Repeal of Greenhouse Gas Emissions Standards for Fossil Fuel-Fired Electric Generating Units (June 17, 2025)

Docket EPA-HQ-OAR-2025-0124
FRL-8536-04-OAR
RIN 2060-AW55

***

Comments of the Texas Public Policy Foundation
August 7, 2025

Table of Contents

Repeal of Greenhouse Gas Emissions Standards for Fossil Fuel-Fired Electric Generating Units (June 17, 2025)
EPA–HQ–OAR–2025–0124

1. Executive Summary

The Texas Public Policy Foundation (TPPF) agrees with the EPA's conclusion that a separate significant contribution and endangerment finding is needed for each source category of emissions and each pollutant to be regulated under Section 111(b)(1)(A)[1] of the Clean Air Act (CAA). The 2024 rule[2] being repealed by this rulemaking erred by not acknowledging this fact and by not revisiting the prior misuse of the CAA section 202 endangerment finding to justify regulating under CAA section 111. Any source category regulated under CAA section 111 must be found to be (1) "significantly contributing" (in contrast to the "cause or contribute" standard under CAA section 202) to "air pollution" that (2) is "reasonably anticipated to endanger public health or welfare."

While the EPA's primary proposal is adopting the correct legal justification for this repeal—namely, that GHG emissions from U.S. power plants are not "significantly contributing" to endangerment—its methodology for assessing "significant contribution" could be substantially improved. What matters most in the regulatory context is not the quantity of GHG emissions but the potential impact of GHG emissions on climate variables such as relative sea level rise, extreme temperatures, and extreme weather and whether a source category of emissions is "significantly contributing" to those factors in a way that endangers the public health. The problem with setting a "significant contribution" threshold based on those factors is that it will not even be possible to empirically attribute any change in most of these factors for the rest of this century.[3] And even if it were possible, setting a threshold based on any of these factors or a combination of them would be a daunting technical challenge.

The only evidence of the impact of GHG emissions to emerge so far from the noise in the data relates to temperature; GHG emissions are causing average global temperatures to rise, and therefore extreme heat is increasing while extreme cold is declining. But total deaths due to extreme temperature have fallen over the past 25 years because deaths from cold are falling faster than deaths from extreme heat are rising.[4] Therefore, the only empirically detectable impact of GHG emissions to date has arguably resulted in a net benefit for the public health.

---

[1] 42 U.S.C. § 7411(b)(1)(A). https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partA.htm.

[2] New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 89 Fed. Reg. 39798 (2024). https://www.govinfo.gov/content/pkg/FR-2024-05-09/pdf/2024-09233.pdf

[3] Intergovernmental Panel on Climate Change (IPCC). (2023a). Climate change information for regional impact and for risk assessment. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, p. 1853. https://doi.org/10.1017/9781009157896.014

[4] Zhao, Q., et al. (2021). Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study. *The Lancet: Planetary Health*, 5(7), E415-E425. https://doi.org/10.1016/S2542-5196(21)00081-4

Despite these challenges, the EPA could set a "significant contribution" threshold based on the impact of a source category of emissions on mean worldwide surface temperature as a sound and defensible means of regulatory gatekeeping. If the impact of a source category on global temperatures cannot be detected, then that source category should be automatically excluded from regulation under CAA section 111.

By this metric, U.S. power plant emissions fall well short of any reasonable "significant contribution" threshold. Eliminating all U.S. power sector CO_2 emissions by 2030 would reduce the increase in mean worldwide surface temperature in 2050 by 0.015 °C, which is nearly an order of magnitude below the ±0.1 °C average uncertainty in worldwide surface temperature measurements from 1850 to the present. Therefore, our proposal is that the EPA adopt a "significant contribution" threshold of ±0.1 °C to the mean worldwide surface temperature over a given period (until 2050 or 2100) and conclude that GHG emissions from U.S. power plants fall well short of that threshold.

These comments also address a critical problem relating to the cost-benefit calculations in the Regulatory Impact Analysis (RIA). By simply reversing the calculations used in the RIA for the 2024 rule,[5] this repeal rule is adopting and legitimizing the flawed method used in the 2024 rule for calculating "co-benefits" from reductions in criteria pollutions that occur as a secondary result of reducing power plant GHG emissions. Because the EPA correctly chose not to quantify the cost of CO_2 emissions, PM2.5 and ozone account for the entirety of the tens of billions of dollars in health benefits that the current RIA is now claiming will be foregone by repealing the 2024 rule.

However, the co-benefits claimed by the 2024 rule either do not exist in reality—being hypothetical constructs of statistical models—or they are far smaller than the 2024 rule estimated them to be. Given the numerous flaws in the EPA's methodology for calculating co-benefits and the failure of that methodology to meet the current administration's scientific standards,[6] it should not use co-benefits from secondary air pollution reduction in this RIA or in future RIAs until it develops a method that meets rigorous scientific standards and subjects that method to appropriate peer-review and rulemaking processes.

