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To: The Office of Science and Technology Policy (OSTP)
The U.S. Global Change Research Program (USGCRP)
1600 Pennsylvania Avenue NW
Washington, DC 20500

***As requested by the notice, this input is being submitted electronically via email to federalregister@ostp.eop.gov as the designated Office of Science and Technology Policy (OSTP) portal.*

Subject: Public Comment Submission Regarding the Proposed Amendment and Clarification on the Federal Use of High-Emissions Scenarios in the Fifth National Climate Assessment (NCA5).

To Whom It May Concern,

The Ecological Society of America (ESA) formally submits the accompanying public comment to the proposed amendment regarding the federal use of high-emissions climate pathways within the Fifth National Climate Assessment (NCA5). As an organization dedicated to the advancement of ecological science, the ESA strongly urges the USGCRP to preserve the unrestricted use of upper-bound scenarios like RCP8.5 and SSP5-8.5 within federal risk management frameworks. Capping or modifying these models creates scientific blind spots that weaken the nation's ability to defend its infrastructure, economy, and citizens.

Description of the Proposed Change
The amendment seeks to modify and clarify how high-emissions climate pathways—specifically **RCP8.5** and **SSP5-8.5**—are interpreted and utilized within the assessment. The proposed change aims to refine the contextual application of these scenarios to ensure that they are presented accurately alongside alternative baseline and mitigation pathways, preventing over-reliance on extreme-upper-bound scenarios as a default baseline projection.

The NCA5 was developed over four years as directed by the US Global Change Research Act and used the most rigorous science. Any changes proposed to a scientific report would require lengthy and thorough review by the scientific community. Changing a report without going through a deliberative process would undermine the scientific integrity of the report.

Opportunities for review of the NCA5 from the public and scientific experts were open and transparent. The NCA5 was additionally externally reviewed by the National Academy of Sciences. The proposed edit to the existing NCA5 report will undermine the Nation's ability to prepare and protect the Nation.

Timeline and Turnaround Concerns

This comment period officially opened on **August 25, 2026**. Because the deadline is today, September 9, 2026, the public was only given a **15-day turnaround window** to review, analyze, and respond to these technical updates. This brief timeframe significantly limits the ability of the broader scientific community, policy experts, and public stakeholders to provide comprehensive, data-driven feedback on a foundational component of federal climate research.

The enclosed submission illustrates with specific examples the vital importance of incorporating multiple varied emissions scenarios, including extreme scenarios, in national assessments and planning.

About the ESA

The Ecological Society of America, founded in 1915, is the world's largest community of professional ecologists and a trusted source of ecological knowledge. ESA is committed to advancing the understanding of life on Earth. The 9,000-member Society publishes a suite of six peer reviewed journals and shares ecological science and resources with policymakers, educators, and the public, to inform choices in a rapidly changing world.

Thank you for your careful consideration of the scientific evidence and viewpoints presented in this document.

Sincerely,

The Ecological Society of America

Executive Summary

This public comment opposes the U.S. Global Change Research Program's (USGCRP) proposed amendment to modify the federal use of high-emissions climate pathways (such as RCP8.5 and SSP5-8.5) in the Fifth National Climate Assessment (NCA5). High-emissions

models are biologically and physically indispensable for safeguarding the nation. Rather than serving as mere predictive baselines, these pathways provide the upper-bound stress tests required to identify non-linear ecological tipping points, forecast biodiversity loss, and map climate velocity. Emissions scenarios are not intended to forecast the future; rather, they help decision-makers explore uncertainties, including extreme outcomes, and develop strategies that perform well under diverse future conditions. Established literature demonstrates that extreme emissions scenarios reflect cumulative historical emissions [1], form a foundational structural framework for testing global socioeconomic vulnerabilities [2], and represent necessary worst-case trajectories originally built to span the complete upper bound of no-policy scenarios [3]. Preserving this framework benefits American livelihoods, local economies, and national safety. Restricting their application creates critical blind spots that prevent federal agencies from safeguarding American agricultural food systems, mapping catastrophic flood vulnerabilities, protecting natural watershed infrastructure, and quantifying severe long-term macroeconomic liabilities. The ESA recommends USGCRP use the best available science by withdrawing the amendment to keep federal risk management aligned with complete, boundary-tested climate science that actively shields American communities from risk.

Public Comment on the U.S. Global Change Research Program (USGCRP) Proposed Amendment to the Fifth National Climate Assessment (NCA5)

To: The Office of Science and Technology Policy (OSTP) and the U.S. Global Change Research Program (USGCRP)
Regarding: Proposed Amendment and Clarification on the Federal Use of High-Emissions Scenarios (FR Doc. 2026-17289)

I. Scientific Statement of Opposition

The proposed amendment seeks to modify the application of high-emissions climate pathways—specifically RCP8.5, SSP5-8.5, and SRES A2—within federal risk frameworks. This modification should not be adopted.

The current interpretation of these scenarios within the Fifth National Climate Assessment (NCA5) should be maintained to protect the scientific integrity of the report and its practical application by federal agencies to benefit the American people and its ecosystems. High-emissions pathways are critical tools for the field of ecology and for agencies and managers who apply ecological science. They provide the necessary physical boundaries required to study ecological tipping points, biodiversity loss, and ecosystem services. Restricting their use limits the completeness of ecological impact analysis [4]. It

also weakens the federal government's ability to protect American food systems, manage severe flood risks, and prevent large-scale economic damage. Keeping this existing framework intact ensures that federal agencies can continue to design robust, proactive protections that shield American families, businesses, and people from preventable hazards.

