September 2, 2025

Secretary Chris Wright
U.S. Department of Energy
1000 Independence Avenue SW
Washington, D.C. 20585

RE: A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate Docket No. DOE–HQ–2025–0207

Dear Secretary Wright:

Thank you for the excellent report on the state of climate science from DOE's Climate Working Group (CWG) contained in "A Critical Review of Impacts of Greenhouse Gas Emissions on the U.S. Climate" (henceforth, "Critical Review" or "CR" with page number when cited directly). You have assembled a team of highly qualified scientists and their ability to encapsulate the vast body of climate change literature into such a readable volume is to be commended. It is a breath of fresh air to read a straightforward, comprehensive summary of the best available science from the Intergovernmental Panel on Climate Change (IPCC) and National Climate Assessments (NCA) with an honest detailing of the confidence levels and uncertainties.

Multiple-use Advocacy strongly supports the efforts of DOE to honestly assess climate science and the effectiveness of climate change policy and its impact on the economy. We are representing various oil and natural gas companies and a trade association with our comments. We are proud that the oil and natural gas industry has a three-and-a-half decade record of success reducing methane emissions. The Biden Administration's Environmental Protection Agency (EPA) credited natural gas and renewable energy in the electric power sector for the fact that total U.S. greenhouse gas (GHG) emissions are 17% below 2005 levels,[1] yet Energy Information Administration (EIA) data have consistently shown that natural gas has reduced more GHG emissions than wind and solar combined, delivering about 61% of the reductions to wind and solar energy's 39%.[2]

As you state in the foreword, the public conversation has veered far from the actual science. We commend your efforts to educate the public on the true state of the science, which usually runs counter to the alarmist narrative in the media propagated by activists. Those expressing criticism of the orthodox climate change narrative are dismissed as deniers, even if they are concerned about addressing climate change in a measured, scientific manner, as you are. You have had the courage to resist that pressure and by releasing this Critical Review, you are forcing those who purposefully refuse to address the full complexity of climate change science to engage if they wish to continue to shape U.S. climate change policy. You are indeed initiating a full, honest conversation about the actual science contained within the IPCC reports and NCAs, not just the political summaries agreed to by governments. This public comment period is a brilliant way to force a conversation

[1] *Data Highlights: Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022*, EPA, April 2024, p. 1.
[2] *U.S. Energy-Related Carbon Dioxide Emissions, 2023—Report Appendix and Methodology*, EIA, April 2024, p. 11.

with those who incorrectly assert that the science is settled. By simply highlighting the science behind the IPCC and NCA reports, the Critical Review clearly shows that it is indeed far from "settled."

We have watched in dismay over the years as scientists who dare to challenge exaggerated claims about a climate crisis are shunned and silenced. Climate alarmists have developed a positive feedback loop using pressure and reputational attacks to silence countervailing opinions; scientific journals refuse to accept papers that do not contribute to the alarmist narrative; and government funding dries up for those scientists who offer a measured analysis of climate change or dare to offer unorthodox conclusions. Scientists are pressured to "downplay or even to misrepresent [their] research on the roles of climate and society in the economic impacts of extreme weather" because nuanced studies "might distract from efforts to advocate for emissions reductions."[3] Scientists are shunned for publishing accurate research that contradicts the alarmist narrative, so they purposefully follow the formula for getting published by, "shaping your research in specific ways to support pre-approved narratives than it is about generating useful knowledge for society."[4] No wonder a large segment of the public distrusts scientists and academia. They have watched scientists turn from dispassionate, objective seekers of truth to advocates for particular scientific and policy outcomes. We applaud your courage to stand up to the fray, and only wish there were more vocal support from the oil and natural gas industry for your efforts.

Should those who have shirked engagement with the Critical Review's authors and others who are critical of the climate science orthodoxy continue to hide behind the very unscientific concept of a "scientific consensus" on climate change and refuse to engage in this comment period, they will choose to disengage from current U.S. climate change discourse. If that turns out to be the case, their disengagement should be interpreted as an inability to address the uncertainties, biases, and discrepancies in the IPCC and NCA science itself.