---

[5] U.S. Environmental Protection Agency (EPA). (2024a, April). Regulatory Impact Analysis for the New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule. https://www.epa.gov/system/files/documents/2024-04/utilities_ria_final_111_2024-04.pdf

[6] Exec. Order No. 14303, 90 Fed. Reg. 22601 (2025). https://www.govinfo.gov/content/pkg/FR-2025-05-29/pdf/2025-09802.pdf

2. **<u>Determining a methodology for making a "significant contribution" finding for GHG emissions from stationary sources.</u>**

   A. Greenhouse gas (GHG) emissions do not endanger the public health, but it is still prudent for the EPA to establish a methodology for determining whether GHG emissions from a source category regulated under CAA section 111(b)(1)(A) "significantly contribute" to endangerment.

The premise that GHG emissions should be regulated under the CAA is remarkable given that the term "greenhouse gas" is not in the CAA at all and carbon dioxide is mentioned only once in Section 103(g)[7]—as part of a directive for the EPA to conduct research into "nonregulatory strategies and technologies" for reducing air pollutants. However, to the extent that the EPA may be required to establish a methodology for determining whether GHG emissions should be regulated from a source category under the CAA, EPA should regulate GHGs under each distinct section of the CAA. Therefore, we agree with the EPA's approach of applying the specific criteria of CAA section 111 to the regulation of power plants.

It is important to point out that, even if a court ultimately concludes that the EPA is compelled to regulate GHGs under CAA section 202, that does not mean that GHGs from stationary sources must be regulated CAA section 111. Therefore, the EPA is taking the correct approach by making a source category-specific and pollutant-specific significant contribution finding.

   B. Emissions of CO_2 and other non-toxic GHGs are not causing or contributing to any direct health impacts and will not do so until concentrations reach at least 5,000 ppm.

Although establishing a threshold is not required to make a materiality finding under Section 111(b)(1)(A), it makes logical sense for EPA to explore doing so to create more regulatory certainty over the long-term. One way to approach the question of materiality is to determine a concentration level at which GHGs may "reasonably anticipated to endanger public health or welfare" and then assess whether a source category is "significantly contributing" to an increase in global GHG concentrations above that level.

This approach to determine materiality may be feasible for the criteria pollutants, which are directly toxic to humans at relatively low concentrations. However, CO_2 and other non-toxic GHGs are only harmful to the degree that they displace oxygen and cause asphyxiation. This is why the Occupational Safety and Health Administration (OSHA) has set an 8-hour permissible exposure limit for CO_2 of 5,000 parts per million (ppm)[8]. But the OSHA guideline itself is extremely conservative. Most exposure studies have been performed at more than 20,000 ppm in order to discern measurable effects within a reasonable timeframe.[9]

[7] 42 U.S.C. § 7403. https://www.govinfo.gov/content/pkg/USCODE-2019-title42/pdf/USCODE-2019-title42-chap85-subchapI-partA-sec7403.pdf

[8] U.S. Occupational Health and Safety Administration. (2024, May 23). "Carbon Dioxide." In *OSHA Occupational Chemical Database*. https://www.osha.gov/chemicaldata/183

[9] National Research Council. (2007). "Carbon Dioxide." In *Emergency and Continuous Exposure Guidance Levels for Selected Submarine Contaminants: Volume 1*. The National Academies Press. https://nap.nationalacademies.org/read/11170/chapter/5

Supposing OSHA's 5,000 ppm exposure limit is an accurate threshold for endangerment, that level is at least an order of magnitude higher than current atmospheric concentrations and three orders of magnitude larger than current annual emissions from any source category. As noted later in these comments, all U.S. GHG emissions will only contribute approximately 11 ppm to global concentrations between now and 2050. Therefore, it is impossible for GHG emissions from any source category to be emitted in quantities that cause direct harm to humans, and even if there was, there is no quantitative means for determining what amount of emissions would be "significant" in this context.

C. If the EPA desires, it can set a significant contribution threshold based on whether the impact of a source category of emissions on worldwide temperatures exceeds the uncertainty in worldwide temperature measurements.

TPPF recommends that the EPA consider assessing materiality based not on emissions levels or on the effect on global GHG concentrations but rather on the degree to which a source category of GHG emissions influences worldwide temperature changes. The challenge is that average worldwide temperature does not in itself have any bearing on the public health and welfare in the U.S. Temperatures can decline in the U.S. even as they rise across the globe, and vice versa. In fact, the U.S. Climate Reference Network shows almost no discernable trend in average U.S. surface temperature over the past 20 years.[10]

Nevertheless, it is possible to use the impact of a source category on worldwide temperatures to set a minimum bar for considering whether that source can be regulated under CAA section 111. If such emissions are causing a measurable change in worldwide temperatures, then further investigation could be undertaken to determine if the emissions are contributing significantly to temperature extremes in the U.S. or on other variables that impact the public health. If the temperature change due to a source category of emissions is not reliably measurable, then those emissions cannot be significantly contributing to global climate change and can categorically be excluded from regulation under CAA section 111.

