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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. Proposed Rule. 88 FR 33240, May 23, 2023

Comments Prepared by Marlo Lewis, Competitive Enterprise Institute

Thank you for the opportunity to comment on the Environmental Protection Agency’s (EPA’s) proposed greenhouse gas (GHG) emission standards and guidelines for new and existing fossil-fuel powerplants.¹ The proposal is the successor to the so-called Clean Power Plan (CPP), the Obama administration’s marquee climate policy, finalized in October 2015,² and vacated by the Supreme Court in *West Virginia v. EPA* (2022).³ The proposal has no official moniker at this time. We hereinafter refer to it as the “Proposed Rule.”

These comments are organized as follows. Section I presents the key points. Section II summarizes the basics of the Proposed rule’s statutory context, section 111 of the Clean Air Act (CAA). Sections III.A-G examine the Proposed Rule’s conformity to *West Virginia v. EPA*. Section IV examines the Proposed Rule’s determination that 90-percent carbon capture and storage (CCS) is an adequately demonstrated best system of emission reduction (BSER) in light of *National Lime Association v. Environmental Protection Agency* (1980). Section V examines the Proposed Rule’s claim that 90-percent CCS is adequately demonstrated because it is heavily subsidized. Section VI discusses climate science issues. Section VII discusses the Proposed Rule’s climate benefits. Section VIII concludes the comments.

Based on the statutory, technological, and scientific reasons discussed below, the Proposed Rule should be withdrawn.

I. Key Points

- The Proposed Rule runs afoul of the Supreme Court’s articulation of the major-questions doctrine in *West Virginia v. EPA* (2022).

¹ EPA, 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, Proposed Rule, 88 FR 33240 (EPA-HQ-2023-0072), May 23, 2023, <https://www.govinfo.gov/content/pkg/FR-2023-05-23/pdf/2023-10141.pdf>.

² EPA, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule, 80 FR 64662, October 23, 2015, <https://www.gpo.gov/fdsys/pkg/FR-2015-10-23/pdf/2015-22842.pdf>.

³ *West Virginia v. EPA*, 142 S. Ct. 2587, 2599 (2022).

- As in the CPP, the EPA unlawfully proposes a sector-wide industrial policy under the guise of regulating pollution from individual sources.
- The new plan is a more aggressive anti-coal market-restructuring program than the CPP, aiming to reduce coal's share of electric generation from 22 percent to 1.3 percent by 2042.
- Once again, the EPA claims to find, in a long-extant statute, an unheralded power to make decisions of vast economic and political significance; asserts a transformative expansion of its regulatory power; attempts to resolve a policy question Congress is still debating (i.e., whether to compel the decarbonization of electricity markets); encroaches on State's traditional authority over electricity mix within their borders; proposes to implement an inverted version of a national clean electricity standard (CES), a policy Congress has not authorized; and attempts to set the stage for market-restructuring via cap-and-trade, the "best system of emission reduction" ruled off limits in *West Virginia*.
- Paragraphs 5 and 6 of section 60107 of Inflation Reduction Act do not provide a clear statement of authorization for the Proposed Rule, contrary to what the EPA seems to imply.
- 90-percent carbon capture and storage (CCS) is not adequately demonstrated because partnering with enhanced oil recovery (EOR) companies is central to the business plans of almost every CCS powerplant ever built or proposed, and 38 States do not have EOR operations.
- 90-percent CCS is also not adequately demonstrated because it is heavily dependent on subsidies, which should be treated as costs in BSEER determinations.
- Climate change is not a "crisis." The EPA relies on unrealistic climate impact assessments produced by combining overheated models with inflated emission scenarios. The agency also ignores the 96 percent decline in decadal average deaths related to extreme weather since the 1920s, and the more than five-fold decline in weather-related damages as a percentage of GDP since the 1980s.
- The Proposed Rule's climate benefits are a mirage. Making all favorable assumptions, the Proposed Rule would avert 0.0575°C of global warming by 2100. That is too small a change for scientists to detect or people to experience. Undetectable, non-experiential effects are "benefits" in name only. In addition, the agency's \$30 billion climate benefits estimate is based on social cost of carbon dioxide (CO₂) estimates biased by inflated emission scenarios, overheated models, and unscientific depreciation of the agricultural benefits of CO₂-atmospheric enrichment.

II. CAA Section 111 Basics

Section 111(b) of the Clean Air Act (CAA) requires the EPA to list categories of stationary sources of air pollution that may reasonably be anticipated to endanger public health or welfare, and to establish emission performance standards for "new" (i.e. future) sources in those categories. Such standards are called new source performance standards (NSPS).

CAA section 111(d) requires the EPA, subject to certain exceptions,⁴ to prescribe regulations (called “guidelines”) under which each state must submit a plan to establish performance standards for “existing” (i.e. already built) sources in categories the EPA regulates under CAA section 111(b). Such state standards are called existing source performance standards (ESPS). State plans must also provide for implementation and enforcement of the standards. The EPA promulgated the CPP under CAA section 111(d).

CAA section 111 performance standards, whether for new or existing sources, are to reflect “the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.”⁵ The phrase “adequately demonstrated” roughly means standards based on the “best system of emission reduction” (BSER) are “achievable” taking “cost” and the other factors into account.

All CAA section 111 rules apply to stationary sources. CAA section 111(a) defines “stationary source” as “any building, structure, facility, or installation which emits or may emit any air pollutant.”

III. The Proposed Rule Is Unlawful under the Supreme Court’s Major-Questions Doctrine as Articulated in *West Virginia v. EPA*.

III.A. *West Virginia*: Background

In *West Virginia v. EPA* petitioners challenged the EPA’s determination that “generation shifting”—reallocating electricity production and market share from coal to gas generation, and from both to renewables—is the adequately demonstrated BSER. The Court ruled that generation shifting is not a permissible BSER under CAA 111(d).

Unlike any previous CAA section 111 rules,⁶ the CPP set emission performance standards no individual source could meet by applying affordable facility-specific technologies. The CPP standard for existing coal powerplants—even those decades old—was 1,305 pounds of carbon dioxide per megawatt hour (1,305 lbs. CO₂/MWh). That is beyond the capability of even new highly-efficient supercritical pulverized coal units using bituminous coal, which typically emit nearly 1,720 lbs. CO₂/MWh. Similarly, the CPP standard for existing natural gas combined cycle

⁴ CAA section 111(d) excludes from its regulatory purview any air pollutant regulated under the national ambient air quality standards (NAAQS) program (CAA sections 108-110) or emitted from a source category regulated under the hazardous air pollutant (HAP) program (CAA section 112).

⁵ CAA section 111(a)

⁶ As of 2015, the EPA had set 111(b) new source standards for 60 industrial source categories since 1971. The EPA had also promulgated 111(d) existing source guidelines for four pollutants from five source categories: fluoride emissions from phosphate fertilizer plants (March 1977), sulfuric acid mist emissions from sulfuric acid production plants (September 1977), fluoride emissions from primary aluminum plants (February 1979), total reduced sulfur from Kraft pulping mills (March 1979), and organic compounds from municipal solid waste landfills (March 1996).

(NGCC) units (771 lbs. CO₂/MWh) was 14 percent lower than the average rate of new units (895 lbs. CO₂/MWh).⁷

To comply with the CPP, the owner of a coal powerplant would have to average the emission rate of his facility with the rates of lower- or non-emitting generators to which he cedes output and market share. For example, a utility with coal generating units could purchase power from gas or renewable generators, invest in new gas or renewable generation, buy emission credits in a cap-and-trade scheme, operate its coal units fewer hours, or (by implication) simply turn them off.⁸

In all previous CAA 111 rulemakings since 1971, the aim was to improve the regulated facility's environmental performance by limiting its emissions per unit of output or heat input. In contrast, the CPP aimed to decrease the power sector's overall emission rate. However, that would not improve the environmental performance of individual coal powerplants. Rather, the CPP would constrain all coal powerplants to perform less—and many to retire. CPP “performance standards” were actually non-performance mandates.

In *West Virginia*, petitioners challenged the CPP on two grounds. They argued that the CPP was unlawful under the specific terms of CAA section 111, citing the agency's consistent practice over four decades and the logic of a statute that defines “source” as an individual physical entity—a “building, facility,” etc., not an industrial sector. Petitioners also challenged the CPP as a usurpation of legislative power under the Supreme Court's major-questions doctrine.

Although the Court considered petitioners' statutory argument “pertinent” to its analysis, it decided the case on major-questions grounds.⁹ The Court held that the CPP was a plan to “substantially restructure the American energy market,” entailing a “transformative expansion” of the EPA's regulatory authority, and that CAA Section 111(d) does not come “close to the sort of clear authorization required” to “delegate authority of this breadth to regulate a fundamental sector of the economy.”¹⁰

III.B. Major Questions and the CPP: Background

The major-questions doctrine is a jurisprudence of political accountability. It seeks to ensure that elected officials, who alone are accountable to the people at the ballot box, decide major questions of public policy.¹¹ Further, the doctrine is specifically concerned about “a particular and recurring problem: agencies asserting highly consequential power beyond what Congress could reasonably be understood to have granted.”¹² In *West Virginia*, the Court identified numerous factors that suggest an agency is exceeding its power, such as when a regulatory agency:

⁷ 80 FR 64662, 64667, 64594, 64618.

⁸ 80 FR 64662, 64731-64732.

⁹ *West Virginia v. EPA*, 142 S. Ct. 2587, 2615 (2022).

¹⁰ *West Virginia v. EPA*, 142 S. Ct. 2587, 2605, 2610, 2614, 2615 (2022).

