NRECA
America's Electric Cooperatives

August 8, 2023

Administrator Michael S. Regan
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Submitted to the Federal eRulemaking Portal, www.regulations.gov

Re: 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 (Docket ID No. EPA-HQ-OAR-2023-0072); 88 Fed. Reg. 33,240 (May 23, 2023)

Dear Administrator Regan,

The National Rural Electric Cooperative Association (NRECA) respectfully submits these comments in response to the U.S. Environmental Protection Agency's (EPA, or the Agency) Proposed Rules to limit greenhouse gas (GHG) emissions from new and existing fossil fuel-fired electric generating units (EGUs).[1] NRECA is the national trade association representing 900 not-for-profit electric cooperatives and other rural electric utilities.

America's electric cooperatives are owned by the people they serve and comprise a unique sector of the electric industry. Electric cooperatives power one in eight Americans and serve as engines of economic development for 42 million people across 56% of the nation's landscape. Electric cooperatives are focused on providing affordable, reliable, and safe electric power in an environmentally responsible manner and support common sense solutions to environmental impacts.

NRECA appreciates the opportunity to comment on the Proposed Rules.[2] These comments are accompanied by several technical comments and reports that NRECA attaches to this submission and cites throughout.[3] These documents should be considered in their entirety.

[1] 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, 88 Fed. Reg. 33,240 (May 23, 2023) (Proposed Rules).
[2] NRECA is also a member of the Power Generators Air Coalition that submitted comments on this proposal.
[3] These documents are: *Appendix: Response to EPA Comment Solicitation Regarding Carbon Storage and Transportation*. (**Carbon Storage Appendix**); *Examination of EPA's Proposed Emission Guidelines Under 40 CFR Part 60*. University of North Dakota Energy & Environmental Research Center. (**EERC**); *Analysis of Post Combustion CO_2 Capture, Transport and Storage Costs in the EPA's Proposed Power Plant Greenhouse Gas Emissions Rule*. William Morris and John Weeda. (**Morris and Weeda CCS**); *Analysis of EPA's Proposed Power Plant Greenhouse Gas Emissions Rule Impact on The Generation Alternative of Fuel Switching to Natural Gas*. William Morris and John Weeda. (**Morris and Weeda Natural Gas**); *Analysis of the EPA's Proposed Power Plant Greenhouse Gas Emissions Rule Impact on Generation Resource Adequacy and the Need for Transmission Alternatives.* John Weeda. (**Weeda**); *Analysis of the National Energy Technology Laboratory Cost Estimation Guidelines and Comparison with Alternate Estimate from the Energy Information Administration, Sargent & Lundy*. Doug Campbell. (**Campbell**

For the reasons explained in these comments, and detailed in the accompanying attachments, EPA should withdraw the Proposed Rules. To put it simply, the proposals exceed EPA's statutory authority and would jeopardize affordable and reliable electricity by mandating nascent, inadequately demonstrated technologies and unachievable emissions limits on an unworkable timeframe.

I. Executive Summary

America's not-for-profit electric cooperatives are committed to keeping the lights on at a cost local families and businesses can afford. This commitment to providing affordable, reliable, and safe electricity underpins NRECA's comments to EPA's proposal. Electric cooperatives operate without shareholders and are uniquely affected by regulatory mandates. Any increased costs for cooperatives must be passed along directly to their consumer-members at the end of the line. It is therefore critical that agencies issue regulations that are cost effective.

EPA's Proposed Rules would require the use of technologies that are not commercially viable on an unreasonably expedited timeframe. Under the Clean Air Act (CAA), EPA's standards must be adequately demonstrated, achievable, and cost effective. Its proposed best systems of emission reduction in the form of carbon capture and storage (CCS), co-firing clean hydrogen, or co-firing natural gas all fail to meet these criteria. Accordingly, the Proposed Rules clearly violate the CAA and go beyond clear limitations established by Supreme Court precedent.

CCS is a nascent but promising technology, and NRECA and its members have been leaders in its development. But it has not been shown to work at a commercial scale on either coal or natural gas units, and certainly not at the 90% capture rate that the Agency proposes. It is also heavily reliant on outside the fence line infrastructure that does not currently exist and will not exist by the proposed compliance dates. Clean hydrogen is even further behind CCS in its development. There is currently no supply of clean hydrogen to meet EPA's standards. Like CCS, there is also no infrastructure in place to transport or store it, even if it was available in the needed amounts. There are also substantial limitations to currently using clean hydrogen as a steady, ongoing fuel source for combustion turbines, making EPA's proposed co-firing levels based on conjecture and aspiration. And while natural gas co-firing is used by some coal units, it is not available to many units due to location, access, or engineering considerations.