Further, the climate policies that have flowed from a skewed view of climate science and the "climate catastrophe" narrative would truly threaten human well-being as they seek to limit access to abundant, affordable energy. We appreciate your leadership reversing the misguided policies that flow from a misapplication of climate science and hope that our comments are helpful.

Comments

In many ways, we do not have much to comment on in the Critical Review, as the sections are clearly laid out, succinctly stated, and reflect a thorough survey of relevant research. Were we to comment on every section, we would often be agreeing wholeheartedly. Therefore, we focus our comments just on those sections for which we have a specific suggestion for improving the report, where we think particular emphasis is warranted, and where we suggest other scientific studies that could be cited to strengthen the points being made. We begin by addressing the blatant attempt to derail DOE's constructive report through unsubstantiated litigation.

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[3] "Why Climate Misinformation Persists: Noble lies, conventional wisdom, and luxury beliefs," Roger Pielke, Jr., *The Honest Broker on Substack*, July 25, 2024.
[4] "A climate scientist questioned his findings. It didn't go well," Stephanie Hanes, *The Christian Science Monitor,* June 10, 2024.

Litigation

We are dismayed with initial attempts by environmental groups to litigate, arguing that the Critical Review is an advisory document that must go through the Federal Advisory Committee Act (FACA) process. The litigation is an attempt to control speech in violation of basic tenets of scientific inquiry and the First Amendment, besides the fact that the plaintiffs do not have any standing because they cannot show any harm from DOE publishing a factual report and seeking public comment. The Obama and Biden Administrations held numerous panels that were providing direct policy advice, such as the social cost of carbon working group, yet they did not provide any opportunity for nominations or disclosure. There was the Biden Administration's White House Climate Science Roundtable on Countering "Delayism" and Communicating the Urgency of Climate Action. Information about this roundtables was in short supply, including whether it met more than once. The readout from the meeting held on February 25, 2022 framed it as a two-hour roundtable "to discuss the scientific understanding of why arguments for delaying action on climate change are appealing and how they can be countered effectively."[5] The committee failed to have balance in the participants and likely failed basic conflict-of-interest standards. Notable participants included Michael Mann and Naomi Oreskes, both well known for their advocacy. In violation of FACA, the head of the White House Office of Science and Technology Policy (OSTP) and Deputy Assistant to the President Dr. Alondra Nelson applauded the roundtable participants for providing knowledge to help inform and accelerate federal climate action. Another example is the High-Level Consultative Group (HLCG) announced on October 14, 2021.[6] Membership of the HLCG did not meet the balanced membership requirements of FACA, as it included the Natural Resources Defense Council, World Resources Institute, ClimateWorks, and Sierra Club.

We would also point out that the Critical Review is akin to a report that DOE has compiled to help inform its work, not a formal FACA advisory board. DOE is relying on the well-established IPCC and NCA processes, which have been relied on to inform U.S. climate policy for over three decades, while also buttressing them with recent studies. The Critical Review is a compendium of IPCC and NCA science, not a new scientific undertaking. The report is not subject to FACA because it does not provide any policy advice or recommendations to the Secretary, nor was it designed to. It is a sober factual analysis and as such, is not covered under FACA. DOE is going the extra step of enabling the public to comment on it, which is very much appreciated.