The HadCRUT 5.0 dataset from the U.K. Met Office Hadley Centre[11] publishes the most complete and standardized worldwide temperature dataset, which is widely used and referenced by governmental bodies like the IPCC. The dataset is updated annually along with an uncertainty range that represents the 95% confidence interval for the measurements. This uncertainty range forms a natural threshold for determining the impact of any source category of GHG emissions. If the signal (the temperature change due to a certain subset of GHG emissions) is less than the noise in the data (the uncertainty in the underlying temperature measurements) then the signal cannot be reliably measured and is certainly not "significant."

The mean uncertainty in the HadCRUT 5.0 dataset from 1850 to the present is ±0.1 °C, with a minimum of ±0.03 °C and maximum of ±0.21 °C. The uncertainty in the last few decades is

---

[10] National Centers for Environmental Information. (2025). *National temperature index: Time series*. https://www.ncei.noaa.gov/access/monitoring/national-temperature-index/time-series/anom-tavg/ann/12

[11] Met Office Hadley Centre. (2023, November 27). *HadCRUT.5.0.2.0 analysis*. https://www.metoffice.gov.uk/hadobs/hadcrut5/data/HadCRUT.5.0.2.0/download.html

consistently near that minimum, and the uncertainty rises further back in the data set. As the next section will demonstrate, the impact of U.S. power plant emissions over the next few decades will be at most 0.02 °C, which is below even the minimum uncertainty and is five times below the mean uncertainty. However, the uncertainty reported in the dataset is simply an attempt to combine the uncertainty in the observations themselves and the uncertainty from combining thousands of temperature measurements into a single measure.[12] It does not fully factor in the uncertainty created by adjustments to the data for confounding factors such as urbanization, which many scientists have noted is a significant part of the observed global warming trend.[13]

D. Because the temperature impact of carbon dioxide emissions from U.S power plants is far below the uncertainty in worldwide temperature measurements, those emissions cannot be reliably measured and therefore are not "significantly contributing" to endangering the public health.

A tool that is often used to predict future worldwide temperatures in a scenario that eliminates U.S. CO_2 emissions is the Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC).[14] We will use it here to assess the impact of removing CO_2 emissions from U.S. power plants and then discuss why even the small changes reported by the MAGICC model are likely overstating the true impact. A more complete explanation of this method can be found in previous work by our group.[15]

The baseline scenario used in this analysis is SSP2-4.5, which is the "middle of the road" scenario among the emission scenarios that the IPCC uses in its various assessments.[16] **Table 1** shows the impact of eliminating future U.S. CO_2 emissions and future U.S. power sector CO_2 emissions on the total worldwide CO_2 emissions. MAGICC uses the values in **Table 1** as inputs and interpolates between the 10-year data points to produce new CO_2 emission profiles.

[12] Morice, C. P., et al. (2021). An updated assessment of near-surface temperature change from 1850: The HadCRUT5 data set. *JGR Atmospheres*, 126(3). https://doi.org/10.1029/2019JD032361
[13] Spencer. R. W., et al. (2025). Urban heat island effects in U.S. summer surface temperature data, 1895–2023. *Journal of Applied Meteorology and Climatology*, 64(7), 717-728. https://doi.org/10.1175/JAMC-D-23-0199.1
[14] Climate Resource. (2021). *Model for the Assessment of Greenhouse Gas Induced Climate Change*. https://live.magicc.org
[15] Bennett, B. (2025, June). The materiality of U.S. CO2 emissions on global climate. Texas Public Policy Foundation. https://www.texaspolicy.com/wp-content/uploads/2025/06/2025-06-LP-Materiality-of-US-CO2-Emissions.pdf
[16] The numbers in the table are based on the assumption that the U.S. share of worldwide CO_2 emissions remains constant through the end of the century at about 13%, which is a conservative assumption given that the U.S. share has been declining consistently for the past 25 years.

Table 1

Projected CO_2 Emissions from Fossil Fuels in the United States and the World, Million Metric Tons/Year

CO_2 Emissions (MMT CO_2)	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**	**2090**	**2100**
SSP2-4.5	40,595	42,089	42,961	41,736	37,447	30,236	20,642	14,483
Minus U.S. electricity	1,504	1,560	1,592	1,546	1,388	1,120	765	537
New global emissions	39,091	40,529	41,369	40,190	36,059	29,115	19,877	13,946
Minus U.S. emissions	5,076	5,263	5,372	5,219	4,682	3,781	2,581	1,811
New global emissions	35,519	36,826	37,589	36,518	32,764	26,455	18,061	12,672

Note: SSP2-4.5 emissions data and modeling environment from *Model for the Assessment of Greenhouse Gas Induced Climate Change*, Climate Resource, 2021 (https://live.magicc.org). U.S. CO_2 emissions data from *Monthly Energy Review: Carbon Dioxide Emissions From Energy Consumption*, U.S. Energy Information Administration, 2025 (https://www.eia.gov/totalenergy/data/monthly/#environment).