¹¹ *West Virginia v. EPA*, 142 S. Ct. 2587, 2616-2626 (2022) (Gorsuch, J. concurring).

¹² *West Virginia v. EPA*, 142 S. Ct. 2587, 2609 (2022)

- Claims to find, in a long-extant statute, an unheralded power to make decisions of vast economic and political significance.
- Asserts a transformative expansion of its regulatory power.
- Attempts to resolve a policy question Congress is still debating.
- Proposes to adopt a policy Congress has considered and rejected.
- Asserts policy leadership in an area not within its traditional expertise or one that is the particular domain of another agency or the States.
- Cannot identify a clear statement of congressional authorization in the rule’s putative statutory basis, but instead infers authority from vague, ambiguous, or cryptic language even though Congress “does not ... hide elephants in mouseholes.”¹³

The CPP hit all the major-questions doctrine trigger points. The Court explained:

- The CPP claimed to find in CAA section 111(d), a statute adopted in 1970, a hitherto unmentioned power to “substantially restructure the American energy market.”¹⁴
- The CPP entailed a “transformative expansion”¹⁵ of the EPA’s regulatory authority. It would empower the agency to determine “how much coal-based power there should be over the coming decades”¹⁶ and even whether coal and gas powerplants “should be allowed to operate.”¹⁷
- Indeed, the CPP’s legal theory implied that the EPA may “order the wholesale restructuring of any industrial sector”¹⁸ with buildings or facilities that emit CO₂.
- The CPP was an attempt to end an “earnest and profound debate across the country” about national climate policy, a matter of “great political significance.”¹⁹
- “At bottom, the Clean Power Plan essentially adopted a cap-and-trade scheme, or set of state cap-and-trade schemes, for carbon.... Congress, however, has consistently rejected proposals to amend the Clean Air Act to create such a program.”²⁰
- There is a “mismatch” between the EPA’s expertise over environmental matters and the agency’s claim that “Congress implicitly tasked it, and it alone, with balancing the many vital considerations of national policy implicated in deciding how Americans will get

¹³ *Whitman v. American Trucking Association*, 531 U.S. 457, 468 (2001).

¹⁴ *West Virginia v. EPA*, 142 S. Ct. 2587, 2610 (2022).

¹⁵ *West Virginia v. EPA*, 142 S. Ct. 2587, 2610 (2022).

¹⁶ *West Virginia v. EPA*, 142 S. Ct. 2587, 2613 (2022).

¹⁷ *West Virginia v. EPA*, 142 S. Ct. 2587, 2621 (2022) (Gorsuch, J. concurring).

¹⁸ *West Virginia v. EPA*, 142 S. Ct. 2587, 2605 (2022).

¹⁹ *West Virginia v. EPA*, 142 S. Ct. 2587, 2620 (2022) (Gorsuch, J. concurring).

²⁰ *West Virginia v. EPA*, 142 S. Ct. 2587, 2614 (2022).

their energy.” Such a claimed power “requires technical and policy expertise not traditionally needed in [the] EPA’s regulatory development.”²¹

- “The CPP unquestionably has an impact on federalism, as ‘the regulation of utilities is one of the most important of the functions traditionally associated with the police power of the States.’”²²
- “As the Court details, the agency before us cites no specific statutory authority allowing it to transform the Nation’s electrical power supply.... Nor has the agency previously interpreted the relevant provision to confer on it such vast authority; there is no original, longstanding, and consistent interpretation meriting judicial respect.”²³
- The EPA claimed to find authority for generating shifting in the term “best system of emission reduction” because generation shifting is, after all, a “system.” The Court stated: “We are confident that Congress could not have intended to delegate a decision of such economic and political significance to an agency in so cryptic a fashion.”²⁴

Justice Neil Gorsuch’s concurrence includes a detailed history of major-questions jurisprudence from the founding era to the present. Gorsuch provides an excerpt²⁵ from the Court’s decision in *ICC v. Cincinnati* (1887) that succinctly states the common sense of the matter:

That Congress has transferred such a power to any administrative body is not to be presumed or implied from any doubtful and uncertain language. The words and phrases efficacious to make such a delegation of power are well understood, and have been frequently used, and if Congress had intended to grant such a power to the [agency], it cannot be doubted that it would have used language *open to no misconception, but clear and direct*.²⁶

III.C. The Proposed Rule Runs Afoul of the Major-Questions Doctrine.

The EPA notes that the Proposed Rule’s BSERs are technologies—carbon capture and storage (CCS), natural gas co-firing, and low-GHG hydrogen co-firing—that apply to and at the individual facilities, and that the Court in *West Virginia* described “fuel switching” and “add-on controls” as “traditional air pollution control measures” under CAA section 111.²⁷ Nonetheless, the Proposed Rule still flouts the major-questions doctrine, and in all the ways described above.

The CPP’s BSER was unlawful because it was a strategy to “substantially restructure the American energy market,”²⁸ a policy not within the authority granted to the EPA in CAA section

²¹ *West Virginia v. EPA*, 142 S. Ct. 2587, 2620 (2022) (Gorsuch, J. concurring).

²² *West Virginia v. EPA*, 142 S. Ct. 2587, 2622 (2022) (Gorsuch, J. concurring).

²³ *West Virginia v. EPA*, 142 S. Ct. 2587, 2624 (2022) (Gorsuch, J. concurring).

²⁴ *West Virginia v. EPA*, 142 S. Ct. 2587, 2613 (2022).

²⁵ *West Virginia v. EPA*, 142 S. Ct. 2587, 2619 (2022) (Gorsuch, J. concurring).

²⁶ *ICC v. Cincinnati, N.O. & T.P.R. Co.*, 167 U.S. 479, 499, 17 S.Ct. 896, 42 L.Ed. 243 (1897), emphasis added.

²⁷ 88 FR 33240, 33269.

²⁸ *West Virginia v. EPA*, 142 S. Ct. 2587, 2610 (2022).

111(d). Add-on controls and fuel-switching mandates can also be manipulated to restructure an industry or sector. As Justice Elena Kagan pointed out during oral argument, generation shifting via cap-and-trade is not inherently costlier than facility-specific technology requirements, which in principle “could drive the entire coal industry out of business tomorrow.”²⁹

The Proposed Rule is a more aggressive anti-coal market-restructuring program than the CPP. The CPP aimed to decrease coal’s share of U.S. electric generation from 38 percent in 2014³⁰ to 27 percent in 2030.³¹ The Proposed Rule aims to decrease coal’s share from 22 percent in 2021³² to 1.3 percent in 2042.³³

The Proposed Rule’s four BSERs for coal powerplants are blatantly calculated to accelerate the decline and secure the demise of coal generation in the United States. The BSERs vary depending on the unit’s remaining years of service:³⁴

1. If a coal electric generating unit expects to operate after Dec. 31, 2039, it must install 90 percent carbon capture and storage (CCS)—a burden few if any utility-scale coal units today would choose to incur rather be converted to burn natural gas³⁵ or simply shut down.
2. If the unit commits to cease operation by Dec. 31, 2039, then it must co-fire with 40 percent natural gas—i.e., generate significantly less electricity from coal.
3. If the unit commits to cease operation by Dec. 31, 2034, it may operate at only 20 percent capacity (presumably to back up renewables)—another CPP-like “perform less” performance standard.
4. If the unit commits to cease operation by Dec. 31, 2031, it need only maintain its current CO₂/MWh emission rate. Such a deal! The owner of a coal powerplant does not have to retrofit the facility or reduce its output if he commits to turn off the facility within four years of the rule taking effect.

Note that three of the four BSERs for coal powerplants include a “federally enforceable commitment”³⁶ to shut down by specific dates. The CPP’s unprecedented non-performance

²⁹ “And inside-the-fence, there are inside-the-fence technological fixes that could drive the entire coal industry out of business tomorrow. And an outside-the-fence rule could be very small or it could be very large.” Justice Elena Kagan, Supreme Court of the United States, *West Virginia v. EPA*, Transcript Oral Argument, February 28, 2022, p. 15, https://www.supremecourt.gov/oral_arguments/argument_transcripts/2021/20-1530_758b.pdf.

³⁰ *West Virginia v. EPA*, 142 S. Ct. 2587, 2604 (2022).

³¹ 80 FR 64662, 64665.

³² 88 FR 33240, 33253.

³³ EPA, Regulatory Impact Analysis for the Proposed 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 (hereafter RIA), May 2023, Table 3-13 2028, 2030, 2035 and 2040 Projected U.S. Generation by Fuel Type for the Baseline and the Illustrative Scenarios, pp. 3-24, 25, https://www.epa.gov/system/files/documents/2023-05/utilities_ria_proposal_2023-05.pdf.

³⁴ 88 FR 33240, 33245.

³⁵ EIA, “More than 100 coal-fired plants have been replaced or converted to natural gas since 2011,” August 5, 2020, <https://www.eia.gov/todayinenergy/detail.php?id=44636>.

³⁶ 88 FR 33240, 33338.

mandates were only an implicit consequence of the BSER. Three of the Proposed Rule’s coal powerplant BSERs expressly require facility termination by specific dates.

Like the CPP, only more aggressively, the Proposed Rule would force coal out of the nation’s electricity fuel mix. Once again, only more extensively, the EPA would override States’ traditional authority over electricity fuel mix within their borders—a power Congress denies to the Federal Energy Regulatory Commission (FERC), the expert agency authorized to regulate interstate energy markets and infrastructure.