EPA couples these inadequately demonstrated technologies with unworkable timelines that will be impossible to achieve. The Agency also substantially underestimates what it would cost to comply – assuming compliance is even possible. As a result, the always available generation that will be necessary to meet the increasing electrification needs of the future will be forced to retire. These retirements will pose direct threats to electric grid reliability that EPA fails to appropriately assess and inaccurately models. Accordingly, EPA should withdraw the Proposed Rules in their entirety.

NETL); *Analysis of Hydrogen in Combustion Turbine Electric Generating Units*. (**Campbell Hydrogen**); *Analysis of EPA's Proposed Construction Timeframes for CCS Projects*. Daniel Walsh. (**Walsh**); *Technical Comments on Hydrogen and Ammonia Firing*. Kiewit Engineering Group, Inc. (**Kiewit**); *Technical Comments on the U.S. Environmental Protection Agency's Integrated Planning Model's Evaluation of the Greenhouse Gas Standards and Guidelines for Fossil Fuel-fired Power Plants – Proposed Rule.* James Marchetti. (**Marchetti Comments**); *Technical Comments on the Carbon Capture Utilization and Sequestration Aspects of the Proposed New Source Performance Standards for GHG Emissions from New and Reconstructed EGUs; Emission Guidelines for GHG Emissions from Existing EGUs; and Repeal of the Affordable Clean Energy Rule*. J. Edward Cichanowicz and Michael C. Hein. (**Cichanowicz and Hein**).

II. Background on NRECA and its Cooperative Members

The nation's member-owned, not-for-profit electric cooperatives constitute a unique sector of the electric utility industry. NRECA's member cooperatives include 63 generation and transmission (G&T) cooperatives and 832 distribution cooperatives. Each cooperative is governed by a board of directors elected from its membership. The G&Ts generate and transmit power to distribution cooperatives that provide it to the end of line cooperative consumer-members. Collectively, G&T cooperatives generate and transmit power to nearly 80% of distribution cooperatives, which in turn provide power directly to consumer-members at the end of the line.[4] The remaining distribution cooperatives receive power directly from other generation sources within the electric utility sector. Both distribution and G&T cooperatives share an obligation to serve their consumer-members by providing affordable, reliable, and safe electric service.

Furthermore, electric cooperatives rely on a diversity of resources that affordably and reliably meet their consumer-members' energy needs. Electric cooperatives are accelerating energy innovation to power a brighter future. Electric cooperatives continue to increase the use of renewable energy resources; add distributed energy resources and storage; adopt energy efficiency programs; monitor and explore developments related to nuclear energy; and work to enable electrification. These efforts are all made while balancing reliability at a time when energy demand is increasing.

Cooperatives have also been at the forefront of exploring carbon capture technologies. NRECA has supported research into the technology, and individual member cooperatives have helped by participating in federally backed research and development efforts. To illustrate this commitment to affordable, reliable, and low emissions power, in 2021, two-thirds of the electricity delivered by cooperatives came from low- or zero-carbon sources.[5]

A. Cost-effective regulations are critical to America's electric cooperatives.

Cost-effective federal regulations that minimize unnecessary burdens are very important to cooperatives' ability to provide affordable, reliable and safe electricity to their consumer-members. Rural electric cooperatives serve large expanses of the United States that are primarily residential and typically sparsely populated. Those characteristics make it comparatively more expensive for rural electric cooperatives to operate than the rest of the electric sector, which traditionally serves more compact, industrialized, and densely populated areas.

Since electric cooperatives serve areas with low population density, costs are borne across a base of fewer consumers and by families that spend more of their limited resources on electricity than do comparable municipal-owned or investor-owned utility customers. Using data from the U.S. Energy Information Administration (EIA) and other sources, NRECA estimates that rural electric cooperatives serve an average of eight consumers per mile of line and collect annual revenue of approximately $19,000 per mile of line. In contrast, for the rest of the industry, the averages are 32 customers and $79,000 in annual revenue per mile of line.

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[4] Cooperatives own and maintain 2.7 million miles, or 42%, of the nation's electric distribution lines. NRECA, *America's Cooperative Electric Utilities Fact Sheet*. p. 2. March 2, 2023. Available at: https://www.cooperative.com/programs-services/bts/Documents/Data/Electric-Co-op-Fact-Sheet.pdf.

