019). Similarly, atmospheric concentrations of mercury, a neurotoxic pollutant that undergoes long-range transport and deposition to remote ecosystems, have decreased due to emissions reductions from Europe, North America, and China (Feinberg et al. 2024).

The Report's argument that the United States' partial share of greenhouse gas emissions means that reducing our emissions will not make a difference in climate change impacts is wrong. It ignores the realities of international diplomacy, collective action, and global markets where U.S. leadership in setting ambitious environmental polices increases pressure for others to follow in our footsteps and economic opportunities for U.S. businesses in global markets. And it ignores the incremental nature of climate impacts. Every fraction of a degree of warming avoided means dangers thwarted, suffering prevented, and lives saved.

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IV. Reliance on the CWG Report in Any Agency Action Would Be Arbitrary and Capricious and Unlawful

For all of the foregoing reasons, any utilization of the legally and analytically flawed and biased CWG Report by DOE, EPA, or other federal agencies—including in rulemaking proceedings, environmental review documents, permit proceedings, or other agency action—would be arbitrary and capricious and unlawful. Under the Administrative Procedure Act's judicial review standard, 5 U.S.C. § 706(2), an agency action is unlawful if it relies on faulty[16] or

[16] *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

biased data,[17] fails to appropriately consider countervailing evidence,[18] 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 CWG Report's findings, as explained above, any agency action that relies in significant part on the CWG Report would lack a rational foundation and thus be unlawful.[19]

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");

[17] *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").

[18] *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.").

[19] *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.").

REQUEST FOR CORRECTION

Under the Information Quality Act ("IQA"), as implemented through the Office of Management and Budget ("OMB") and DOE's guidelines, EDF includes with these public comments a Request for Correction, asking DOE to immediately withdraw the CWG Report, respond to each of the cited inaccuracies, and produce an updated report adhering to DOE's information quality standards.

The 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. DOE's IQA guidelines were initially published in 2002, *see* 67 Fed. Reg. 8452 (Feb. 22, 2002), and more recently updated to incorporate additional best practices, *see* 84 Fed. Reg. 53124 (Oct. 4, 2019). The current guidelines set forth data quality standards for "any public dissemination of information under the control of DOE." DOE, *Final Report Implementing Updates to the Department of Energy's Information Quality Act Guidelines* 13 (2019) ("DOE IQA Guidelines");[20] *see also id.* ("'Information' means any communication or representation of knowledge such as facts or data.").

As explained below, DOE's publication of the CWG Report constitutes dissemination of information that is plainly subject to the requirements of the IQA and implementing guidelines. The CWG Report violates DOE's information quality standards in myriad ways, and utilization of this inaccurate information by DOE and EPA is causing significant harm to EDF and its members, and the American public more broadly. The inaccurate and biased information in the CWG Report should be immediately corrected as described below to comply with all applicable information quality requirements. And pending correction, DOE should immediately withdraw the Report, and DOE, EPA, and other federal agencies should halt any ongoing actions or proceedings that rely on or incorporate the CWG Report's inaccurate information.

I. Description of Information That Violates Quality Standards and of Violations

This Request for Correction concerns a report authored by DOE's Climate Working Group, entitled *A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate* ("CWG Report"), dated July 23, 2025, which DOE disseminated to the public on July 29, 2025 via official press release[21] and publication on its website.[22] DOE subsequently published notice of a public comment period on the CWG Report in the Federal Register. *See* 90 Fed. Reg. 36150 (Aug. 1, 2025). The CWG Report itself expressly states that it was "disseminated by the

[20] *Available at* https://www.energy.gov/cio/articles/2019-final-updated-version-doe-information-quality-guidelines.
[21] Press Release, https://www.energy.gov/articles/department-energy-issues-report-evaluating-impact-greenhouse-gasses-us-climate-invites.
[22] *See* https://www.energy.gov/sites/default/files/2025-07/DOE_Critical_Review_of_Impacts_of_GHG_Emissions_on_the_US_Climate_July_2025.pdf.

Department of Energy" and thus must comply with the IQA and "information quality guidelines issued by the Department of Energy." CWG Report at iii; *see also* DOE IQA Guidelines at 13 (defining "dissemination" as "agency initiated or sponsored distribution of information to the public").