Under all pre-CPP section 111 rules, the Court observed, the EPA’s “role was limited to ensuring the efficient pollution performance of each individual regulated source.” Under the CPP’s conception of the statute, the EPA “can demand much greater reductions in emissions based on a very different kind of policy judgment,” namely, “that it would be ‘best’ if coal made up a much smaller share of national electricity generation.” On that unprecedented view of its 111(d) authority, the Court explained, the EPA “could go further, perhaps forcing coal plants to ‘shift’ away virtually all of their generation—i.e., to cease making power altogether.”³⁷ In footnote 3 of the opinion, the Court stated: “Section 111(d) empowers EPA to guide States in ‘establish[ing] standards of performance’ for ‘existing source[s],’ §7411(d)(1), not to direct existing sources to effectively cease to exist.”

Rather than heed that admonition, the EPA proposes yet another rule based on the same unauthorized policy judgement. Like the CPP, the proposed rule is not regulating a business so much as directing it to close. If Congress wanted to authorize the EPA to ban businesses, it would have stated that clearly. Any claim that Congress has granted such sweeping authority is unreasonable, and when it comes to Section 111, it is not supported by the plain language of the statute.

Thus, once again, the EPA again claims to find, in a long-extant statute, an unheralded power to make decisions of vast economic and political significance; asserts a transformative expansion of its regulatory power; attempts to resolve a policy question Congress is still debating; and asserts policy leadership in an area that is the particular domain of another agency and the States.

III.D. The Proposed Rule Sets the Stage for Generation Shifting via Cap-and-Trade—the BSER Ruled Off Limits in *West Virginia*.

In *West Virginia*, the Court stated: “Finally, we cannot ignore that the regulatory writ EPA newly uncovered conveniently enabled it to enact a program that, long after the dangers posed by greenhouse gas emissions ‘had become well known, Congress considered and rejected’ multiple times.”³⁸ That program was cap-and-trade.

Despite the Court’s emphasis on Congress’s rejection of cap-and-trade, the EPA proposes “to allow State plans to include emission trading programs as a compliance flexibility” for

³⁷ *West Virginia v. EPA*, 142 S. Ct. 2587, 2612 (2022).

³⁸ *West Virginia v. EPA*, 142 S. Ct. 2587, 2614 (2022).

powerplants, discusses how State plans could incorporate trading programs, and, as in the CPP, enthuses about California’s and the Northeast States’ cap-and-trade programs.³⁹

Moreover, as in the CPP, the EPA’s cap-and-trade advocacy invokes the 1990 CAA Amendments, which established the Title IV Acid Rain emission trading program and amended CAA section 110 to allow the use of “economic incentives such as fees, marketable permits, and auctions of emissions rights” in State implementation plans under the National Ambient Air Quality Standards (NAAQS) program.⁴⁰

That argument is not viable. The 1990 Amendments also amended 111(d), but no part of CAA section 111 contains anything like the trading terminology in CAA section 110 or Title IV (“allowance,”⁴¹ “auction,” “purchaser,” “seller,” “sales price”⁴²). As the Supreme Court has stated, “[W]here Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion.”⁴³

The EPA suggests that, unlike the CPP, cap-and-trade under the Proposed Rule is strictly a compliance flexibility with no role in determining the standards. That remains to be seen. The EPA is “not proposing a presumptively approvable averaging or trading approach at this time.”⁴⁴ For all we know, the EPA may finalize the Proposed Rule before it even proposes a companion cap-and-trade rule. What if States and EGUs complain that they cannot meet the Proposed Rule’s stringent standards without trading? If trading becomes economically essential for compliance, then it also becomes an “integral part” of the BSER, as it was in the CPP.⁴⁵ Trading for compliance flexibility rather than standard setting could prove to be a distinction without a difference.

III.E. The Proposed Rule Is an Inverted Clean Electricity Standard—a Policy Congress Has Not Authorized.

The Proposed Rule may be viewed as implementing another climate policy Congress has considered but not authorized—a national clean electricity standard (CES), sometimes called a clean energy standard. A CCS sets targets and timetables requiring annually increasing percentages of electric generation from “clean” sources until “dirty” sources such as coal cease making power. The Proposed Rule is an inverted CES. Instead of mandating increasing percentages of zero-emission generation, it adopts emission standards that compel rapidly decreasing percentages of coal generation—down to 1.3 percent.⁴⁶ Although conventional gas generation increases through the compliance period (2028-2042), its future is also sealed by the

³⁹ 88 FR 33240, 33393-96.

⁴⁰ CAA section 110(a)(2)(A).

⁴¹ The term “allowance” occurs 367 times in CAA Title IV.

⁴² CAA section 416

⁴³ *Russello v. United States*, 464 U. S. 16, 23 (1983)

⁴⁴ 88 FR 33240, 33393.

⁴⁵ *West Virginia v. EPA*, 142 S. Ct. 2587, 2614 (2022), citing 80 FR 64662, 64734.

⁴⁶ EPA, RIA, Table 3-13, pp. 3-24, 25.

Proposed Rule’s requirement that new and reconstructed combustion turbines must either install 90-percent CCS by 2035 or co-fire with 96-percent low-GHG hydrogen by 2038.⁴⁷

Moreover, by setting those requirements for combustion turbines, and squeezing coal generation out of the market, the Proposed Rule backstops the multitude of State renewable portfolio standards (RPS) and CES programs.⁴⁸ In other words, even if States with RPS or CES programs later decide to rescind them, the Proposed Rule would not allow them to increase generation from conventional gas or coal.

The history of CES legislation leaves no doubt that Congress has not authorized any agency to shut down conventional fossil generation in the United States.

President Obama held a press conference the day after House Democrats lost their majority in the 2010 mid-term elections—a defeat largely brought on by their passage⁴⁹ of the Waxman-Markey cap-and-trade bill.⁵⁰ Asked how the election would affect the prospects for climate legislation, Obama remarked that cap-and-trade was “just one way of skinning the cat” and vowed to find “other means” of addressing climate change.⁵¹

In his 2011 state of the union speech, Obama proposed a national clean energy standard⁵² whereby 80 percent of U.S. electric power would come from “clean sources” by 2035.⁵³ Although he did not mention it, the proposed standard was virtually identical to the 2030 electricity fuel mix projected by the U.S. Energy Information Administration (EIA) for the Waxman-Markey bill.⁵⁴

In March 2012, Sen. Jeff Bingaman (D-N.M.) introduced a CES bill based on Obama’s proposal. The bill would mandate a nationwide transition to 95 percent zero-emission electricity by 2050.⁵⁵ The Senate Energy and Natural Resources Committee held a hearing on the bill but Chairman Bingaman declined to schedule a vote on it.⁵⁶

⁴⁷ 88 FR 33240, 33244.

⁴⁸ EPA reports that 15 States have “RPS targets that are at or well above 50 percent,” while 21 States “have adopted some form of clean energy requirement or goal with 17 of those states setting 100 percent targets.” 88 FR 33240, 33263.

⁴⁹ Patrick Michaels, “IPCC Political Suicide Pill: Politicians” *National Review*, September 26, 2013, <https://www.nationalreview.com/2013/09/ipcc-political-suicide-pill-patrick-j-michaels/>.

⁵⁰ H.R. 2454, The American Clean Energy and Security Act, <https://www.congress.gov/bill/111th-congress/house-bill/2454>.

⁵¹ Press Conference by the President, November 3, 2010, <https://obamawhitehouse.archives.gov/the-press-office/2010/11/03/press-conference-president>

⁵² More recent proposals use the term “clean electricity standard.” Both terms are abbreviated “CES.”

⁵³ Obama’s State of the Union Transcript 2011, Politico, January 25, 2011, <https://www.politico.com/story/2011/01/obamas-state-of-the-union-transcript-2011-full-text-048181>

⁵⁴ Marlo Lewis, “Obama Recycles Waxman-Markey Utility Sector Target—Neglects to Inform Congress, Public,” GlobalWarming.Org, January 26, 2011, <http://www.globalwarming.org/2011/01/26/obama-recycles-waxman-markey-utility-sector-target-neglects-to-inform-congress-public/>.

⁵⁵ EIA, *Analysis of Impacts of a Clean Energy Standard, as requested by Chairman Bingaman*, November 2011, https://www.eia.gov/analysis/requests/ces_bingaman/pdf/ces_bingaman.pdf.

⁵⁶ S.2146, Clean Energy Standard Act of 2012, <https://www.congress.gov/bill/112th-congress/senate-bill/2146>.

A November 2021 Congressional Research Service report identifies 11 national CES bills introduced in the 117th and 116th Congresses.⁵⁷ The bills differ with regard to eligible sources, targets, and timetables. Nonetheless, all would dramatically limit generation from coal. None was enacted. Even more telling, none came to a vote in either the House or the Senate.⁵⁸

In April 2021, President Biden proposed to achieve “100 percent carbon pollution-free electricity by 2035” as part of his plan to reduce U.S. GHG emissions 50-52 percent below 2005 levels by 2030 and achieve net-zero emissions economy-wide by 2050.⁵⁹ A CES bill could not meet the 60-vote threshold required to overcome a filibuster in the Senate. Only as part of a reconciliation bill, on which Vice President Harris could cast the tie-breaking vote,⁶⁰ could Democratic leaders hope to pass “clean electricity” legislation. However, under the Senate’s Byrd Rule, reconciliation bills are limited to spending and taxes, whereas a CES sets regulatory standards.