[5] In 2021, electric cooperatives' fuel mix included 22% renewables, 15% nuclear, 29% natural gas, 32% coal, and 2% oil and other resources. National Rural Electric Cooperative Association. *Electric Co-op Facts and Figures*. April 13, 2023. (NRECA Fact Sheet) Available at: https://www.electric.coop/electric-cooperative-fact-sheet.

Many cooperative consumer-members are among those least able to afford higher electricity rates. In 2022, the average (mean) household income for electric cooperative consumer-members was 12% below the national average. That is unsurprising, given that electric cooperatives serve 92% of persistent poverty counties in the United States.[6]

More generally, the electricity supplied by rural cooperatives is vital to rural economies and an essential element of modern residential, rural life. Rural development requires access to affordable and reliable electric power. Regulations that are not cost-effective and increase the cost of producing that electricity, or threaten its availability, thus pose serious threats to maintenance and growth in large segments of rural America.

Electric cooperatives have no equity shareholders who can bear the costs of stranded generation assets or investment in new or alternative generation resources. Cooperatives do not have a rate of return on equity as do investor-owned utilities because cooperatives operate on a not-for-profit basis. For that reason, all costs are passed through directly to their consumer-members that already spend more of their limited incomes on electricity. Consequently, electric cooperatives must ultimately pass along capital costs directly to their consumer-members through increased electric rates.

Given that cooperatives maintain only marginal cash reserves for anticipated operating expenses and unforeseen events, financing for many capital projects necessarily require reliance on debt sourced from entities such as the United States Department of Agriculture's (USDA) Rural Utilities Service, National Rural Utilities Cooperative Finance Corporation, and CoBank. The costs of borrowing, too, are necessarily passed on to cooperatives' consumer-members. Ultimately, then, it is the cooperatives' consumer-members at the end of the line who bear the cost of regulations through increased electric rates.

All but two of NRECA's member cooperatives are "small entities" under the U.S. Small Business Administration's (SBA) size standards. By virtue of their size and limited resources, small entities such as cooperatives are disproportionately burdened by the cost of regulations in comparison to their larger counterparts. Cost-effective federal regulations that minimize unnecessary burdens are very important to cooperatives' ability to provide affordable, reliable, and safe electricity to their consumer-members. For that reason, it is extremely important that EPA comply with the Regulatory Flexibility Act (RFA) and properly assess the costs of the Proposed Rules on small entities, work to reduce any disproportionate burdens, and provide compliance flexibility.

B. Policy decisions and other challenges are threatening the reliable delivery of electricity in the United States.

Providing affordable, reliable, and safe electricity is paramount for electric cooperatives. A resilient and reliable electric grid that affordably keeps the lights on is the cornerstone of American social, economic, energy security, and national security needs. However, the United States is facing a number of challenges to maintaining reliable electricity. In addition to the Proposed Rules, a series of EPA regulations are being issued in rapid succession with the outcome of making it too costly and difficult to operate always available, fossil fuel-fired power plants, threatening the stability of America's electric grid.[7]

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[6] NRECA Fact Sheet at 1.

[7] These actions include: Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 88 Fed. Reg. 18,824 (March 29, 2023); National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review, 88 Fed. Reg. 24,854 (April 24, 2023); Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric

As a nation, we are heading towards a future that depends on electricity to power more of the economy. Recent modeling by the Electric Power Research Institute concluded that achieving net-zero economy-wide emissions by 2050 could require generation capacity to increase by as much as 480% compared to what is in place today.[8] Electrifying other sectors of the economy could require a three-fold expansion of the transmission grid and up to 170% more electricity supply by 2050, according to the National Academies of Sciences.[9]

While the United States' electricity demand is increasing, policy decisions are driving always available power plants to retire at too rapid a pace without adequate replacement capacity. The North American Electric Reliability Corporation's (NERC) recent reliability assessments have "pointed to the disorderly retirement of traditional generation (with its inherent ability to provide essential reliability services and balance energy reserves) as one of the biggest challenges facing the grid."[10] NERC's 2023 Summer Reliability Assessment shows that two-thirds of North America is at elevated risk of energy shortfalls this summer due to conventional generation retirements, a substantial increase in forecast peak demand, and an increasing threat from a wide-spread heat event.[11] That assessment also identifies EPA's recently finalized ozone transport rule as one that will exacerbate these reliability challenges.[12]