Politization of Climate Science

Section 3.2 treats the very important topic of how climate science is misused by policymakers. "Although the IPCC does not claim its emission scenarios are forecasts, they are often treated as such." (CR15) This is an understatement. It cannot be emphasized enough that the IPCC summaries are used incorrectly on a regular basis to support an alarmist climate crisis narrative that is simply not supported by the underlying science. The scientific reports compiled by the IPCC are not the problem; it is how they are summarized incorrectly by governments to advance a narrative and yes, as justification for more control by those very same governments over

[5] "Readout of White House Climate Science Roundtable on Countering "Delayism" and Communicating the Urgency of Climate Action," February 25, 2022.
[6] "U.S. State Department, Bezos Earth Fund, and The Rockefeller Foundation Announce Next Steps on Energy Transition Accelerator," Press Release from the Rockefeller Foundation, January 15, 2023.

increasingly more aspects of their citizens' lives, from what products they are allowed to purchase to rationing of energy through inflated prices caused by their climate change policies. One has only to observe how electricity prices are much higher in Germany, the United Kingdom, California, and other jurisdictions that have dictated renewable energy standards, cap-and-trade schemes, and other climate change policies.[7]

While we agree that the IPCC represents the best state of current research, the summaries are often misleading or misrepresentative of the science, as they are developed with the interference of policymakers advancing their particular agendas. But we also indeed fault lead IPCC scientists for not doing more to correct those overstated, alarmist narratives. We encourage the Trump Administration to engage actively in the IPCC, using the Critical Review, to help reverse the bias in the IPCC summaries for policymakers (or more correctly, summaries by policymakers, not scientists) that overstate alarmist interpretations and understate uncertainties in the science.

Discrepancies Between Model Projections and Observations

The Critical Review dispels the notion that climate science is settled by merely pulling out the uncertainties in the underlying IPCC reports, mentioning "uncertainty" and "uncertainties" 45 time in 150 pages. In some cases, uncertainty piles on uncertainty: "…there remains considerable uncertainty in how fast land processes are removing CO2 from the atmosphere, which in turn creates uncertainty in future atmospheric CO2 concentrations, which then produce uncertainty in climate model simulations of future climate change." (CR 18) The compounding of uncertainties should serve as a cautionary note to policymakers who quote model results as if they are reality. We look forward to policies from the Trump Administration that follow a realistic assessment of climate models.

The Critical Review does an admirable job showing how modeling projections consistently run hot and overpredict temperatures. It lays out in great detail how, "Comparisons of past scenario groups against observations show that IPCC emission projections have tended to overstate actual subsequent emissions." (CR15) For decades, models have overpredicted temperatures, both past and future. It is frustrating that so many scientists and policymakers continue to give credence to models that cannot even "predict" past temperatures, and there does not seem to be an effort to honestly calibrate the models based on past performance. We are left wondering how many decades can the modelers get it wrong before we stop believing the models? If they cannot explain the past, how can they possibly predict the future? We encourage the Trump Administration to lead on climate change, not in the manner demanded of the activists to impose heavy-handed climate change policies, but rather by compelling modelers to bring their models in line with reality before such models can be used to drive U.S. climate policies. Reliance on models has led to disproportionate alarmism that scares the public into believing the planet is boiling, to paraphrase the very unscientific U.N. General Secretary António Guterres.

[7] "Household electricity prices worldwide in March 2025, by country," Statista, accessed August 24, 2025; "Table of Average State Electricity (kWh) Prices," ElectricChoice, an Independent Comparison Site, August 21 2025.

To its credit, IPCC in the Sixth Assessment Report (AR6), "did not rely on climate model simulations in their assessment of climate sensitivity, relying instead on data-driven methods." (CR 27) The Critical Review admirably calls for more reliance on data and observations rather than models. However, to IPCC's discredit, "…despite the accumulation of evidence of excess model warming the IPCC assigns only medium confidence to the existence of a warming bias." (CR 36) It is well know that the models run hot (CR figures 3.2.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.9), with the example of the U.S. Corn Belt being almost comical, but IPCC AR6 chose not to assess the issue of models' consistent warming bias relative to observations. Likewise, IPCC assigns very high confidence to the fact that increases in heat events have resulted in increased human mortality and morbidity from heat events, yet is silent on the larger decrease in mortality and morbidity from cold events (CR 113), another display of bias from the IPCC.