Democratic leaders came up with a fiscal surrogate for a CES, the Clean Electricity Performance Program (CEPP). Funded at \$150 billion, the CEPP would use financial rewards and penalties to increase utilities’ sales of “clean” power.⁶¹ However, the plan fell apart when, in October 2021, Sen. Joe Manchin (D.W.Va.), announced his opposition to the CEPP.⁶²

The reconciliation bill was later named the Inflation Reduction Act (IRA). Instead of enacting a \$150 billion CEPP wielding both carrots and sticks, the IRA amended the CAA to establish a \$68 million grant program. Called the Low Emissions Electricity Program (LEEP), it provides

⁵⁷ Ashley J. Lawson, “Clean Energy Standards: Selected Issues for the 117th Congress, Congressional Research Service, R44691, November 2, 2021, <https://crsreports.congress.gov/product/pdf/R/R44691>.

⁵⁸ The bills, with their respective targets and timetables, are: (117th Congress) CLEAN Energy Future Act, H.R. 1512 (100% by 2035), American Renewable Energy Act of 2021, H.R. 3959 (70% by 2030), Clean Energy Future Through Innovation Act of 2021, H.R. 4153 (80% power sector emission reductions by 2050), Clean Energy Innovation and Deployment Act of 2021, H.R. 4309 (100% by 2050); (116th Congress) Climate Solutions Act of 2019, H.R. 330 (100% by 2030), Clean Energy Standards Act of 2019, S. 1359/H.R. 2579 (100% by 2050), Renewable Electricity Standard Act, S. 1974 (increasing annual percentages from 2020-2035), Clean Energy Innovation and Deployment Act of 2020, H.R. 7516 (100% by 2050), American Renewable Energy and Efficiency Act, H.R. 9036 (91% by 2039), and Clean Energy Future Through Innovation Act of 2020, H.R. 9054 (80% reduction in power sector emissions by 2050).

⁵⁹ FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies, April 22, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>.

⁶⁰ David Wessel, “What is reconciliation in Congress?” Brookings Institution, February 5, 2021, <https://www.brookings.edu/articles/what-is-reconciliation-in-congress/>.

⁶¹ Ewelina Czapla, “Reconciliation and the Clean Energy Performance Program,” American Action Forum, September 21, 2021, <https://www.americanactionforum.org/insight/reconciliation-and-the-clean-electricity-performance-program/>. For a detailed explanation of the program’s provisions, see Ashley Lawson, *Clean Electricity Performance Program (CEPP): In Brief*, Congressional Research Service, R46934, October 7, 2021, <https://sgp.fas.org/crs/misc/R46934.pdf>.

⁶² Josh Lederman, Sahil Kapur and Leigh Ann Caldwell, “Clean energy program likely to be dropped because of Manchin’s objections,” NBC News, October 16, 2021, <https://www.nbcnews.com/politics/politics-news/clean-energy-program-likely-be-dropped-because-manchin-s-objections-n1281698>.

“educational and technical assistance” grants to help households, low-income communities, industries, and State and Tribal governments reduce electricity-related GHG emissions.

In passing the LEEP grant program, Congress did not authorize the EPA to implement a national CES, inverted or otherwise.

III.F. The Proposed Rule’s Transformative Expansion of the EPA’s Authority over a Fundamental Economic Sector Raises a Major Question Regardless of the Agency’s Baseline Electricity Market Projections.

The EPA suggests—and its allies assert⁶³—that the Proposed Rule is not transformative, hence does not raise major questions, because it barely accelerates where the market is already going. For example, in the EPA’s current policies baseline, coal generation dwindles to 1.5 percent of total generation in 2040, compared to 1.3 percent under the Proposed Rule. Similarly, conventional gas generation in 2040 is virtually identical in the baseline (21.4 percent) and the proposal (20.7 percent).⁶⁴

One notable difference is that coal generation capacity without CCS declines more rapidly in the proposal (from 99 GW in 2028 to 0 GW in 2035) than in the baseline (from 100 GW to 33 GW).⁶⁵ One may also question the realism of the EPA’s baseline projections. In EIA’s baseline, total coal capacity (with and without CCS) in 2040 is 77 GW.⁶⁶ In EPA’s baseline, total coal capacity is 9 GW, all of it with CCS.

The gist of the EPA’s baseline assessment is that no new coal plants have commenced construction in more than a decade, companies have not announced plans to build new units, and much of the fleet is “aging, expensive to operate and maintain, and increasingly uncompetitive relative to other sources of generation in many parts of the country.”⁶⁷ Coal’s installed capacity declined by 107 GW since 2010 while wind, gas, and solar installed capacities increased by 93 GW, 84 GW, and 60 GW, respectively. Moreover, the annual average capacity factor of coal powerplants decreased from 67 to 49 percent.⁶⁸

The EPA attributes those trends to multiple factors: State policies, the high capital cost of coal plants due to environmental requirements, the cost and performance advantages of gas generation, consumer preferences, and the declining cost of renewable technologies. The EPA expects those trends to accelerate due to the 2021 Infrastructure Investment and Jobs Act (IIJA)

⁶³ Lisa Friedman, “Democrats Designed the Climate Law to Be a Game Changer. Here’s How,” *New York Times*, August 22, 2022, <https://www.nytimes.com/2022/08/22/climate/epa-supreme-court-pollution.html>.

⁶⁴ EPA, IRA Table 3-13, pp. 3-24, 25.

⁶⁵ EIA, RIA Table 3-14, p. 3-27.

⁶⁶ EIA, American Energy Outlook 2023, Table 9, Electric Generating Capacity, Power Sector, Coal, Reference Case, <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=9-AEO2023&cases=ref2023&sourcekey=0>.

⁶⁷ 88 FR 33240, 33256.

⁶⁸ 88 FR 33240, 33257. Capacity factor is the ratio of actual electricity output over a given period of time to the unit’s theoretical maximum output over that period.

and 2022 IRA, which massively expanded federal grants and tax credits for renewable energy, CCS, low-GHG hydrogen co-firing, and battery storage.⁶⁹

Note, though, that the EPA offered a similar market trend analysis to rebut allegations that the CPP was an extreme program. The CPP quoted the EIA’s Annual Energy Outlook 2015: “RE [renewable electric] generation grows substantially from 2013 to 2040 in the reference case and all alternative cases,” increasing “by more than 70 percent from 2013 to 2040 and accounts for over one-third of new generation capacity.”⁷⁰

Indeed, the Trump EPA’s ACE Rule, which challenged the CPP on both statutory and major-questions grounds, acknowledged that “[m]arket-based forces have already led to significant generation shifting in the power sector,”⁷¹ and that “there is likely to be no difference between a world where the CPP is implemented and one where it is not.”⁷² The Proposed Rule quotes those statements,⁷³ albeit somewhat selectively. After acknowledging coal’s declining market share since 2005, the ACE Rule states: “However, the fact that those market forces have had that result does not confer authority on the EPA beyond what Congress conferred in the CAA.”⁷⁴

Spot on. A rule may lack a clear statement of congressional authorization regardless of whether market trends align with or even surpass the rule’s intended results. Creative marketplace destruction requires no clear statement of congressional authorization; industrial policy schemes do.

In effect, the EPA and allies now try to revive Justice Kagan’s argument in *West Virginia* that the CPP could not raise a major question because “industry exceeded” the CPP’s emission-reduction target “all on its own.”⁷⁵ Again, that misses the point. The EPA needs a clear statement of congressional authorization to restructure an industry, the industry does not.

Besides, the CPP’s long-term economic impacts, which by definition could not be known in 2015, were not the chief indicator of its “bigness.” As one legal scholar observed in a monograph⁷⁶ quoted by Justice Gorsuch,⁷⁷ “The electric power sector is among the largest in the US economy, with links to every other sector.” Any rule aiming to reorganize the power sector is inherently a big deal. By 2015 the controversy over climate policy had “raged” for decades, Congress remained divided, so were the States, and the CPP was itself highly controversial. There is thus no disputing the CPP’s economic and political significance. Kagan herself described the CPP’s subject matter as “the most pressing environmental challenge of our time,”⁷⁸

⁶⁹ 88 FR 33240, 33260-33261.

⁷⁰ 80 FR 64662, 64695.

⁷¹ 84 FR 32520, 32532.

⁷² 84 FR 32520, 32561.

⁷³ 88 FR 33240, 33268.

⁷⁴ 84 FR 32520, 32532.

⁷⁵ *West Virginia v. EPA*, 142 S. Ct. 2587, 2638 (2022) (Kagan, J. Dissenting).

⁷⁶ Nathan Richardson, *Keeping Big Cases from Making Bad Law: The Resurgent “Major Questions” Doctrine*, CSAS Working Paper 16-11, George Mason University Antonin Scalia Law School, September 16, 2016, https://administrativestate.gmu.edu/wp-content/uploads/2023/04/16-11_Richardson.pdf.

⁷⁷ *West Virginia v. EPA*, 142 S. Ct. 2587, 2622 (2022) (Gorsuch, J. concurring).

⁷⁸ *West Virginia v. EPA*, 142 S. Ct. 2587, 2625 (2022) (Kagan, J. dissenting).

which implies a policy question of some “magnitude.” Most importantly, the CPP entailed a “shift in scope,” regulating a sector in the guise of regulating individual facilities.⁷⁹ And the CPP rested on “thin statutory text.”⁸⁰

All those factors made the CPP a proper subject of major-questions review, and all are present in the current rulemaking as well. Whether or not the power sector’s market structure in 2042 under the Proposed Rule is similar to the projected baseline is not the relevant legal issue. What matters is that the EPA is adopting standards (no baseline coal without 90-percent CCS, no new or reconstructed combustion turbines without 90-percent CCS or 96-percent low-GHG hydrogen co-firing) that compel an entire industrial sector to achieve the market structure the EPA deems “best.”⁸¹ CAA 111(d) does not give the agency such power.