In a recent report, PJM, the regional transmission organization (RTO) that serves parts of 13 states and the District of Columbia, identified three EPA regulations – the steam electric effluent limitations guidelines rule, the coal combustion residuals rule, and the ozone transport rule – as ones that have "the potential to result in a significant amount of generation retirements within a condensed time frame."[13] Reiterating the point during a recent Senate hearing, PJM CEO Manu Asthana said that "we need to hang on to resources that we have today that work, until their replacement is here" and that the Proposed Rules "will continue to push this generation off the grid."[14]

Completing federal environmental reviews and obtaining permits for infrastructure projects also takes too long and is another challenge to build new electric generating assets and other electric infrastructure, including transmission lines that would be required to replace the reliable, dispatchable power retired as a result of the Proposed Rules. On average, it takes federal agencies more than four years simply to complete

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Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31,982 (May 18, 2023); and Federal Good Neighbor Plan for the 2015 Ozone National Ambient Air Quality Standards, 88 Fed. Reg. 36,654 (June 5, 2023).

[8] Electric Power Research Institute. *LCRI Net-Zero 2050: U.S. Economy-Wide Deep Decarbonization Scenario Analysis, Executive Summary*. Last updated March 9, 2023. Available at: https://lcri-netzero.epri.com/en/executive-summary.html.

[9] National Academies of Sciences, Engineering, and Medicine. *Accelerating Decarbonization of the U.S. Energy System*. 2021. Available at https://nap.nationalacademies.org/catalog/25932/accelerating-decarbonization-of-the-us-energy-system.

[10] North American Electric Reliability Corporation. *2022 Annual Report*. February 2023. p.13. Available at: https://www.nerc.com/gov/Annual%20Reports/NERC_Annual%20Report_2022.pdf.

[11] North American Electric Reliability Corporation. *2023 Summer Reliability Assessment Infographic*. May 2023. Available at: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA%20Infographic_2023.pdf; and *2023 Summer Reliability Assessment*. May 2023. Available at: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_2023.pdf.

[12] *Id*. at 6.

[13] PJM. *Energy Transition in PJM: Resource Retirements, Replacements, &* Risks. February 24, 2023. p. 7. (Energy Transition in PJM) Available at https://www.pjm.com/-/media/library/reports-notices/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx. PJM's analysis shows that a total of 40 gigawatts (GW) of existing generation are at risk of retirement by 2030, including 25 GW of potential policy-driven retirements. *Id*. p. 2.

[14] Senate Committee on Energy & Natural Resources. *Full Committee Hearing to Examine the Reliability and Resiliency of Electric Services in the U.S. in Light of Recent Reliability Assessments and Alerts*. Held June 1, 2023. Video of hearing available at: https://www.energy.senate.gov/hearings/2023/6/full-committee-hearing-to-examine-the-reliability-and-resiliency-of-electric-services-in-the-u-s-in-light-of-recent-reliability-assessments-and-alerts.

the environmental review process, while one quarter of projects take more than six years.[15] And those timelines do not account for litigation that may ensue, further delaying the needed infrastructure projects. While important reforms to the National Environmental Policy Act (NEPA) were recently enacted, more must be done to increase the efficiency of the federal environmental review and permitting process, which can involve multiple agencies depending on the federal permits, authorizations, and other approvals required for a project.[16] Unfortunately, the federal environmental review process is being made more complex and less efficient by policies that are being pursued by this administration.[17]

On top of these difficulties, electric utilities are facing significant challenges and delays in their supply chains, which are contributing to an unprecedented shortage of the most basic machinery and components essential to ensuring continued reliability of the electric grid. Electric cooperatives are waiting a year, on average, to receive distribution transformers. Additionally, lead times for large power transformers have grown to more than three years. And orders for electrical conduit have been delayed five-fold to 20 weeks, with costs ballooning by 200% year-over-year. As a result, new projects are being deferred or canceled, and electric cooperatives and other electric utilities are concerned about their ability to respond to major storms due to depleted stockpiles. In addition, utilities are facing natural gas shortages, which can cause particularly acute challenges during periods of peak demand.[18]

All of these challenges pose a serious threat to electric reliability, and federal agencies – in particular EPA – should be considering how their regulations increase reliability risks and how they can avoid exacerbating those risks. In fact, Section 111 of the CAA requires EPA to do so.[19] Unfortunately, EPA has not adequately assessed the impact of the Proposed Rules, nor the cumulative impacts of the several recent Agency actions mentioned above, on electric reliability.