Climate science also suffers from selection bias. Weather events are scrutinized, "that are more likely to have been made more severe by climate change" rather than those that climate change has made less severe, "creating a misleading impression about the impact of climate change on extreme weather" and, "can explain why attribution studies paint a more alarming picture than comprehensive IPCC assessments." We suggest that the Critical Review reference the work of Brown when detailing the problems of selection bias.[8]

The bias is compounded by the use of RCP8.5, an implausibly high scenario, as if it were "business as usual." Pielke and Ritchie (2020) report on the high frequency of studies that use RCP8.5 and liken such research to "science fiction" that is "imbalanced in an apocalyptic direction." Per Google Scholar, more than 50,000 published studies rely on or refer to the unreasonable RCP8.5 scenario, and over 10,000 rely on or reference the unreasonable SSP5 scenario. Such papers generate the large majority of media coverage that activists use to raise money. With all these examples of bias baked into the IPCC, DOE is right to fully examine that bias and refuse to fall into a so-called "scientific consensus" that quotes such studies uncritically. We urge the Trump Administration to unravel those unreasonable scenarios from all U.S. government publications informing prior public policy decisions and ensure they do not creep into future ones.

Further, the Critical Review discusses the uncertainties related to attribution of observed and modeled temperature increases to human activities. Far from settled is the separation of natural variability from anthropogenic causes. Again, hard data should be favored over models. For example, "A combination of tropospheric warming and stratospheric cooling is a commonly cited 'fingerprint' of anthropogenic climate change. Stratospheric warming since 2000 coincides with continued surface and tropospheric warming, a pattern that is not found in climate model simulations and is not apparently consistent with the anthropogenic fingerprint." (CR 39) The Critical Review highlights studies that over rely on fingerprinting rather than established statistical methods to explain empirical data. In many cases the data, though showing warming, is not consistent with anthropogenic warming. As the scientific method requires, data uncertainties and discrepancies require more scientific study, not a jump to preferred conclusions. Climate change policy that has huge implications for the economy and human welfare, such as transitioning to energy sources that are unreliable, hugely expensive, and increase energy poverty should not be undertaken when it cannot be shown more conclusively that the policies would have any actual

[8] "Do Climate Attribution Studies Tell the Full Story?" Patrick Brown, *The EcoModernist*, January 8, 2025.

benefit to the climate. Confusing natural warming with anthropogenic exacerbates the problem of hugely expensive climate policies that have no measurable benefit.

In fact, not only is attribution uncertain scientifically, it has been discovered to be more a litigation strategy than good science. Publicly revealed meeting notes from an infamous June 2012 meeting in La Jolla, California of lawyers, climate scientists, and activists with the goal to "shut down [fossil fuel] compan[ies]" conspired to advance scientifically spurious attribution as part of a lawfare and media strategy.[9] Attendees admitted that there are a "variety of vexing issues concerning the extent to which localized environmental impacts can be accurately attributed to global warming and how, in turn, global warming impacts might be attributed to specific carbon emitters or producers." Climate scientists at the meeting stated that, "If you want to have statistically significant results about what has already happened [on health impacts of climate change], we are far from being able to say anything definitive because the signal is so often overwhelmed by noise." Despite fully acknowledging the problems with attribution, attendees decided to pursue their strategy of litigation regardless.

Failure to match reality is not unique to modeled temperatures. Snow cover data compiled by the Rutgers University Snow Lab show increasing snow cover even as models continue to predict declining cover (CR Figure 5.7). Yet somehow the narrative in the media continues to be that snow could disappear from the Northern Hemisphere, as models that grab headlines take precedence over empirical reality.[10] Since the period from the 1940s to the 1970s was a cold period, both in terms of snow pack and Arctic ice, using the end of that period as a starting point for data sets showing declining snow pack or ice is a disingenuous exercise in cherry picking data, a way for biased climate scientists to show warming so that they can publish papers that grab attention and alarm the public. We applaud the Critical Review for helping to bring these discrepancies to light such as with Table 8.1 showing that of 33 weather impact categories, an anthropogenic signal is displayed with high confidence in only five categories and with medium confidence in only four.