III.G. The Agency’s Interpretation of Section 60107(6) Flunks the Elephant-Mousehole Test.

IRA section 60107 established LEEP as a new section 135 of the CAA. The Proposed Rule reports that paragraph 5 of IRA 60107 “provides \$1 million for the EPA to assess the GHG emissions reductions from changes in domestic electricity generation and use anticipated to occur annually through fiscal year 2031.” That is correct. The Proposed Rule further claims that paragraph 6 “provides \$18 million for the EPA to promulgate *additional CAA rules* to ensure GHG emissions reductions that *go beyond* the reductions expected in that assessment.”⁸² Here the agency embellishes.

Paragraph 6 says nothing about “additional CAA rules” or achieving reductions “beyond” those expected in the assessment. It simply authorizes \$18 million to “ensure reductions in greenhouse gases are achieved through the use of existing [CAA] authorities . . . incorporating [i.e. informed by] the assessment.”⁸³

Is the EPA suggesting that it could not assess GHG emission reductions from changes in the electric power sector through 2031 absent the \$1 million authorization in paragraph 5 of IRA 60107? Or that it could not ensure reductions in GHG emissions absent the \$18 million authorization in paragraph 6? Surely not. Paragraphs 5 and 6 give the EPA additional funding but no new or expanded authority under CAA 111(d).

Maybe the EPA wants to be able to claim that paragraphs 5 and 6 provide a “clear statement” authorizing the Proposed Rule—an “additional rule” informed by the RIA’s projections of changes in domestic electricity generation through FY 2031 and beyond.

That won’t wash. To immunize itself from a future major-questions challenge, the Proposed Rule must identify a clear statement authorizing the EPA’s pursuit of a 98.7 percent coal-free power system. Paragraphs 5 and 6 do not come “close to the sort of clear authorization required”⁸⁴ to

⁷⁹ Richardson, *Id.*

⁸⁰ Richardson, *Id.*

⁸¹ *West Virginia v. EPA*, 142 S. Ct. 2587, 2612 (2022).

⁸² 88 FR 33240, 33316 (emphasis added).

⁸³ The text of LEEP in the U.S. Code is available here: <https://www.law.cornell.edu/uscode/text/42/7435>.

⁸⁴ *West Virginia v. EPA*, 142 S. Ct. 2587, 2614 (2022).

shut down coal generation. That which *West Virginia* forbade remains forbidden. In fact, the IRA language provides a clear statement that there is no new regulatory authority. The money in Paragraph 6 to ensure reductions in greenhouse gas emissions is limited to the use of *existing* authorities.

Sen. Joe Manchin (D-W.Va.) was a key lawmaker in negotiating and passing the IRA. Here is what Manchin told West Virginia Coal Association president Chris Hamilton two days before the Senate vote on the IRA:

The U.S. Supreme Court in that ruling made clear that Congress did not give EPA the authority to require “generation shifting.” The Inflation Reduction Act does not provide any new authority for EPA to shut down coal plants or to require “generation shifting.” The text does not grant EPA any new authority to do anything to power plants or coal facilities that Congress has not already authorized.⁸⁵

Manchin has not changed his assessment of the IRA, but he now views the Proposed Rule as the extreme program Hamilton feared the IRA would unleash:

Despite neither the Bipartisan Infrastructure Law nor the Inflation Reduction Act providing the Environmental Protection Agency (EPA) with any new rulemaking authority, the EPA continues to advance a radical climate agenda, much of it with insufficient opportunities for public comment and review. Specifically, on May 23, 2023, the EPA published a proposed rule to limit greenhouse gas emissions from new and existing fossil fuel-fired electric generating units which comprise about 60% of total U.S. generating capacity, without an adequate plan to replace the lost dispatchable generation.⁸⁶

Congress does not hide elephants in mouseholes, and did not do so in IRA 60107. It actually provided clear language that there is no new authority.

IV. 90 Percent CCS Is Not an Adequately Demonstrated BSER.

For baseload coal powerplants that expect to operate in the long-term (after December 31, 2039), the EPA proposes to determine that the BSER is CCS technology set to capture 90 percent of the unit’s CO₂ emissions.⁸⁷ For perspective, the BSER in the EPA’s 2015 CAA section 111(b) rule for new coal powerplants was “partial” CCS capturing 16-23 percent of the unit’s emissions.⁸⁸

For baseload natural gas combined cycle (NGCC) powerplants, the EPA proposes two alternative BSERs. An NGCC unit may install 90-percent CCS by 2035, or it may co-fire with

⁸⁵ Sen. Joe Manchin, Letter to Chris Hamilton, President, West Virginia Coal Association, August 4, 2022, https://www.manchin.senate.gov/imo/media/doc/coal_associations_response_letter3.pdf?cb.

⁸⁶ Sen. Joe Manchin, Letter to Honorable Michael Regan, Administrator, U.S. Environmental Protection Agency, June 9, 2023, https://www.manchin.senate.gov/imo/media/doc/regan_letter_power_plant_rule_comment_period_extension.pdf.

⁸⁷ 88 FR 33240, 33245.

⁸⁸ 88 FR 33240, 33350.

30 percent (by volume) low-GHG hydrogen by 2032, ramping up to 96 low-GHG hydrogen by 2038.⁸⁹ Our comments in this section focus on CCS.

To begin with, the EPA’s track record in evaluating CCS has not been stellar. In January 2014, the EPA proposed to determine that CCS was the adequately demonstrated BSER for new coal powerplants, with an associated performance standard (emission limitation) of 1,100 lbs. CO₂/MWh.⁹⁰ As evidence, the EPA cited a handful of projects, all subsidized, and none completed at the time.⁹¹ Critics warned that the standard would halt investment in new coal generation, thereby undermining CCS deployment and innovation. One year and 10 months later, the final rule determined that “partial CCS” was adequately demonstrated, and set a more lenient standard of 1,400 lbs. CO₂/MWh.⁹²

Since then, despite billions in taxpayer support, not one of the U.S. flagship CCS projects touted in the EPA’s proposed and final NSPS rules is producing commercial power and capturing CO₂ today. Mechanical problems, delays, cost overruns, and cancellations have been common afflictions.⁹³

In fact, only one commercial CCS coal powerplant operates in all of North America—the Boundary Dam Project in Saskatchewan. The EPA featured Boundary Dam in the January 2014 proposal and 2015 final rule. The Proposed Rule does as well. Boundary Dam “has achieved CO₂ capture rates of 90 percent using an amine-based post-combustion capture system retrofitted to the existing steam generating unit,” the EPA reports.⁹⁴ That is correct but misleading, because Boundary Dam has not achieved 90 percent capture on a regular basis, which is what the proposed standard requires.

In 2021, Boundary Dam had to shut down for weeks at a time to repair the carbon capture system. According to one report, the project’s actual capture rate for that year was “less than 37

⁸⁹ 88 FR 33240, 33244.

⁹⁰ EPA, Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units, Proposed Rule, 79 FR 1430, 1433, January 8, 2014, <https://www.govinfo.gov/content/pkg/FR-2014-01-08/pdf/2013-28668.pdf>.

⁹¹ 79 FR 1430, 1434.

⁹² EPA, Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units; Final Rule, 80 FR 64510, 64512, October 23, 2015, <https://www.govinfo.gov/content/pkg/FR-2015-10-23/pdf/2015-22837.pdf>.

⁹³ Steve Daniels, “FutureGen ‘clean coal’ plant is dead,” *Crain’s Chicago Business*, February 3, 2015, <https://www.chicagobusiness.com/article/20150203/NEWS11/150209921/futuregen-clean-coal-plant-in-illinois-is-killed-by-obama-administration>; Kristi E. Swartz, “Southern Co.’s clean coal plant hits a dead end,” *E&E News*, June 22, 2017, <https://subscriber.politicopro.com/article/eenews/1060056418>; Dennis Wamsted, *Petra Nova Mothballing Post-Mortem: Closure of Texas Carbon Capture Plant Is a Warning Sign*, Institute for Energy Economics and Financial Analysis, August 2020, <https://ieefa.org/wp-content/uploads/2020/08/Petra-Nova-Mothballing-Post-Mortem-August-2020.pdf>.

⁹⁴ 88 FR 33240, 33254.

percent of the official 90 percent target.” After repairs were completed, the rate was 75-80 percent.⁹⁵

As for NGCC powerplants with CCS, none has ever been built. Granted, the EPA may determine a control technology to be adequately demonstrated “even if it is new and not yet in widespread commercial use.”⁹⁶ Nonetheless, the dismal record of coal CCS does not inspire confidence that an even less studied and tested NGCC-plus-CCS system will soon meet the EPA’s expectations.

We turn now to a more fundamental problem. NSPS are uniform, hence are intended to be achievable at reasonable cost by any new facility built anywhere in the United States. Accordingly, in *National Lime Association v. Environmental Protection Agency* (1980), the D.C. Circuit Court of Appeals held that NSPS must be “achievable” by the regulated “industry as a whole” under the “most adverse conditions” that may recur “anywhere in the country.”⁹⁷ An adequately demonstrated BSER, therefore, may not be geographically limited to certain regions or States.

A central feature in the business plans of almost every utility-scale commercial CCS powerplant ever built or proposed in North America is an arrangement to sell its captured CO₂ to companies engaged in enhanced oil recovery (EOR). Injecting CO₂ into older oil fields increases production by increasing field pressure while reducing the oil’s viscosity. Thirty-eight States do not have EOR operations. That places a significant geographic constraint on the viability of CCS powerplants.