The model then runs the new CO_2 emission scenarios through a reduced-form climate model to approximate future CO_2 concentrations and worldwide temperatures. **Table 2** shows the model outputs for the worldwide CO_2 concentrations in 2030, 2040, and 2050, and the worldwide temperature change relative to the preindustrial baseline if the U.S. were to eliminate CO_2 emissions by 2030.[17]

Table 2

Predicted CO_2 Concentrations and Change in Worldwide Temperatures in 2030, 2040, 2050, with No U.S. CO_2 Emissions Beginning in 2030

	Net zero CO_2 emissions by 2030	**CO_2 concentration (ppm)**	**Percentage difference**	**Temperature difference (°C) relative to the 19th century baseline**	**Temperature difference (°C) relative to SSP2-4.5**
2030	SSP2-4.5	440.9		1.435	
	No U.S. Electricity	440.2	0.16%	1.432	0.002
	No U.S. Emissions	438.4	0.55%	1.427	0.008
2040	SSP2-4.5	469.9		1.694	
	No U.S. Electricity	467.8	0.45%	1.685	0.009
	No U.S. Emissions	462.8	1.52%	1.664	0.030
2050	SSP2-4.5	498.8		1.948	
	No U.S. Electricity	495.4	0.68%	1.933	0.015
	No U.S. Emissions	487.4	2.29%	1.896	0.052

Note: Modeling results derived from *Model for the Assessment of Greenhouse Gas Induced Climate Change*, Climate Resource, 2021 (https://live.magicc.org).

As shown in **Table 2**, eliminating U.S. power sector CO_2 emissions by 2030 would reduce the worldwide CO_2 concentrations in 2050 by 3.4 ppm, or 0.7%, and reduce the increase in mean

[17] Because the model uses decadal data inputs, it is not possible to model the impact of immediately eliminating U.S. CO_2 emissions in 2025. The earliest the model can accommodate is 2030. Because of the long timescale of the model, this 5-year delay does not materially impact the model output in 2050.

worldwide surface temperature in 2050 by 0.015 °C. Eliminating all U.S. CO_2 emissions by 2030 would reduce worldwide CO_2 concentrations in 2050 by 11.4 ppm, or 2.3%, and reduce the increase in mean worldwide temperature in 2050 by 0.052 °C. Therefore, the modeled temperature increase due to future U.S. CO_2 emissions—which is itself subject to large uncertainties—is at least two times as small, and likely an order of magnitude smaller, than the measurement error in global temperatures.

This result takes the MAGICC model and its assumptions at face value, but there is ample evidence that the model itself overestimates the true impact of CO_2 emissions on worldwide temperatures. Van Wijngaarden and Happer[18] estimate that the direct warming effect of CO_2, in the absence of any feedback mechanisms, such as an assumed increase in atmospheric water vapor as temperatures increase, is less than half of the effect that most climate models estimate. In their model, a doubling of CO_2 concentration from 400 to 800 ppm would result in surface warming of about 1.3 °C, compared to the 3.0 °C central value in the IPCC's latest assessment.[19] However, some authors have asserted that, even using the same underlying data as the IPCC, the central value should be close to 2.0 °C and that values lower than 2.0 °C are very plausible.[20]

Lindzen et al.[21] showed that the temperature impact of reducing CO_2 emissions scales linearly with the value of the equilibrium climate sensitivity (i.e., the temperature change due to a doubling of the atmospheric CO_2 concentration). Therefore, if the true climate sensitivity, free of assumed feedbacks that have limited empirical support, is half of the climate sensitivity in MAGICC, then the warming impact of CO_2 emissions from U.S. power plants would be 0.007 °C between 2025 and 2050.

In conclusion, even an aggressive estimate for the temperature impact of U.S. power plant CO_2 emissions, 0.015 °C by 2050, is still only half of the most generous assumption for the uncertainty in the measurement of average worldwide temperature, ±0.03 °C. A more realistic estimate for the temperature impact of U.S. power plant CO_2 emissions, less than 0.01 °C between 2025 and 2050, is ten times lower than the mean uncertainty in the temperature data. These results demonstrate that the impact of U.S. power plant CO_2 emissions on global temperatures cannot even be reliably measured, and the consequent impacts on variables relevant to the public health are impossible to discern empirically. Until the impact of U.S. power plant CO_2 emissions can be reliably detected in the worldwide temperature data, there is no rational basis for regulating those emissions under CAA section 111.

---

[18] van Wijngaarden, W. A. & Happer, W. (2019). *Infrared forcing by greenhouse gases*. CO_2 Coalition. https://co2coalition.org/wp-content/uploads/2022/03/Infrared-Forcing-by-Greenhouse-Gases-2019-Revised-3-7-2022.pdf

[19] Intergovernmental Panel on Climate Change (IPCC). (2023b). The Earth's energy budget, climate feedbacks and climate sensitivity. In *Climate Change 2021 – The Physical Science Basis: Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, p. 1007. https://doi.org/10.1017/9781009157896.009

[20] Lewis, N. (2023). Objectively combining climate sensitivity evidence. *Climate Dynamics*, 90, p. 3139-3165. https://link.springer.com/article/10.1007/s00382-022-06468-x

[21] Lindzen, R., Happer, W., & van Wijngaarden, W. A. (2019). *Net zero averted temperature increase*. CO_2 Coalition. https://co2coalition.org/wp-content/uploads/2024/06/Net-Zero-Averted-Temperature-Increase-2024-06-11.pdf