The summary to Chapter 5 should serve as a cautionary tale to all policymakers who would impose draconian climate policies. Climate models are at best a guide that should not be taken as reality. We are fortunate in the United States that we have not gone as far as the United Kingdom or Germany in disrupting energy markets and imposing heavy costs on citizens. Policymakers serve both their current and future citizens much better by enabling them access to abundant, affordable energy and economic prosperity that will enable adaptation to climate change, whether from natural variability or human causes.

Policymakers serve their constituents better by engaging in policies of adaptation and mitigation. As pointed out (CR 110), technical advances such as improved weather forecasting and early warning systems have reduced losses from extreme weather events and heat-related mortality has dropped substantially with abundant, affordable energy that enables air conditioning. We need not helplessly stand by as the climate changes. Adaptation has been undervalued too long by those

[9] "Establishing Accountability for Climate Change Damages: Lessons from Tobacco Control," Climate Accountability Institute and Union of Concerned Scientists, June 2012.

[10] "Snow is disappearing as the planet warms. A new study shows who's losing the most," Rachel Ramirez, *CNN*, January 10, 2024. The study at issue only looks at spring snow over a short time period and uses modeling to fill in gaps in the data to support the thesis.

who would reduce GHG emissions by removing humanity's access to energy, pursuing highly attenuated means to address climate change when simple adaptations are available to us in the here and now.

Global Climate Impacts of U.S. Emissions Policies

Modeling from the Texas Public Policy Foundation (TPPF) using the Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC) strongly supports the conclusion in Critical Review Chapter 12 that U.S. climate policy actions have undetectably small impacts on the global climate, with those insignificant "benefits" far into the future.[11] Lest we seem hypocritical by quoting modeling runs after our criticism of models above, using MAGICC seems a good test of hypothetical policy on hypothetical impacts far into the future, since those potential impacts are derived themselves from modeling. The policies meant to address climate change should be subject to testing using those models.

TPPF's runs of MAGICC find that eliminating *all* U.S. CO_2 emissions from fossil fuels by 2030 would reduce worldwide CO_2 concentrations in 2050 by 11.4 parts per million (ppm) or 2.3% of worldwide concentrations, and would reduce the increase in mean worldwide temperatures by 0.052 degrees Celsius.[12] As that change falls within the measurement error for global temperatures, which is ±.1°C, not only is it not meaningful, it is not even measurable.

The chapter 12.2 discussion of the scale of U.S. motor vehicle emissions to total global emissions is likewise buttressed by the TPPF report. Of course, it is completely unrealistic to eliminate all fossil fuel use in the United States, as there are no alternatives that do everything that oil and natural gas do, especially when considering affordability. If eliminating all U.S. fossil fuel use has an insignificant impact on climate and hence, the public health of U.S. citizens, than any one source category has even less significance.

TPPF also ran MAGICC for all U.S. future power plant emissions and found an even less measurable 0.015°C impact on global temperatures by 2050. In the context of the example in the Critical Review, U.S. motor vehicle emissions, the insignificance is similar. U.S. electricity generation GHGs are roughly equivalent to vehicle emissions, and therefore, the insignificance is similar. The power sector contributes 1.43 billion metric tons of carbon dioxide equivalents ($GtCO_2e$)[13] while tailpipe emissions for all light-, medium-, and heavy-duty vehicles contribute 1.41 $GtCO_2e$.[14] We included heavy-duty trucks to get an even closer comparison to the TPPF MAGICC electricity scenario, whereas the Critical Review 12.2 does not include the heavy-duty category. Ours is merely a

[11] MAGICC is a well-respected climate modeling tool developed by recognized experts across the globe that has been used in past IPCC assessment reports. MAGICC is described in Meinshausen et al, (2011), with updates in Meinshausen et al. (2020).

[12] *The Materiality of U.S. CO_2 Emissions on Global Climate Change*, Brent Bennet, commissioned by the Texas Public Policy Foundation, June 2025.