The Trump EPA’s Affordable Clean Energy (ACE) describes this problem in detail:

In addition, nearby EOR opportunities are not available for many EGUs, which, as a result, would incur higher costs for constructing and operating pipelines to transport CO₂ long distances. Throughout the country, 29 states are identified as having oil reservoirs amenable to EOR, of which only 12 states have active EOR operations. The vast majority of EOR is conducted in oil reservoirs in the Permian Basin, which extends through southwest Texas and southeast New Mexico. States where EOR is utilized include Alabama, Arkansas, Colorado, Louisiana, Michigan, Mississippi, Montana, New Mexico, Oklahoma, Texas, Utah, and Wyoming, whereas coal-fired generation capacity is located across the country. For example, Georgia, Minnesota, Missouri, Nevada, North Carolina, South Carolina, and Wisconsin have coal-fired generation capacity but do not have oil reservoirs that have been identified as amenable for EOR. In addition, some of the states with the largest amounts of coal-fired generation capacity have no active EOR operations, including Illinois, Indiana, Kentucky, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. Even in states that are identified as having potential oil and gas storage capacity, the amount of storage resource varies by state. In some states, the total oil and gas storage resource is smaller than the annual energy-related CO₂ emissions

⁹⁵ Karin Rives, “Only still-operating carbon capture plant battled technical issues in 2021, S&P Global, January 6, 2022, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/only-still-operating-carbon-capture-project-battled-technical-issues-in-2021-68302671>.

⁹⁶ 88 FR 33240, 33243.

⁹⁷ *National Lime Association, Petitioner, v. Environmental Protection Agency and Douglas M. Costle, Administrator of Environmental Protection Agency*, 627 F.2d 416 (D.C. Cir. 1980).

from coal, including Indiana and Virginia. The limited geographic availability of EOR, and the consequent high costs of CCS for much of the coal fleet, by itself means that CCS cannot be considered to be available across the existing coal fleet.⁹⁸

Finally, it not clear that CCS + EOR is a bona fide system of emission reduction. In a 2011 report, the Department of Energy’s National Energy Technology Laboratory (NETL) estimated that injecting 20 billion tons of CO₂ underground for EOR would increase U.S. oil production by 67 billion barrels.⁹⁹

According to EPA emissions data, combusting one barrel of oil emits, on average, 0.43 metric tons of CO₂.¹⁰⁰ Plugging that conversion factor into NETL’s analysis, injection of 20 billion metric tons of CO₂ produces 67 billion barrels of oil that, when combusted, emit 28.81 billion metric tons of CO₂. In other words, CCS combined with EOR emits 1.41 tons of CO₂ for every ton injected underground.

In another report, NETL summarizes a Montana Tech University study of a potential CCS-EOR operation, which found that CO₂ flooding of Montana’s Elm Coulee and Cedar Creek oil fields could result in the recovery of 666 million barrels of incremental oil and the storage of 109 million metric tons of CO₂. All the CO₂ would be supplied by a nearby coal powerplant, equivalent to 7 years of the plant’s emissions. That implies an even bigger net increase in emissions than NETL’s 2011 report indicates—about 2.6 tons of CO₂ emitted for every ton stored underground.

We recognize that the EPA determines compliance with the proposed standards “exclusively by the tons of CO₂ captured by the emitting EGU,” and that tons “sequestered by the geologic sequestration site are not part of that calculation.”¹⁰¹ Nonetheless, if CCS in commercial practice increases emissions, then the technology does not pass muster on a life-cycle analysis, which the EPA uses to assess other climate policies, such as the renewable fuel standard.¹⁰² At a minimum, the EPA would need to lower its estimate of the rule’s emission reductions.

V. Subsidies and Subsidy-Dependence Should Be Negative Factors in BSER Determinations.

The EPA’s likely rebuttal to our geographic constraint argument is that IRA subsidies now make CCS affordable without EOR revenues. Specifically, the IRA expanded the IRC section 45Q tax

⁹⁸ EPA, Repeal of the Clean Power Plan; Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guidelines Implementing Regulations, 84 FR 32520, 32549, July 8, 2019, <https://www.govinfo.gov/content/pkg/FR-2019-07-08/pdf/2019-13507.pdf>.

⁹⁹ NETL, Improving Domestic Energy Security and Lowering CO₂ Emissions with “Next Generation” CO₂-Enhanced Oil Recovery (CO₂-EOR), June 20, 2011, https://www.netl.doe.gov/sites/default/files/netl-file/NextGen_CO2_EOR_06142011.pdf.

¹⁰⁰ EPA, Greenhouse Gas Equivalencies Calculator—Calculations and References, <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>.

¹⁰¹ 88 FR 33240, 33328.

¹⁰² EPA, Life Cycle Analysis of Greenhouse Gas Emissions under the Renewable Fuel Standard, <https://www.epa.gov/renewable-fuel-standard-program/lifecycle-analysis-greenhouse-gas-emissions-under-renewable-fuel>.

credit for CCS powerplants from \$50/metric ton to \$85/metric ton. According to the EPA, the tax credit exceeds the per-ton cost of installing and operating CCS. If a CCS powerplant has a 70 percent annual capacity factor, the unit's costs are a negative \$8 per ton of CO₂ reduced.¹⁰³

That raises additional questions. Is an emission control system “adequately demonstrated” if it is not financially viable without permanent taxpayer subsidies? The very need to increase subsidies that to date have failed strongly suggest that it is not adequately demonstrated.

Another critical question: Is the taxpayer subsidy a “cost” the EPA must consider when determining whether a control technology is “adequately demonstrated”?

The EPA argues that the section 45Q tax credit should weigh in favor of determining CCS to be adequately demonstrated “because it reduces the cost of the controls to the source, which has a significant effect on the actual cost of installing and operating CCS.”¹⁰⁴ Moreover, the EPA contends that CAA section 111(a) “makes clear that the cost that the EPA must take into account is the cost to the affected source of the system of emission reduction.”¹⁰⁵

However, the statute requires the EPA to take into account three factors: “[1] the cost of achieving such reduction and [2] any nonair quality health and environmental impact and [3] energy requirements.” The plain language of factor 1 does not limit cost to the source (i.e. compliance cost). The term “cost” is not modified by “compliance” or “to the regulated facility.” Rather, “cost” is broad in scope. It includes all costs connected to the “cost of achieving such reduction.”

The EPA relies heavily on the 45Q tax credits to justify 90-percent CCS as BSER. The agency fails to meet the cost analysis requirements under CAA 111(a)(1) by ignoring the cost of the massive subsidies, without which “such reduction” would not be achieved. If the agency may ignore all costs except compliance costs, absurd consequences ensue. The agency could ignore taxpayer costs of tens or even hundreds of billions of dollars because the regulated parties are subsidized. There is no warrant in 111(a)(1) to disregard costs to taxpayers and other non-regulated parties.

Consider also that if the three factors are limited to the source, the provision would make no sense. The Factor 2 examination of nonair quality health and environmental impacts inherently requires looking at issues beyond the sources, as does the factor 3 examination of energy requirements, such as the impacts on the grid. Given that these factors clearly require looking beyond the individual source, it would be an improper statutory interpretation¹⁰⁶ and arbitrary and capricious to read factor 1 as being unlike the others.

¹⁰³ 88 FR 33240, 33348.

¹⁰⁴ 88 FR 33240, 33300.

¹⁰⁵ 88 FR 33240, 33273.

¹⁰⁶ It would be inconsistent with the canon of *Ejusdem Generis*. See, e.g., *Ejusdem Generis*, *The Law Dictionary*, <https://thelawdictionary.org/ejusdem-generis/>.

The EPA acknowledges that the cost standard, as interpreted by the D.C. Circuit Court of Appeals, precludes a cost that would be “greater than the industry could bear and survive.”¹⁰⁷ That, too, involves a broader perspective than the impact on an individual source.

Further, if the subsidies cease to exist or do not remain as generous (a genuine possibility), then the agency’s overreliance on them to justify CCS becomes even more problematic. At that point, there could be no little or cost reprieve for regulated parties required to apply technology that has not been financially-viable to date even with subsidies.

Is a control technology that enriches utilities but imposes billion-dollar costs on taxpayers “adequately demonstrated”? The EPA apparently thinks so, and the IRA is heavy with taxpayer-funded wealth transfers. We doubt, however, that CAA section 111(a) endorses the theory that taking cost into account excludes consideration of taxpayer cost, or confuses “adequately demonstrated” with heavily subsidized.

VI. Climate Change Is Not a Crisis.

For the scientific basis of the proposal, the EPA invokes the authority of major climate change assessment reports, such as the 2017-2018 Fourth National Climate Assessment (NAC4) of the U.S. Global Change Research Program (USGCRP), the Intergovernmental Panel on Climate Change’s (IPCC’s) 2018 report on Global Warming of 1.5°C, and the IPCC’s 2021 Sixth Assessment Report (AR6). Such reports are flawed and biased towards alarm. The dominant emission scenarios in those reports—RCP8.5 in NAC4 and the 2018 IPCC report, and SSP5-8.5 in AR6—were wildly inflated.

RCP8.5 is a forcing trajectory (“emissions concentration pathway”) that assumes a world in which global coal consumption increases nearly 10-fold during 2000-2100,¹⁰⁸ regaining the market share it enjoyed in 1940. Nothing like that is happening or expected to happen.