E. **Apart from temperature changes, establishing materiality based on the impact of GHG emissions on certain climate variables is not possible right now because the data and scientific methods to reliably attribute any changes in specific variables to human emissions do not exist.**

Even if the EPA determined that a source category of emissions was "significantly contributing" to worldwide temperature change, regulating that category under CAA section 111 requires translating the global climate impact of any source category into localized impacts on variables that may endanger the public health. The 2024 rule is correct by focusing on the effect of GHG emissions on specific variables that influence the public health, including extreme temperatures, dangerous storms, and sea level rise.[22] However, while the 2024 rule asserts that GHG emissions from U.S. power plants are impacting these variables, it fails to provide adequate empirical evidence to support its assertions.

Not only does the evidence attributing GHG emissions to specific climate variables not exist (with the exception of temperature changes), but it also will not be possible to make such attributions for many decades because of the time required to gather enough data to separate the effect of GHG emissions from all the other factors that influence extreme weather, flooding, and the like. This "time of emergence" effect is a critical challenge in trying to detect an empirical signal in a variable with a lot of noise and confounding factors.

The IPCC discusses time of emergence at length in its latest assessment[23] and provides estimates of the time of emergence for changes due to anthropogenic emissions in a number of empirical climate variables (see **Table 3**). Among more than two dozen variables, only changes in extreme heat and cold, along with changes in ocean temperatures and sea ice, have emerged in the historical record. The IPCC deems it likely that a signal will be detected for changes in mean precipitation before 2050 and sea level rise before 2100. However, river flooding, fire weather, tropical cyclones, and numerous other variables will not show a detectable signal until after 2100 even under the most extreme emissions scenario.

Moreover, current empirical data indicates that most weather extremes that cause harm to the public health, such as hurricanes[24] and tornadoes,[25] are not growing more frequent or causing more damage when adjusted for inflation and economic growth. Extreme precipitation is increasing, but there has been no detectable change in flooding in the U.S.[26] Deaths from extreme heat have risen globally over the past 25 years, but deaths from extreme cold are 7.5 times greater and are falling faster, driving down total extreme temperature deaths.[27]

---

[22]New Source Performance Standards for Greenhouse Gas Emissions, pp. 39807-39810.
[23] IPCC 2023a, p. 1853.
[24] Klotzbach, P. J., et al. (2018). Continental U.S. hurricane landfall frequency and associated damage: Observations and future risks. *Bulletin of the American Meteorological Society*, 99(7), 1359-1376. https://doi.org/10.1175/BAMS-D-17-0184.1
[25] Pielke Jr., R. (2023, February 13). *What the media won't tell you about … Tornadoes*. Substack.com. https://rogerpielkejr.substack.com/p/what-the-media-wont-tell-you-about-3fe
[26] Pielke Jr., R. (2025, July 13). *Precipitation Paradox?* Substack.com. https://rogerpielkejr.substack.com/p/precipitation-paradox
[27] Zhao, Q., et al.

Table 3

Emergence of Climate Impact Drivers in Different Time Periods; color indicates the degree of confidence; white cells indicate where evidence is lacking or the signal is not present.

Climatic Impact-driver Type	Climatic Impact-driver Category	Already Emerged in Historical Period	Emerging by 2050 at Least for RCP8.5/SSP5-8.5	Emerging Between 2050 and 2100 for at Least RC8.5/SSP5-8.5
Heat and Cold	Mean air temperature	1		
	Extreme heat	2	3	
	Cold spell	4	5	
	Frost			
Wet and Dry	Mean precipitation		6 7	
	River flood			
	Heavy precipitation and pluvial flood			8
	Landslide			
	Aridity			
	Hydrological drought			
	Agricultural and ecological drought			
	Fire weather			
Wind	Mean wind speed			
	Severe wind storm			
	Tropical cyclone			
	Sand and dust storm			
Snow and Ice	Snow, glacier and ice sheet		9	10
	Permafrost			
	Lake, river and sea ice	11		
	Heavy snowfall and ice storm			
	Hail			
	Snow avalanche			
Coastal	Relative sea level		12	
	Coastal flood			
	Coastal erosion			
Open Ocean	Mean ocean temperature			
	Marine heatwave			
	Ocean acidity			
	Ocean salinity	13		
	Dissolved oxygen	14		
Other	Air pollution weather			
	Atmospheric CO_2 at surface			
	Radiation at surface			

1. *High confidence* except over a few regions (CNA and NWS) where there is *low agreement* across observation datasets.
2. *High confidence* in tropical regions where observations allow trend estimation and in most regions in the mid-latitudes, *medium confidence* elsewhere.
3. *High confidence* in all land regions.
4. Emergence in Australia, Africa and most of Northern South America where observations allow trend estimation.
5. Emergence in other regions.
6. Increase in most northern mid-latitudes, Siberia, Arctic regions by mid-century, others later in the century.
7. Decrease in the Mediterranean area, Southern Africa, South-west Australia.
8. Northern Europe, Northern Asia and East Asia under RCP8.5 and not in low-end scenarios.
9. Europe, Eastern and Western North America (snow).
10. Arctic (snow).
11. Arctic sea ice only.
12. Everywhere except WAN under RCP8.5.
13. With varying area fraction depending on basin.
14. Pacific and Southern oceans then many other regions by 2050.