[13] *Ibid*. p. ES-10.

[14] *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022,* EPA 430-R-24-004, April 11, 2024, p. 2-14. Light-duty trucks contribute about 646.6 million metric tons of carbon dioxide equivalents ($MMT\text{-}CO_2e$), medium-and heavy-duty trucks 404.1 MMT-CO2e and passenger vehicles 361.9 MMT-CO2e, for a total of 1,412.6 $MMT\text{-}CO_2e$.

refinement—the point is the same. The country could foolishly implement "net-zero" policies in the near- to medium-term to eliminate whole categories of GHG emissions and they would have no impact on global temperatures or benefit to public health and air quality.

As summed up on page 129, drastic policy actions in the United States will have negligible effects and only after long delay. "The practice of referring to unilateral U.S. reductions as 'combatting climate change' or 'taking action on climate' on the assumption we can stop climate change therefore reflects a profound misunderstanding of the scale of the issue." We find this point to be extremely important for any future U.S. climate policies. We would also note that nearly all U.S. federal, state, and local policies designed to reduce GHG emissions completely ignore the leakage impacts of those policies, such as shifting manufacturing and intensive energy use to countries like China, India, Indonesia, Vietnam, Russia, and Saudi Arabia that are less efficient users of energy, which results in a net increase in global GHG emissions. In the absence of alternative energy sources that do everything that oil and natural gas do, we could shut down all U.S. production and the result would be an huge outsourcing of our energy, and national security, to Venezuela, OPEC, and other countries that do not follow the strict environmental standards we have in the United States.

Social Cost of Carbon

We appreciate the succinct review of the shortcomings of the Social Cost of Carbon (SCC). The focus on just the costs of oil and natural gas without considering the enormous benefits of them has long been frustrating. We would argue that their ubiquitous use and obvious benefits—transportation, electricity, heating and cooling, manufacture and delivery of goods and services, as feedstock for countless products—are well above costs. The Tol (2017) paper "The Private Benefit of Carbon and its Social Cost" cited in the Critical Review is a well articulated treatment of the issue. Other studies referenced in the Critical Review, particularly from Dayaratna et al., show how Integrated Assessment Models (IAM) such as DICE and FUND, which the Biden Administration used to increase the SCC five-fold in 2023, can generate widely diverging SCC estimates from positive to negative based on various shifts in assumptions, making the entire process susceptible to political gaming.

Likewise, the SCC also fails to reflect the substantial benefits of CO_2-induced warming on crop growth, with the Biden Administration even boosting the SCC five-fold, "based largely on a very pessimistic 2017 estimate of global agricultural damages from climate warming." (CR 106) Yet crop yields continue their upward climb. In fact, the underlying SCC calculations are so fraught with arbitrary judgements and opinion as to be meaningless. Only by the use of an inflated, biased SCC was the Biden Administration able to justify its overly costly climate change regulations. We encourage the Trump Administration to develop a more realistic estimate of the SCC that acknowledges the benefits of fossil fuels and CO_2-induced global greening, or scrap its use altogether.

Natural Disasters

Listening to media reports and the narrative from climate change activists, the public can be forgiven for believing that every natural disaster is caused by climate change. In fact, as the Critical

Review highlights, "Most types of extreme weather exhibit no statistically significant long-term trends over the available historical record." (CR 46) For example, the public believes that wildfires are more frequent, damaging, and deadly because of climate change. The science simply does not support that conclusion, and as stated in the first sentence of Section 6.8 on wildfires, the IPCC wisely does not attempt to attribute the anthropogenic contribution. The number of fires and area burned is not increasing, as the Critical Review shows. What is increasing is population growth and encroachment of development on forested lands, particularly in arid climates of the western United States.