II. Ecological Tipping Points and Earth System Feedbacks

The primary scientific justification for maintaining high-emissions scenarios in ecology is that ecosystems respond non-linearly to environmental stress. Gradual warming can lead to sudden, irreversible shifts in whole landscapes. High-emissions scenarios are necessary to locate these ecological tipping points. Below we provide specific research examples showing how the use of modeling high emissions pathways helps federal agencies plan its programs using the best available science for the benefit of the Nation.

- **Abrupt Ocean State Transitions:** Research underscores that high-emissions baselines (such as SSP5-8.5) are critical for tracking abrupt state transitions in ocean circulation and heat distribution [5]. Utilizing the core structural frameworks that map multi-scenario model intercomparisons, federal models can accurately capture the physical threshold where deep-ocean systems risk structural reorganization. Maintaining this data directly benefits coastal American states by preventing sudden, unpredicted collapses in marine life that local maritime economies depend on for survival.
- **Terrestrial Forest Dieback:** Climate tracking frameworks within leading peer-reviewed literature document that simulated forest productivity and species abundance decline abruptly once upper-bound thermal thresholds are breached. Peer-reviewed evaluations of emissions tracking demonstrate that RCP8.5 remains a useful tool because it closely mirrors cumulative historical CO2 emissions [1], making it a relevant proxy for tracking current, unmitigated atmospheric stress on terrestrial vegetation. Comprehensive scenario analyses emphasize that omitting these upper bounds ignores the historical realities of carbon-intensive growth paths [6]. Restricting these models makes it impossible for federal forest managers to identify the precise boundaries where key American timberland and wilderness systems face catastrophic dieback. Using the existing high-emissions framework ensures the federal government can protect rural American logging communities, safeguard domestic timber supply chains, and keep public recreation lands safe from severe wildfire risks.

III. Biodiversity Loss, Range Shifts, and Habitat Buffers

Ecologists use climate models to predict how species move, adapt, or face extinction as the planet warms. High-emissions scenarios provide the boundary data needed to understand the range of potential threats to biodiversity.

- **The Velocity of Climate Change:** Landmark spatial modeling shows that the geographical velocity of temperature shifts under high-emissions pathways outpaces the natural migration capabilities of many organisms [7]. Federal conservation frameworks rely on these metrics to map wildlife corridors and plan long-term habitat resilience. Grounding these models in established socioeconomic and radiative forcing pathways allows federal land managers to build resilient wildlife corridors that keep outdoor recreation, hunting, and eco-tourism sectors stable for millions of Americans.
- **Refugia Demarcation:** High-emissions scenarios are valuable in identifying the limits of climate refugia and the conditions under which these areas may cease to provide protection for vulnerable species. This is particularly important because the capacity of refugia to sustain biodiversity may be reduced under severe climate change, making it necessary to evaluate how refugial function changes across a broad range of future conditions. Assessing refugia under extreme warming scenarios can therefore help inform conservation strategies that remain effective even if climate change does not proceed at the pace assumed in high-emissions scenarios [8].

IV. Protecting American Food Systems and Agricultural Ecology

Federal agencies rely on upper-bound climate scenarios to ensure long-term food security and support American farmers, ranchers, and fishers.

- **Crop Yield Stress-Testing:** High-emissions scenarios provide an important stress test for crop research and agricultural planning. Even if such futures are considered unlikely, they help reveal biophysical and management thresholds, evaluate the robustness of adaptation strategies, and identify potential risks to food production under severe climatic change. The resulting insights can support agricultural decisions that remain effective across a broad range of future conditions [9].
- **Marine Ecosystems and Fisheries:** Advanced simulations show that the global marine ecosystem response to high-emissions scenarios includes abrupt regional drops in biomass and severe compound marine heatwaves. Given that cumulative emissions tracking validates the use of these upper-bound scenarios to represent worst-case business-as-usual realities [1], the National Oceanic and Atmospheric Administration (NOAA) requires access to this data to establish safe catch limits

and protect American commercial fishing infrastructure from sudden stock collapses. Furthermore, cornerstone long-term ecological synthesis shows that rapid shifts across marine and terrestrial baselines trigger cascading range shifts that alter commercial species assembly [10].

V. Flood Prevention, Hydrological Resilience, and Economic Vulnerabilities

Healthy ecosystems function as natural infrastructure that protects American homes and businesses from devastating floods. Federal agencies need high-emissions data to calculate the limits of these natural defenses especially since 40 percent of Americans live in counties on the coast, according to NOAA.

- **Watershed Function and Inland Flooding:** High-emissions climate scenarios remain valuable in watershed and flood-risk research because they help identify the limits of watershed resilience and flood management capacity under severe climatic change. By examining hydrologic responses to extreme precipitation, more intense storm events, shifts in snowpack and runoff timing, and changing land-atmosphere interactions, researchers can better understand vulnerabilities, evaluate the effectiveness of adaptation measures, and identify thresholds beyond which flood risks may increase substantially [11].

Endnotes & References

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