September 9, 2026

RFI Response: Proposed Amendment to NCA5
Comments of the Competitive Enterprise Institute
Via federalregister@ostp.eop.gov

Dr. Matthew Wielicki
Director, U.S. Global Change Research Program
Office of Science and Technology Policy

Dear Dr. Wielicki,

Thank you for the opportunity to comment[1] on the US Global Change Research Program's (USGCRP) proposed amendment[2] to the Fifth National Climate Assessment.[3] CEI strongly supports the proposed amendment, which "corrects the interpretation and federal use of the Fifth National Climate Assessment (NCA5) findings that depend upon Representative Concentration Pathway 8.5 (RCP8.5), Shared Socioeconomic Pathway 5-8.5 (SSP5-8.5), or equivalent high emissions pathways."[4]

Key Recommendations:

- Add reference (Ritchie and Dowlatadabadi, 2017) on RCP8.5 coal market assumptions.
- Clarify that SSP3-7.0 Does Not Constitute a Plausible Baseline Future.
- Revise Description of NCA5's Position on SSP5-8.5.
- Trace the RCP8.5 Path of Mischief.
- Clarify that RCP8.5 Was Always Beyond the "Upper Edge of Plausibility."
- Quantify RPC8.5 Assumptions.
- Put More Weight on RCP8.5's Inherent Implausibility than ScenarioMIP's Pronouncement.
- Do Not Fund or Request More Studies Based on Implausible Scenarios.
- Develop a Companion Amendment to Address the "Hot Model" Problem.

Overview of the Proposed Amendment

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[1] Office of Science and Technology Policy (OSTP), United States Global Change Research Program; Availability for Public Comment on the Proposed Amendment to the Fifth National Climate Assessment (NCA5), 91 FR 54893, August 25, 2026, https://www.govinfo.gov/content/pkg/FR-2026-08-25/pdf/2026-17289.pdf (hereafter "OSTP RFI").
[2] USGCRP, Proposed Amendment to the Fifth National Climate Assessment (NCA5) Implausible High-Emission Scenario Dependence, Gold Standard Science, and Observational Grounding, August 2026, https://www.noaa.gov/sites/default/files/2026-08/NCA5-Proposed-Amendment-August-2026.pdf (hereafter "USGCRP, proposed amendment").
[3] USGCRP, Fifth National Climate Assessment (NCA5), Published November 14, 2023; Revised June 6, 2024, https://toolkit.climate.gov/sites/default/files/2025-07/NCA5_2023_FullReport.pdf.
[4] USGCRP, proposed amendment, p. 1.

The proposed amendment would make the following critical changes to NCA5:

1. "RCP8.5, SSP5-8.5, and equivalent high emissions pathways do not constitute plausible baseline futures for federal planning, policy analysis, or risk assessment."[5]
2. "Any NCA5 result based on RCP8.5, SSP5-8.5, or equivalent high forcing should be treated as an implausible-scenario output and should not be used as a policy, planning, regulatory, public-communication, or grant-making premise unless independently reproduced under a plausible current-policy, or updated scenario and evaluated against observations."[6]
3. "Any NCA5 figure, map, table, caption, callout, chapter highlight, regional summary, or impact statement that presents a high scenario result should carry the scenario label and the implausibility caveat in the same sentence, caption, box, or summary where the projected impact is communicated."[7]

The scope of the proposed correction is "technical and targeted."[8] The amendment "would not withdraw NCA5 in its entirety."[9] "NCA5 findings may continue to inform federal work when they are observationally grounded or reproduced under plausible scenarios."[10] Nor would the amendment prohibit future use of high emission scenarios. Even scenarios at the "upper edge of plausibility" can have "scientific utility" for "exploratory research" such as "climate model experimentation and intercomparison" and "climate system sensitivity" testing.[11] What is illegitimate, according to USGCRP, is using such pathways as "expected, baseline, business-as-usual, likely, central, or policy-relevant federal planning futures."[12]

The correction is also targeted in the sense that it aligns with ScenarioMIP's recent decision to retire SSP5-8.5 and RCP8.5 as implausible scenarios.[13] ScenarioMIP is the international scientific committee of the World Climate Research Programme[14] that develops emission scenarios for the Intergovernmental Panel on Climate Change (IPCC). In July, ScenarioMIP proposed five new emission scenarios for the IPCC's forthcoming Seventh Assessment Report (AR7), with a new high emission scenario "expected to result in forcings below SSP5-8.5."[15]