High confidence of decrease | Medium confidence of decrease | Low confidence in direction of change | Medium confidence of increase | High confidence of increase

It is possible to imagine the EPA creating a program to systematically track the degree to which the threat to the public health from these variables is increasing or decreasing, but attributing the change in any variable other than temperature to anthropogenic GHG emissions is not possible with current scientific techniques and limited data. Even if such changes could be detected and attributed to U.S. power plant emissions, what variable or mix of variables should the EPA use, and how should materiality be assessed for those variables? There is no clear point at which a certain increase in extreme temperatures or a certain amount of sea level rise becomes "significant." Furthermore, there are many ways in which people adapt to climate change such that the harm can be reduced or eliminated even as the change is occurring, thus negating the need to mitigate the change by reducing emissions.

3. <u>The method for calculating health impacts in the Regulatory Impact Analysis is deeply flawed and must be abandoned entirely unless a replacement method is developed.</u>

A. The entirety the "disbenefits" in the RIA come from the health impacts of particulate matter and ozone pollution, which are as flawed as the CO_2 emissions impacts that the RIA abandoned.

The combined impact of the PM2.5 and ozone health-related costs, which the RIA calls "disbenefits," is substantial, comprising $76 billion in present value terms at a 7% discount rate and $130 billion at a 3% discount rate.[28] Because the EPA correctly chose not to quantify the cost of CO_2 emissions, given the unreliability of the current social cost of carbon estimates, these disbenefits from PM2.5 and ozone comprise the entirety of the repeal rule's costs.

Both the 2024 rule and the repeal rule RIAs only state the mortality and morbidity effects from PM2.5 and ozone in selected years and do not provide a total for the entire modeled period, so it is difficult to deduce the contribution of different factors to the total cost. The RIAs also do not state the value of a statistical life (VSL) that is used. However, assuming the mortality benefits are simply a function of multiplying the estimated number of lives saved by the 2019 VSL,[29] which is $10.1 million when updated to 2024 dollars at a 3% discount rate, then it is possible to deduce from Tables 4-1 and 4-2 in the repeal rule[30] that premature mortality comprises roughly 70-80% of the health-related costs.

Because PM2.5 contributes to roughly 80-90% of the premature deaths, which comprise 75% of the total health, nearly two-thirds of the total health impacts are derived from assumed deaths due to PM2.5. The estimated increase in PM2.5 emissions in 2028 is two thousand short tons per year,[31] which is assumed to cause 450 premature deaths at a cost of about $4.5 billion. This

---

[28] U.S. Environmental Protection Agency (EPA). (2025a, June). Regulatory Impact Analysis for the Proposed Repeal of Greenhouse Gas Emissions Standards for Fossil Fuel-Fired Electric Generating Units. p. 4-8. https://www.epa.gov/system/files/documents/2025-06/utilities_ria_proposal_111_repeal_2025-06.pdf

[29] U.S. Environmental Protection Agency (EPA). (2023, January). Estimating PM2.5- and ozone-attributable health benefits. In *Technical Support Document (TSD) for the 2022 PM NAAQS Reconsideration Proposal RIA*, p. 85. https://www.epa.gov/system/files/documents/2023-01/Estimating%20PM2.5-%20and%20Ozone-Attributable%20Health%20Benefits%20TSD_0.pdf

[30] EPA 2025a, p. 4-5.

[31] EPA 2025a, p. 3-5.

increase is about 0.12% of the 1.7 million tons of PM2.5 emissions in 2023.[32] **Applying the RIA's health impact estimates to all U.S. PM2.5 emissions in 2023 would yield 382,500 premature deaths *in that year alone* at a cost of roughly $3.9 trillion.** If the RIA is accurate, then PM2.5 emissions would be a true national emergency on the same level as the COVID-19 pandemic, yet it is clear that is not the case.

The answer is that these health impacts and their costs are mostly fictional. By simply reversing the estimates for health benefits from the 2024 rule RIA,[33] the current RIA inherits the flaws in the 2024 rule's methodology, which are as significant as the flaws in the social cost of carbon estimates that the EPA chose to abandon. These comments will focus particularly on the use of the linear no-threshold model for calculating health effects due to PM2.5 and on the methods for quantifying the health effects.

B. The RIA's quantification of health benefits at levels below the National Ambient Air Quality Standards for particulate matter and ozone pollution is improper.