May we suggest strengthening section 6.8 with reference to Doerr/Santín, which finds that wildfires are within historic norms and where they have been more extreme, such as in California, they have been shown to be affected much more by the proximate cause of poor forest management than climate change.[15] Miller/Stafford finds an increase in burn severity in Californian mixed conifer forests, but attributes that largely to decades of fire suppression and other forest management practices, not climate change.[16] Both studies give important context to enable the public to sift through alarmist media reports about the latest fire being "caused" by climate change.

In section 8.6, the Critical Review does a good job of explaining the difficulties of extreme weather attribution. It references Sardeshmukh (2015) on the need for caution regarding extreme weather events. We'd like to emphasize their findings that attribution studies ignore, "distinctively skewed and heavy-tailed aspects of the probability distributions of daily weather anomalies." The authors warn that, "the issue, at its core, is the meaningfulness of assigning quantitative probabilities to events that have never occurred or have occurred only a few times in a finite record."[17] As the Critical Review correctly points out, attribution methods "cannot fully account for all uncertainties, and thus ultimately expert judgement is required to give a calibrated assessment of whether a specific cause is responsible for a given climate change." (CR 83) Given the bias of many climate scientists, this "expert judgement" is simply subjective opinion that fails to meet basic scientific standards for empirical evidence.

The Critical Review is right to call out World Weather Attribution (WWA), which even admits that their, "rapid attribution studies do not follow a peer review process" and are rushed out within days or weeks of weather events in a successful effort to influence the "public and policymakers while the impacts…are still fresh."[18] No wonder a segment of the public cannot discern between normal weather and climate change; they are being conditioned to believe that every weather event is caused or made worse by climate change. Clearly, attribution science fails to meet basic scientific norms and uphold the independence required of true scientific inquiry.

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[15] "Global Trends in Wildfire and Its Impacts: Perceptions Versus Realities in a Changing World," Stefan H. Doerr and Cristina Santín, Philosophical Transactions of the Royal Society of London, Series B, Biological Sciences 371, no.1696, 2016.
[16] "Trends in Wildfire severity: 1984 to 2010 in the Sierra Nevada, Modoc Plateau, and Southern Cascades, California, USA," Jay Miller and Hugh Stafford, *Fire Ecology,* 8, pp. 41-57.
[17] "Need for Caution in Interpreting Extreme Weather Statistics," Prashant Sardeshmukh, Gilbert P. Compo, and Cécile Penland, *Journal of Climate*, December 1, 2015.
[18] "'Blame it on Climate Change': What Attribution Studies Tell Us and What They Don't," PreventionWeb, July 18, 2023.

Economic Impacts

Chapter 11 on economic impacts is well articulated and a welcome antidote to extremely costly policies being proposed today that have only theoretical benefits far into the future. The best data, much of which you cite in chapter 11, show very little economic impact from climate change in the future and "…economists consider climate a relatively unimportant factor in economic growth…" (Critical Review 120), as even IPCC AR5 attests.

We suggest buttressing that chapter with recent work from Bjorn Lomborg, which finds that, "Scenarios set out under the UN Climate Panel (IPCC) show human welfare will likely increase to 450% of today's welfare over the 21st century. Climate damages will reduce this welfare increase to 434%."[19] That amounts to a 3.6% reduction in total GDP out to 2100 in a world that is much wealthier than today's world. His findings are in line with the work of Nordhaus that you cite, as well as IPCC AR5. (p. 117 of the Critical Review) In the same study, Lomborg discusses how global costs from extreme weather have declined 26% over the last 28 years.[20]

In conclusion, we very much appreciate the Critical Review and how well it brings balance to the public conversation on climate change. The criticism will be intense, but this conversation is too important to leave to the loudest voices who deny the true state of climate science and seek to impose a climate orthodoxy. Thank you for having the courage to boldly take on the challenge.

Sincerely,

Kathleen M. Sgamma
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[19] "Welfare in the 21st century: Increasing development, reducing inequality, the impact of climate change, and the cost of climate policies", Bjorn Lomborg, *ScienceDirect, Volume 156,* July 2020.
[20] *Ibid*.