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[5] USGCRP, proposed amendment, p. 2.
[6] USGCRP, proposed amendment, p. 3.
[7] USGCRP, proposed amendment, p. 3.
[8] USGCRP, proposed amendment, p. 5.
[9] OSTP RFI.
[10] USGCRP, proposed amendment, p. 5.
[11] USGCRP, proposed amendment, p. 3.
[12] USGCRP, proposed amendment, p. 1.
[13] Detlef van Vuuren et al. 2026. The Scenario Model Intercomparison Project for CMIP7 (ScenarioMIPCMIP7). *Geoscientific Model Development* 19: 2627-2656, https://gmd.copernicus.org/articles/19/2627/2026/gmd-19-2627-2026.pdf. The proposed amendment discusses that study on pp. 2-4.
[14] ScenarioMIP is part of the Coupled Model Intercomparison Project (CMIP) organized by the World Climate Research Programme, https://wcrp-cmip.org/mips/scenariomip/#scientific_steering_committee.
[15] Van Vuuren et al. (2026).

To its credit, the proposed amendment reserves judgment on those scenarios, stating, "…future federal climate assessments shall evaluate all emission scenarios according to their plausibility, transparency, empirical grounding, and fitness for purpose, rather than assuming that newly developed scenarios are inherently appropriate for policy, relevant planning, or decision making."[16]

In keeping with the proposal's targeted scope, my comments below are technical. However, some comments raise related issues pertinent to the administration's larger goal of "restoring Gold Standard Science."[17]

Technical Comments

Add Reference on RCP8.5 Coal Market Assumptions.

The proposed amendment states: "The peer-reviewed literature has repeatedly ruled that the coal-intensive development pathway required to achieve RCP8.5-type forcing levels is unlikely and that treating this scenario as business-as-usual future distorts both climate-risk assessments and policy relevance," citing five sources.[18] To those references, USGCRP should add a 2017 study by Justin Ritchie and Hadi Dowlatabadi, titled, "The 1000 GtC coal question: Are cases of vastly expanded future coal combustion still plausible?"

That study was the first peer-reviewed empirical demonstration that "vast expansion in 21st-century coal consumption should not be used to describe any plausible reference case of the global energy future. Illustrating coal as a practically unlimited backstop supply is inconsistent with the current state of coal markets, technology, and reserve estimates."[19]

Clarify that SSP3-7.0 Does Not Constitute a Plausible Baseline Future.

Although van Vuuren et al. (2026) does not expressly classify SSP3-7.0 as implausible, the authors' final response to peer review report that the new CMIP7 high-end scenario would be "even below 7 W/m^2 according to FaIR preliminary estimates."[20]

Revise Description of NCA5's Position on SSP5-8.5.

The proposed amendment states: "Chapter 3 acknowledges that SSP5-8.5 is no longer plausible without substantial departure from current trends in energy efficiency, technological development,

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[16] USGCRP, proposed amendment, p. 2.
[17] Executive Order 14303 of May 23, 2025, Restoring Gold Standard Science, 90 FR 22601, May 29, 2025, mentioned five times in the proposed amendment.
[18] USGCRP, proposed amendment, p. 1.
[19] Justin Ritchie and Hadi Dowlatabadi. 2017. The 1000 GtC coal question: Are cases of vastly expanded future coal combustion still plausible? *Energy Economics*, 65: 16-31, https://www.sciencedirect.com/science/article/abs/pii/S0140988317301226.
[20] Van Vuuren et al. (2026), Interactive Discussion, RCI/AC6, https://egusphere.copernicus.org/preprints/2025/egusphere-2024-3765/#AC6.

and deployment of low-carbon energy sources."[21] In fact, Chapter 3 does not affirm the implausibility of SSP5-8.5. Rather, it reports that "some recent studies … have argued that the highest scenario, SSP5-8.5, is no longer plausible without a reversal of current trends in the adoption of renewables and energy efficiency."[22]

Trace the RCP8.5 Path of Mischief.

The proposed amendment states: "Importantly, the high forcing pathways underlying RCP8.5 were not originally developed as forecasts of the most likely socioeconomic future. The Representative Concentration Pathways were designed primarily to provide a range of radiative forcing outcomes for climate-model experiments."[23]

The scenario developers certainly knew RCP8.5 was not a reference scenario, business-as-usual projection, or no-climate-policy baseline. They implied or stated as much in Moss et al. (2010) and van Vuuren et al. (2011)—studies cited in the proposed amendment.[24] However, the scenarists took little if any subsequent action to discourage the scenario's misuse. Moreover, RCP8.5's misclassification as a reference case started early and hardened quickly. Tellingly, although Riahi et al. (2011) do not call RCP8.5 *the* baseline scenario, they describe it as *a* baseline, a term they never apply to the other forcing trajectories, RCP2.6, RCP4.5, or RCP6, which they call "mitigation scenarios."[25] So, already, the terminology suggests RCP8.5 is what happens when governments do not mitigate baseline emissions.