The vast majority of health benefits due to PM2.5 and ozone emissions reductions in the 2024 rule are derived from reductions in pollution in areas that already meet the National Ambient Air Quality Standards (NAAQS). Consider that the entire country is in attainment for the current PM2.5 NAQQS except for five counties, comprising less than 10% of the country's population (mostly in Southern California).[34] About a third of the country lives in counties that are in nonattainment for ozone.[35]

The idea that health impacts below the NAAQS should be counted as co-benefits or costs in RIAs that do not regulate those pollutants is at odds with the CAA itself, which dictates that the NAAQS be "requisite to protect the public health" with "an adequate margin of safety."[36] If there are such enormous benefits to be derived from reducing pollution in areas that meet the NAAQS, then why are the NAAQS not set lower? Or conversely, how can the EPA quantify such benefits when pollution levels are already so low?

Because the large majority of the health impacts are derived from PM2.5 (nearly two-thirds from PM2.5 mortality alone), the rest of these comments will focus on the flaws in the EPA's methodology for deriving the PM2.5 health impacts. Previous work by our group[37] has identified many flaws in the EPA's methodology for calculating premature mortality from PM2.5. The errors and biased assumptions are summarized as follows:

---

[32] U.S. Environmental Protection Agency (EPA). (2024b). Criteria pollutant trends show clean air progress. In *Our Nation's Air, Trends Through 2023*. https://gispub.epa.gov/air/trendsreport/2024/#naaqs_trends
[33] EPA 2025a, p. 4-3
[34] U.S. Environmental Protection Agency (EPA). (2025b, July 31). Green Book: PM-2.5 (2012) designated area/state information. https://www3.epa.gov/airquality/greenbook/kbtc.html
[35] U.S. Environmental Protection Agency (EPA). (2025c, July 31). Green Book: 8-hour ozone (2015) designated area/state information. https://www3.epa.gov/airquality/greenbook/jbtc.html
[36] 42 U.S.C. § 7409(b). https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partA.htm.
[37] Hartnett-White, K. & Bennett, B. (2019, December). The EPA's pretense of science: Regulating phantom risks. Texas Public Policy Foundation. pp. 7-9. https://www.texaspolicy.com/wp-content/uploads/2019/12/White-Bennett-EPA's-Pretense-of-Science1.pdf

1. The EPA's assumption of a 100% causal connection between PM2.5 and premature death based on a small number of ecological epidemiology studies.
2. The disregard of several studies showing no correlation or even a negative correlation between PM2.5 exposure and premature death.
3. The attribution of a vast number of cardiovascular and respiratory ailments (e.g., asthma) to outdoor air pollution.
4. The assumption that all study subjects are equally exposed to the monitored levels of outdoor PM2.5, especially when indoor levels are often higher than outdoor levels and likely have a far greater impact on overall exposure.
5. The use of the linear no-threshold (LNT) model to determine health impacts at levels far below the levels measured in toxicology and epidemiology studies.

The LNT model is explicitly called out in Executive Order 14300 as being a flawed method for calculating health impacts when pollution levels are low, especially if they are near naturally occurring levels.[38] The EO is referring to the use of LNT to determine the impacts of nuclear radiation, but the same problems with LNT apply to its use in determining impacts of PM2.5 emissions. The bottom line is that most of the health "disbenefits" in the RIA rest upon a whole host of questionable assumptions regarding the effect of PM2.5 on premature mortality, creating outsize health impacts from PM2.5 that defy common sense.

C. The RIA cannot derive estimates of "lives saved" and concomitant benefits by the simple aggregation of statistical risks.

In addition to overattributing the health benefits of reduced PM2.5 and ozone pollution, the 2024 rule inflated the dollar value of the benefits by using extreme assumptions for factors such as the value of a statistical life (VSL) and the frequency and cost of treating various health issues. It is important to note that the "lives" the RIA counts as being lost due to air pollution are merely statistical constructs of epidemiology models. There are no actual post-mortem studies being performed that are directly attributing the pollution as the cause of death. Therefore, the projected health benefits are more accurately described as a reduction in the relative risk of mortality resulting in increased life expectancy.

These semantics actually have a significant bearing on the way in which the VSL is calculated. The 2024 rule RIA sums all of the life years gained from reduced pollution into a cumulative total of statistical lives saved, which is then multiplied by the VSL to calculate the total benefits from reduced mortality. Prior studies by the EPA show that the median age of people who gain life expectancy from lower air pollution is about 80 years[39], yet the VSL used to calculate the health benefits is more representative of a 20 to 40-year-old person. The VSL for an 80-year-old is likely 15-20% that of a young person.[40] Therefore, the VSL for the "average person"

[38] Exec. Order No. 14300, 90 Fed. Reg. 22587 (2025). https://www.govinfo.gov/content/pkg/FR-2025-05-29/pdf/2025-09798.pdf
[39] U.S. Environmental Protection Agency (EPA). (2011, April). The benefits and costs of the clean air act from 1990 to 2020. p. 5-28. https://www.epa.gov/sites/default/files/2015-07/documents/fullreport_rev_a.pdf
[40] Murphy, K. M., & Topel, R. H. (eds). (2003). The economic value of medical research. In *Measuring the Gains from Medical Research: An Economic Approach*. University of Chicago Press. https://doi.org/10.7208/chicago/9780226551791.003.0003

experiencing increased life expectancy from reduced pollution is probably around $2 million instead of $10 million.