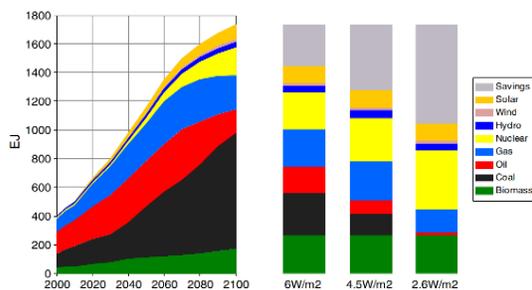


Fig. 5 Development of global primary energy supply in RCP8.5 (left-hand panel) and global primary energy supply in 2100 in the associated mitigation cases stabilizing radiative forcing at levels of 6, 4.5, and 2.6 W/m² (right-hand bars). Note that primary energy is accounted using the direct equivalent method

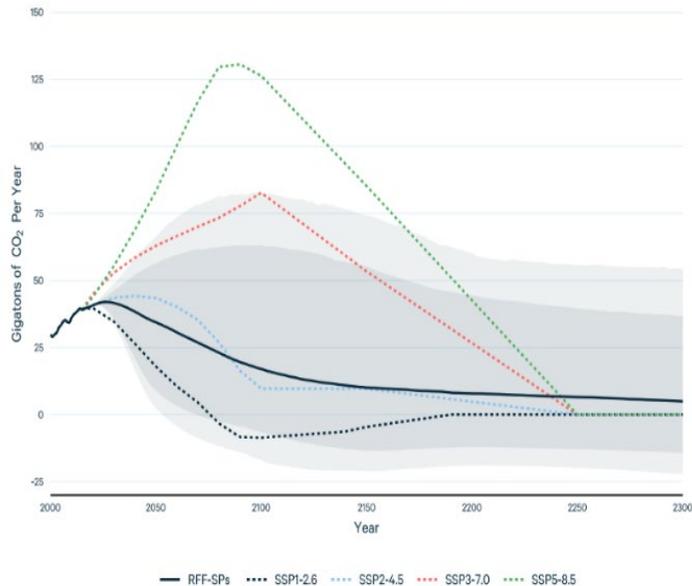
Source: Kewan Riahi et al. (2011)

¹⁰⁷ 88 FR 33240, 33273.

¹⁰⁸ Kewan Riahi, Shilpa Rao, Volker Krey, Cheolhung Cho, Vadim Chirkov, Guenther Fischer, Georg Kindermann, Nebojsa Nakicenovic, and Peter Rafaj. 2011. RCP8.5—A Scenario of Comparatively High Greenhouse Gas Emissions. *Climate Change* 109: 33-57, <https://link.springer.com/article/10.1007/s10584-011-0149-y>.

SSP5-8.5 is a “shared socioeconomic pathway” emissions scenario calibrated to match the RCP8.5 forcing trajectory. The next chart compares SSP5-8.5 (and other SSPs in AR6) to updated emission baselines developed by Resources of the Future.¹⁰⁹ The EPA considers the RFF baselines to be the most rigorous available.¹¹⁰

Figure 8. Net Annual Emissions of CO₂ from RFF-SPs and SSPs



Notes. Lines represent median values, and dark and light shading represent the 5th to 95th (darker) and 1st to 99th (lighter) percentile ranges of the RFF-SPs.

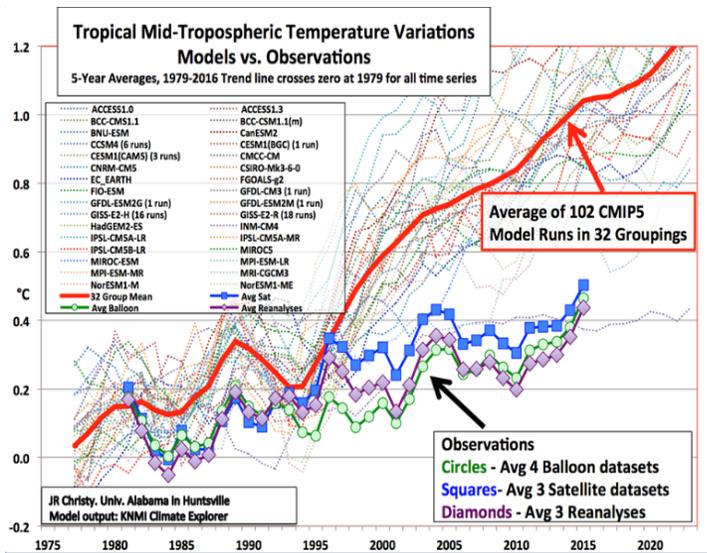
Source: *Kevin Rennert et al. 2021*

Annual CO₂ emissions in the new RFF baselines are less than half those projected by SSP5-8.5 in 2050 and less than one-fifth those projected by SSP5-8.5 in 2100. Lower emissions mean less warming and milder climate impacts.

NAC4 and the IPCC’s 2018 report ran RCP8.5 with the CMIP5 ensemble of climate models. AR6 ran SSP5-8.5 with the CMIP6 model ensemble. CMIP5 and CMIP6 are warm-biased models. The following chart compares CMIP5 model temperature projections with observations in the bulk tropical atmosphere (the tropical mid-troposphere).

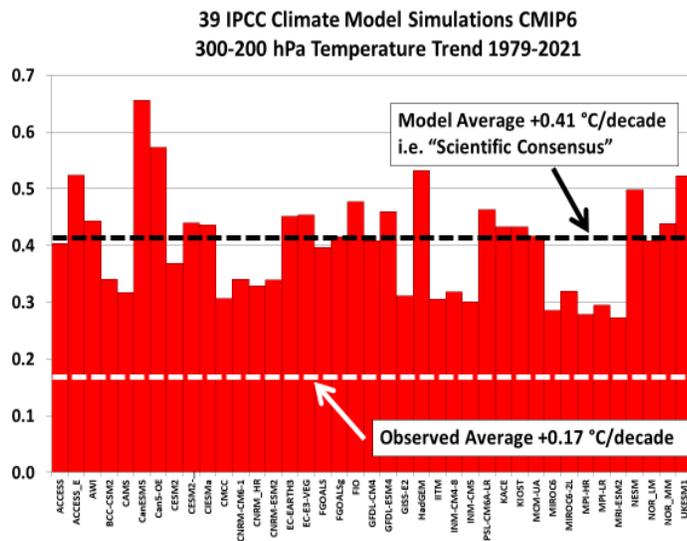
¹⁰⁹ Kevin Rennert et al. *The Social Cost of Carbon: Advances in Long-Term Probabilistic Projections of Population, GDP, Emissions, and Discount Rates*, Resources for the Future, October 2021, <https://www.rff.org/publications/working-papers/the-social-cost-of-carbon-advances-in-long-term-probabilistic-projections-of-population-gdp-emissions-and-discount-rates/>.

¹¹⁰ EPA, External Review Draft of the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances, September 2022, p. 19, https://www.epa.gov/system/files/documents/2022-11/epa_scghg_report_draft_0.pdf.



Source: John Christy (2017)¹¹¹

The next chart compares CMIP6 model projections with observations in the same atmospheric region.



Source: Ross McKittrick and John Christy (2020).¹¹²

Both model ensembles overshoot observations by a factor of about 2.4. If anything, CMIP6 is less accurate because every CMIP6 model overshoots the average of observations from satellites, weather balloons, and re-analyses.

¹¹¹ Christy, J.R.: 2017, [in "State of the Climate in 2016"], *Bull. Amer. Meteor. Soc.* 98, (8), S16-S17, <https://journals.ametsoc.org/view/journals/bams/98/8/2017bamsstateoftheclimate.1.xml>.

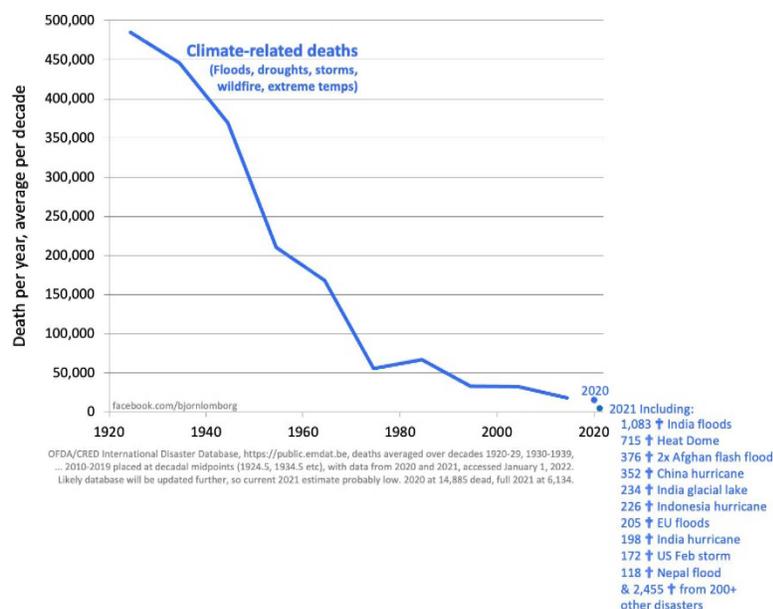
¹¹² McKittrick and J. Christy. 2020. Pervasive Warming Bias in CMIP6 Tropospheric Layers. *Earth and Space Science* Volume 7, Issue 9, <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020EA001281>.