Two years later, the IPCC's 2013 Fifth Assessment Report (AR5) structured its analysis around four RCPs, "one mitigation scenario leading to a very low forcing level (RCP2.6), two stabilization scenarios (RCP4.5 and RCP6), and one scenario with very high greenhouse gas emissions (RCP8.5)."[26] The most natural inference is that RCP8.5 is what happens when governments do not implement policies to mitigate or stabilize emissions. Nor is that all. In the AR5 Working Group III report on climate change mitigation, RCP8.5 is prominently depicted at the top of the IPCC's

[21] USGCRP, proposed amendment, p. 6.
[22] NCA5, Chapter 3: Earth System Processes, 3-38/39, https://toolkit.climate.gov/sites/default/files/2025-07/NCA5_Ch3_Earth-Systems.pdf.
[23] USGCRP, proposed amendment, p. 1.
[24] Moss et al. (2010) and van Vuuren et al. (2011), cited by USGCRP, proposed amendment, references 9 and 10.
[25] Keywan Riahi et al. (2011), RCP 8.5—A scenario of comparatively high greenhouse gas emissions, *Climatic Change* (2011) 109:33–57, https://link.springer.com/article/10.1007/s10584-011-0149-y.
[26] IPCC, *Climate Change 2013: The Physical Science Basis*, Summary for Policymakers, p. 29, https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf.

"baseline" emission scenario range.[27] In AR6, the IPCC plainly labels SSP5-8.5 as a "no climate policy reference scenario."[28]

Clarify that RCP8.5 Was Always Beyond the "Upper Edge of Plausibility".

It is not always clear whether USGCRP thinks RCP8.5 became implausible as energy markets changed[29] or was had a "deeper structural deficiency"[30] from the start. The proposed amendment at one point seems to imply that RCP8.5 was within the "upper edge of plausibility" because it was *representative* of the "upper range of forcing outcomes identified in the scenario literature."[31] That discussion should be clarified. Neither publication nor representativeness can guarantee plausibility.

Quantify RCP8.5 Assumptions.

The proposed amendment states: "The scientific literature has increasingly concluded that achieving radiative forcing levels equivalent to RCP8.5 or SSP5-8.5 would require a combination of demographic, economic, technological, and energy-system developments that are inconsistent with current observations, mainstream projections, and present understanding of global energy markets."[32] Again, this suggests RCP8.5 was plausible under older observations and understandings.

Quantitative information, presented in ascending order of improbability, would help clarify RCP8.5's inherent implausibility. RCP8.5 assumes:

- Global population increases to 12 billion in 2100 even though the UN's central estimate in 2010 was 10.1 billion.[33]

- Primary energy-intensity of GDP improves by 0.5 percent annually after 2005 even though historical improvement averaged 1 percent annually during 1940-2000.[34]

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[27] IPCC, AR5, Working Group III, Chapter 6, Assessing Transformation Pathways, Figure 6.7, p. 432, https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter6.pdf.
[28] IPCC, AR6, Working Group I, Cross-Chapter Box 1.4, Figure 1, p. 232, https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FullReport.pdf.
[29] USGCRP, proposed amendment, p. 2. See next section for discussion.
[30] USGCRP, proposed amendment, p. 1.
[31] USGCRP, proposed amendment, pp. 1-2.
[32] USGCRP, proposed amendment, p. 2.
[33] United Nations, *World Population Prospects: The 2010 Revision*, 2011, https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_2010_world_population_prospects-2010_revision_highlights.pdf.
[34] Riahi et al. (2011).

- The abrupt slowdown in energy efficiency improvement "reflects the storyline assumption of slow technological change."[35] That's right, everyone knows technology change will decelerate in the 21st century! With that, we're already on the upper edge of plausibility.