Of course, the repeal rule RIA repeats this error by simply inverting the calculated benefits in the 2024 rule RIA. **Table 4** shows the total cost of the increased PM2.5 emissions using this lower VSL value and discounting both the impact of the LNT assumption and the assumed causality between PM2.5 and premature death by 50%. These alternate assumptions easily reduce the dollar value of health impacts by 10 times or more. While the RIA denotes a 95% confidence range based on its Monte Carlo simulations, it should also clarify these additional assumptions and create estimates wherein the central estimates are discounted using alternative assumptions.

Table 4
Health Impacts from PM2.5 Emissions with Alternative Assumptions

	RIA Assumptions	**Alternative Assumptions**
Statistical lives lost in 2028 from increased PM2.5 emissions	450	450
VSL for median age of 80-year-old	$10.1 million	$2 million
Probability of association between PM2.5 and premature death	100%	50%
Probability of no PM2.5 threshold	100%	50%
Total cost of PM2.5 mortality	$4.545 billion	$225 million

D. The EPA must cease counting health benefits related to criteria pollutant emissions unless a new methodology for determining those benefits is adopted.

The RIA already assumes a vast uncertainty in the costs of PM2.5 and ozone health impacts—a variance of more than 20 times at the 95% confidence level.[41] However, while the RIA gives a brief mention of the reasons for such a large uncertainty, it fails to denote that equally valid alternative assumptions could result in benefits that are at least 10 times lower than what is claimed in the RIA.

As such, the quantification of health effects in the RIA are not only invalid, but also misleading, characterizing the repeal rule as costing tens of billions of dollars due to thousands of early deaths and hospital visits that very likely will not occur. Therefore, TPPF strongly recommends that the EPA abandon the quantification of these costs in the RIA, just as it abandoned the estimates for the cost of CO_2 emissions, until it develops a more rigorous method for calculating those costs and subjects that method to peer-review by the Science Advisory Board and appropriate rulemaking processes.

[41] EPA 2025a, p. 4-5

4. Conclusion

While the EPA's primary proposal is correct to conclude that U.S. power plant emissions do not meet the "significantly contribute" requirement of Section 111(b)(1)(A), the EPA can buttress that conclusion by showing that U.S. power plant emissions have no material impact on global concentrations or on global temperature changes. Although the EPA is not required to set a "significant contribution" threshold, doing so would create more regulatory certainty over the long term, and it is worth exploring the creation of a threshold that can stand the test of time.

A first test of materiality would be to assess whether GHG emissions from a source category "significantly contribute" to driving global concentrations above a level that is "reasonably anticipated to endanger public health or welfare." Because CO_2 and other non-toxic GHGs are not directly harmful to human health until concentrations reach at least 10 times current ambient levels, there is no endangerment or threat of endangerment based on this metric. What is needed is to assess whether a source category of GHG emissions impacts factors such as extreme weather, sea level rise, and the like. However, the only effect of human GHG emissions that has reliably emerged in the empirical record is the effect on worldwide temperature, as well as the consequent effects on temperature extremes and ocean temperature.

Therefore, TPPF recommends that the EPA set a "significant contribution" threshold based on the impact of a source category of emissions on mean worldwide surface temperature. If the impact falls below the average uncertainty in the temperature measurements, ±0.1 °C, then it will be impossible to attribute the impact of those emissions on any factors that might impact the public health and that source category should be automatically excluded from regulation. Even under aggressive warming assumptions, U.S. power plant GHG emissions will only increase mean worldwide surface temperature in 2050 by 0.015 °C, which is almost an order of magnitude below the 0.1 °C threshold. Therefore, it would be unreasonable to conclude that U.S. power plant emissions meet this "significant contribution" threshold.

Further problems exist in the analysis of costs and benefits in the RIA. The RIA vastly overestimates the costs of increased PM2.5 and ozone emissions, and TPPF recommends that these estimates should not be used in the RIA (as was done with the cost estimates for CO_2 emissions) or should be appropriately discounted to account for the uncertainties in the estimates. Nearly two-thirds of the health impacts are due to increased PM2.5 mortality, and the assumed cost of PM2.5 emissions is so large that extrapolating it to all U.S. PM2.5 emissions in 2023 would result in nearly $4 trillion in costs *in just one year*. Even if it is taken for granted that benefits can be quantified for reductions in PM2.5 emissions below the NAAQS, alternative assumptions would reduce the value of the central benefit estimate by more than 10 times, in addition to the large uncertainty in that estimate itself.

These comments do not mean to imply that the primary proposal or the RIA are invalid because their methodologies contain significant flaws. The legal justification for the repeal rule and the policy direction taken by it are sound. However, TPPF believes the EPA can bolster the record in support of its direction here with the adjustments we recommend. Therefore, we strongly encourage the EPA to adopt these recommendations in its final rule.

DATE: August 7, 2025

Respectfully submitted,

Brent Bennett, Ph.D.
Policy Director, Life:Powered
bbennett@texaspolicy.com

Texas Public Policy Foundation
901 Congress Avenue
Austin, Texas 78701
Telephone: (512) 472-2700
Facsimile: (512) 472-2728