The EPA should note that the tropical mid-troposphere is uniquely suited for testing the validity of climate models. That is because: (1) all models predict a strong positive feedback in that atmospheric layer; (2) the region is well-monitored by satellites and weather balloons; (3) the region is too distant from the surface to be influenced by land use changes; and (4) the models have not been previously “tuned” to match historical troposphere temperatures, so are genuinely independent of the data used to test them.¹¹³

The EPA should keep in mind two other big-picture points. First, the past century has witnessed a dramatic reduction in humanity’s vulnerability to extreme weather. The annual number of climate-related deaths per decade has declined by 96 percent since the 1920s.¹¹⁴

Climate-related Deaths: 1920-2021

Deaths have declined precipitously because richer and more resilient societies reduce disaster deaths and swamp any potential climate signal



Source: Bjorn Lomborg¹¹⁵

This spectacular decrease in aggregate climate-related mortality is all the more impressive because it occurred during fourfold increase in global population. That means the individual risk

¹¹³ R. McKittrick and J. Christy. 2018. A Test of the Tropical 200- to 300-hPa Warming Rate in Climate Models, *Earth Space and Science*, 5, 529–536, <https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2018EA000401>.

¹¹⁴ Bjorn Lomborg, “We’re Safer from Climate Disasters than Ever Before,” *Wall Street Journal*, November 3, 2021, <https://www.wsj.com/articles/climate-activists-disasters-fire-storms-deaths-change-cop26-glasgow-globalwarming-11635973538>; “Fewer and Fewer People Die from Climate-Related Disasters,” Facebook, <https://www.facebook.com/bjornlomborg/posts/475702943914714/>.

¹¹⁵ Bjorn Lomborg Facebook Page, updating “Welfare in the 21st century: Increasing development, reducing inequality, the impact of climate change, and the cost of climate policies,” *Technological Forecasting and Social Change*, July 2020, Vol. 156, <https://www.sciencedirect.com/science/article/pii/S0040162520304157>.

of dying from extreme weather events declined by 99.4 percent over the past 100 years.¹¹⁶ Far from being an impediment to such progress, fossil fuels were its chief energy source.¹¹⁷

The second big-picture point is this. We often hear—and the EPA suggests¹¹⁸—that the weather is becoming increasingly destructive. Climate-related damages are larger, but that is chiefly due to increases in population and wealth. What matters from a sustainability perspective is climate-related damages as a percentage of exposed GDP. Globally, weather-related losses per exposed GDP declined nearly five-fold from 1980–1989 to 2007–2016.¹¹⁹

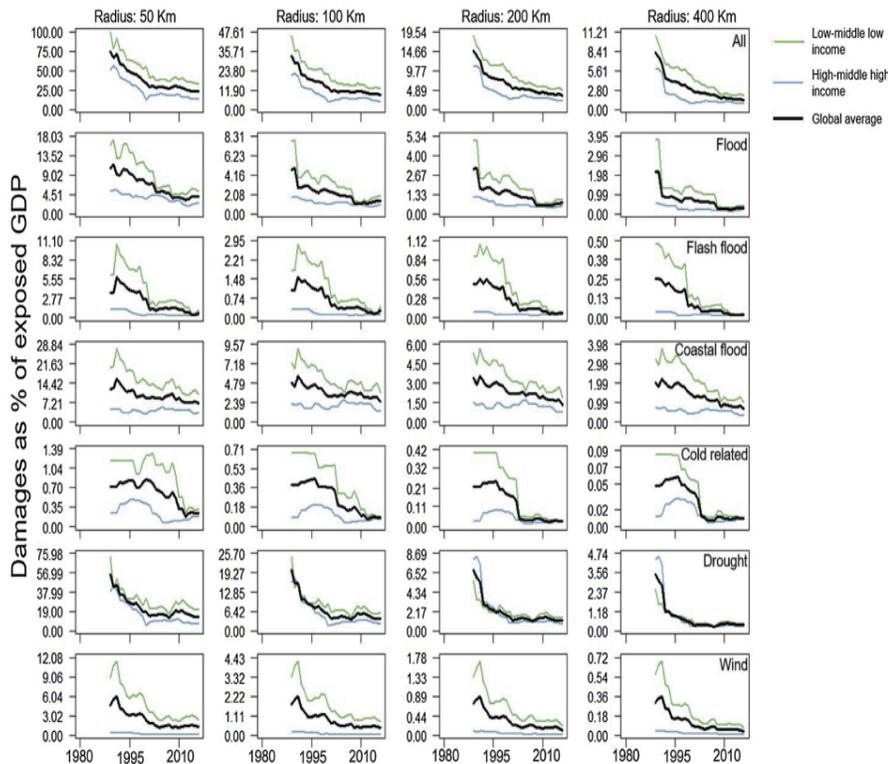


Fig. 3. Loss rates for the analyzed hazards. Results for each hazard represent 10-year moving average of the median (for each year per income class) loss rates for two income levels (low/middle-low income in green and high/middle-high income in blue) and all countries (average of low/middle-low and high/middle-high income classes). Multi-hazard loss rates are the sum of single hazard median values.

Source: Formetta and Feyen (2019). *Decreasing relative economic impact of six types of extreme weather in high- and low-income countries, 1980-1989 vs 2007-2016.*

¹¹⁶ Bjorn Lomborg, "The risk of dying from climate-related disasters has declined precipitously." Twitter, January 1, 2023, <https://twitter.com/BjornLomborg/status/1609568094447456259>.

¹¹⁷ Alex Epstein, *Fossil Future: Why Human Flourishing Requires More Oil, Coal, and Natural Gas—Not Less* (New York: Penguin Random House, 2022).

¹¹⁸ 88 FR 33240, 32451.

¹¹⁹ Giuseppe Formetta and Luc Feyen. 2019. Empirical Evidence of Declining Global Vulnerability to Climate-Related Hazards, *Global Environmental Change*, 57: 1-9, https://www.researchgate.net/publication/333507964_Empirical_evidence_of_declining_global_vulnerability_to_climate-related_hazards.

VII. The Proposal's Climate Benefits Are a Mirage.

The EPA projects that the proposed standards for existing coal power plants and the first two phases of the proposed standards for new combustion turbines will reduce CO₂ emissions by 617 million tons during 2028-2042 relative to the baseline. The third phase combustion turbine standards are projected to further reduce CO₂ emissions by 215-409 million tons.¹²⁰ The EPA projects “about \$30 billion” in present value climate benefits over the 2028-2042 period.¹²¹

Let's then assume the standards reduce U.S. power-sector emissions by 1,026 million tons. If we plug that number into MAGICC, the federal government's climate policy calculator, and assume RCP6.0, which overshoots the new RFF emission baseline, and a climate sensitivity of 5.0°C, which is above the high end (4.5°C) of the IPCC's “likely” range, the standards avoid 0.0273°C of warming by 2050, and 0.0575°C by 2100.

Those mitigations are smaller than the 0.11°C standard deviation for estimating changes in annual average global surface temperatures.¹²² Such effects are too small to be detected by scientific measurements or experienced by human beings. Undetectable, non-experiential effects are “benefits” in name only and should not netted against multi-billion-dollar compliance costs that verifiably impose measurable burdens on identifiable people and businesses.

The agency calculates its \$30 billion climate benefit estimate by multiplying the Proposed Rule's projected number of tons of CO₂ emissions reduced by the Interagency Working Group's (IWG's) February 2021 interim estimates of the social cost of carbon dioxide (SC-CO₂). The IWG's methodology is rife with biases that inflate its SC-CO₂ estimates.

The IWG relies on an obsolete emission baseline that projects more than three times the cumulative quantity of CO₂ emissions during 2000-2300 than more up-to-date estimates. The IWG relies on an obsolete climate sensitivity distribution that projects significantly more warming from a given increase in CO₂ concentration than more recent empirically-constrained climate sensitivity studies. The IWG averages the results of three integrated assessment models (IAMs), two of which ignore the immense agricultural benefits of CO₂-atmospheric enrichment.

For the details, see my comments on the Office of Management and Budget's proposed revision of Circular A-4 regulatory accounting guidelines.¹²³

¹²⁰ 88 FR 33240, 33409.

¹²¹ 88 FR 33240, 33412.

¹²² J. Hansen, et. al. 1999. GISS Analysis of Surface Temperature Change. *Journal of Geophysical Research*, Vol. 104, No. D24, 30,997-31,022, <https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/1999JD900835>.

¹²³ Marlo Lewis, Comments to the Office of Management and Budget on the proposed update to Circular A-4: Regulatory Analysis, June 20, 2023, <https://cei.org/wp-content/uploads/2023/06/Lewis-CEI-Comments-OMB-2022-0014-0001-Draft-Circular-A-4-June-20-2023.pdf>.

VIII. Conclusion

Last year, the Supreme Court made it clear that the EPA has no authority under Section 111 to effectively become the nation's grid manager. During that short period of time, nothing has changed to give the agency this authority. If Congress wanted the agency to possess such authority, it would have said so in clear terms. Congress has not done so, yet the agency is still trying to assert this incredible power. The agency is also equating regulation of individual sources with the authority to shut down those sources. Once again, the agency asserts a power that Congress would not have neglected to mention in clear terms.

The proposed rule, like the Clean Power Plan, ignores the separation of powers that is vital to the nation's republican form of government. If policymakers want to dictate how electricity is generated in this country or shut down certain types of businesses, then those are choices that Congress should make. And if Congress did want the EPA to exercise such power, common sense tells us that Congress's authorization would be stated clearly.

Beyond the separation of powers problems and the major question implications, the EPA's proposed rule fails to meet statutory requirements, including improperly considering costs, and improperly trying to adopt technological requirements that are not remotely close to being commercially viable or feasible across many parts of the country. Quite simply, the rule is unauthorized, unreasonable, and arbitrary and capricious. Therefore, the EPA should withdraw the Proposed Rule.

Respectfully,

Marlo Lewis, Jr., Ph.D.
Senior Fellow in Energy and Environmental Policy
Competitive Enterprise Institute
202-331-1010; marlo.lewis@cei.org