- The era of peak oil begins and intensifies. Demand for coal-to-liquid motor fuel surges from about 0.12–0.13 million b/d in 2005 to 3.5 million b/d in 2025. The actual amount in 2025 is 0.2-0.25 million b/d, or about 15 times lower than the RCP8.5 projection.[36]

- Global coal consumption increases "almost ten-fold" during 2005-2100, providing 46-47 percent of global primary energy by century's end,[37] a market share not seen since the late 1940s.[38]

- Global energy consumption in the 21st century releases 7,300 gigatons of CO_2 emissions.[39] That is approximately 2.6 times larger than the estimated 2,795 gigatons of CO_2 emissions embedded in global proved reserves of coal, oil, and natural gas.[40]

Put More Weight on Inherent Implausibility than the ScenarioMP's Pronouncement.

USGCRP states: "These findings [about the "socioeconomic narratives" required to achieve RCP8.5 forcing levels] are not the principal basis for this proposed amendment. The primary basis remains the current ScenarioMIP-CMIP7 determination that forcing levels comparable to SSP5-8.5 are no longer considered plausible, even under assumptions that include rollback of currently implemented climate policies."[41] With all due respect, the evidence of implausibility matters more than any expert body's recognition of it.

Do Not Fund or Request More Studies Based on Implausible Scenarios.

The proposed amendment states: "A model run based on a pathway now identified as implausible may be useful for narrow research comparison, legacy-model continuity, or bounding physical sensitivity …"[42] Hundreds of scholars have been cranking out high-emission scenario-based climate impact studies for decades. Enough is enough. Academics should be free to research

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[35] Riahi et al. (2011).
[36] Roger Pielke, Jr., "No RCP8.5 Did Not Become Implausible Because of Climate Policy," The Honest Broker, May 18, 2026, https://rogerpielkejr.substack.com/p/no-rcp85-did-not-become-implausible.
[37] Riahi et al. (2011), Figure 5.
[38] Our World in Data, Primary Energy by Source, https://ourworldindata.org/grapher/global-primary-energy-by-source (accessed September 7, 2026).
[39] Riahi et al. (2011).
[40] Carbon Tracker Initiative, *Unburnable Carbon: Are the World's Financial Markets Carrying a Carbon Bubble?* (2011), pp. 2, 6, https://carbontracker.org/reports/carbon-bubble/.
[41] USGCRP, proposed amendment, p. 4.
[42] USGCRP, proposed amendment, p. 5.

whatever they want. However, if they want to use implausible scenarios, let them do it on their own dime.

Develop a Companion Amendment to Address the "Hot Model" Problem.

According to Roger Pielke, Jr., AR7's new high-end scenario projects 3,438 gigatons of carbon dioxide (CO_2) during 2025-2100, a 53 percent reduction from SSP5-8.5, which projects 7,380 Gt of CO_2 during that period.[43] However, we should not assume IPCC and the climate research profession will project less warming in 2050 and 2100 or reduce previous estimates of climate-change risks and damages.

In November 2023, the Environmental Protection Agency (EPA) revised longstanding US Government methodologies for calculating the social cost of carbon (SCC), a metric estimating the per-ton damage of an incremental ton of CO_2 emitted in a specific year. During 2010-2021, the US Interagency Working Group (IWG) used a set of baselines that on average projected 17,195 Gt of CO_2 during 2000-2300. The EPA, aware of the same sorts of technical issues that retired RCP8.5 and SSP5-8.5, reduced its SCC baseline to 5,000 Gt CO_2.

Despite that more than two-thirds reduction in baseline emissions, the EPA's "update" increased SCC values by more than three-fold. For example, the EPA replaced the IWG's central SCC estimate of $85 per ton of CO_2 in 2050 with a new central estimate of $310 per ton.[44]

This is a reminder of two things. First, no less than emission scenarios, climate models have many knobs and dials that can be adjusted to produce a scary result. Second, the proposed amendment tackles only the emission scenarios used in climate impact assessments, not the models that run the scenarios. The proposed amendment is a good first step, but it is not sufficient to "restore Gold Standard Science" in national and intergovernmental climate impact assessments. USGCRP should propose a companion amendment to correct the "hot model" problem.

Sincerely,

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[43] Roger Pielke, Jr., "The Retreat Continues: Updated again, lower again," The Honest Broker, July 15, 2026, https://rogerpielkejr.substack.com/p/the-retreat-continues.

[44] Marlo Lewis, Chapter 1: Modernizing EPA Science Policies, pp. 73-81, in Daren Bakst and Marlo Lewis, eds., *Modernizing the EPA: A Blueprint for Congress*, Competitive Enterprise Institute, 2025, https://cei.org/studies/modernizing-the-epa-a-blueprint-for-congress/.