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").[23] 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. 2664 (Jan. 14, 2005), 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 CWG Report fails to adhere to applicable information quality standards in multiple respects. As explained in detail in EDF's accompanying comments, *see supra* at Comment Sections I-IV, which this Request for Correction incorporates, the CWG Report is riddled with inaccuracies, tainted by bias, reliant on unreputable sources, and marked by transparency failures and undue influence, and it has not been appropriately peer-reviewed. Information quality violations are also further summarized below.

The 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. As detailed in EDF's accompanying comments, *supra* at Comment Section II, 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. The failures of DOE and the CWG to disclose materials related to the development of the 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.

[23] *Available at* https://www.whitehouse.gov/wp-content/uploads/2019/04/M-19-15.pdf.

The 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 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. 2664 (Jan. 14, 2005). *Id.* at 8.

The CWG Report violates the DOE IQA Guidelines' standards regarding objectivity because its conclusions are wrong, misleading, or incomplete. As detailed in the accompanying comments, *supra* at Comment Sections II.B and III, 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 CWG Report does not accurately reflect the overwhelming scientific evidence of the causes and harms of climate change. The CWG Report also violates the DOE IQA Guidelines' standards regarding objectivity because, as explained in the accompanying comments, *see supra* at Comment Section II.A, the CWG is not fairly balanced and its findings were inappropriately influenced by Secretary Wright. In addition, as explained *supra* at Comment Section II.B, the CWG Report fails to comply with OMB peer review standards, which constitutes an additional violation of the DOE IQA Guidelines.

Because the 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. But even if the Report were presumed to be objective, EDF's detailed analysis of the CWG Report, which is supported by citations to a robust body of peer-review literature, effectively rebuts any such presumption. *See id.* (providing that a request for correction may rebut a presumption of objectivity through a "persuasive showing" that the data is not objective).

The 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 a significant precedent, model or methodology." 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 CWG Report clearly constitutes "influential information," since EPA relied on the CWG Report as a critical basis of its proposal to rescind the Endangerment Finding, 90 Fed.

Reg. 36288 (Aug. 1, 2025)—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.[24] It is therefore crucial that the CWG Report reflects the best available science. It is also foreseeable that DOE, EPA, and other agencies will rely on the CWG Report in future actions relating to climate change. Given the 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 CWG Report abjectly fails to comply with the DOE IQA Guidelines for information generally, let alone heightened standards for "influential information."

II. EDF's Significant Interest in DOE's Correction of the Non-Compliant Information

EDF has significant interests in correction of the CWG Report's information-quality failures. EDF and its members are harmed by the CWG Report's biased and inaccurate analysis in furtherance of its purpose to undermine the scientific consensus on climate change, which cuts to the core of EDF's mission and its members' interests. A federal agency commissioning and publishing a report like this one that purports to contradict the weight of peer-reviewed studies in a critical field of study and reverses course on factual conclusions that the federal government has maintained for over a decade, with significant implications for policymaking, is of monumental public import. The ramifications of DOE, other federal agencies, and other governmental and private entities relying on the CWG Report's flawed and biased findings to inform future decisionmaking could include substantial health, economic, and environmental harm to the American people, including EDF's members. In particular, EDF and its members urgently need the CWG Report to be withdrawn and corrected because of EPA's substantial real-time reliance on the Report in its proposed rescission of the Endangerment Finding. Expedient correction is crucial to inform comments by EDF and other members of the public on EPA's proposal, due September 22, 2025, and to inform EPA in its ongoing rulemaking proceeding.

III. Requested Corrections

EDF requests that each of the inaccuracies and other information-quality failures identified in this Request for Correction and EDF's accompanying detailed comments be immediately corrected in accordance with EDF's comments to comply with all applicable information quality requirements. And pending correction, DOE should immediately withdraw the Report and halt any ongoing actions or proceedings that rely on or incorporate the CWG Report's inaccurate information.

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[24] *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.

Thank you for your consideration. Should you have any questions or wish to discuss these issues further, please contact Stephanie Jones, Senior Attorney, Environmental Defense Fund, at (202) 572-3543 or sjones@edf.org.

Respectfully submitted,

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Appendices:

EDF is submitting to the record the following sources cited in these comments.

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