C. Electric cooperatives are carbon capture and storage leaders.

Electric cooperatives are among the national leaders exploring the development of CCS. NRECA is proud to be sponsoring partners of the National Carbon Capture Center and the Wyoming Integrated Test Center (ITC). In addition to the important research efforts that take place at these facilities, in geographic locations

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[15] *Environmental Impact Statement Timelines (2010-2018)*. Executive Office of the President, Council on Environmental Quality. June 12, 2020. p. 4. Available at: https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timeline_Report_2020-6-12.pdf; *see also 2022 Annual NEPA Report of the National Environmental Policy Act Working Group*. National Association of Environmental Professionals. July 2022. Available at: https://naep.memberclicks.net/assets/annual-report/NEPA_Annual_Report_2022.pdf. In 2022, the average preparation time for a final EIS, as measured from notice of intent to final EIS, was 4.2 years.

[16] *Federal Environmental Review and Authorization Inventory*. March 2023. Available at: https://www.permits.performance.gov/tools/federal-environmental-review-and-authorization-inventory-excel.

[17] *See, e.g.*, National Rural Electric Cooperative Association Comments on the Bureau of Land Management's Proposed Rule on Conservation and Landscape Health (July 5, 2023), BLM-2023-0001-152650, https://www.regulations.gov/comment/BLM-2023-0001-152650; Comments of the National Rural Electric Cooperative Association and the American Public Power Association on the Council on Environmental Quality's National Environmental Policy Act Interim Guidance on Consideration of Greenhouse Gas Emissions and Climate Change (April 10, 2023), CEQ-2022-0005-0307, https://www.regulations.gov/comment/CEQ-2022-0005-0307; Comments of the Utility Water Act Group in Response to US Army Corps of Engineers and Environmental Protection Agency Proposed Rule on Revised Definition of "Waters of the United States" (Feb. 7, 2022), EPA-HQ-OW-2021-0602-0601, https://www.regulations.gov/comment/EPA-HQ-OW-2021-0602-0601.

[18] Letter from Gordon van Welie, President and Chief Exec. Officer, ISO New England to the Hon. Jennifer Granholm, Secretary, U.S. Department of Energy. August 29, 2022. Available at: https://www.iso-ne.com/static-assets/documents/2022/08/isone_energy_security_letter_to_us_doe_and_statement_for_ferc_winter_forum_2022_08_29.pdf. (Describing the challenges New England faces as it requires natural gas generation to sustain reliability, particularly as policymakers seek to increase electrification, and how the region's lack of sufficient pipeline infrastructure and uncertainty surrounding the global market for liquefied natural gas has the potential to stress electric grid reliability).

[19] *See* 42 U.S.C. § 7411(a) (1) (Requiring EPA take "nonair quality health and environmental impact and *energy requirements*" into account when setting standards).

where it is feasible and makes sense for cooperative consumer-members to do so, NRECA's members are actively engaged in the deployment of CCS as an emerging technology.

Minnkota Power Cooperative's Milton R. Young Station will be the site of Project Tundra, a carbon capture project to retrofit the North Dakota coal-fired plant with an amine-based solvent technology. The captured carbon dioxide (CO_2) will be stored more than a mile underground and accompanied by extensive sequestration monitoring. The project, originally conceived in 2015 and currently in the engineering phase with operation anticipated by 2028, will capture CO_2 from one of the Young Station's two units and is expected to be the world's largest CCS facility when complete.

Basin Electric Power Cooperative's coal-fired Dry Fork plant is the host site for the ITC and is adjacent to the University of Wyoming's CarbonSAFE CO_2 storage project. The ITC is a public-private partnership that includes support from Basin, NRECA, and Tri-State Generation and Transmission Association. Dry Fork provides the equivalent of 20 megawatts (MW) of flue gas to the ITC, which provides space for researchers to test CCS technologies. Some of the first tenants were teams competing for the NRG COSIA Carbon XPRIZE. Dry Fork is also the host site for a commercial-scale engineering and design study to incorporate a capture system using membrane technology.

Golden Spread Electric Cooperative's natural gas-fired Mustang Station was the subject of a University of Texas at Austin CO_2 capture feasibility study. The front-end engineering and design study assessed an advanced post-combustion CO_2 scrubbing process with solvent regeneration for the West Texas plant.

Wabash Valley Power Alliance, Southern Illinois Power Cooperative, and Prairie Power are part owners of the Prairie State Energy Campus, which has partnered with the University of Illinois on a CO_2 capture retrofit front-end engineering and design study for the southern Illinois coal-fired plant.

The Nebraska Public Power District, which sells power to Nebraska Electric Generation & Transmission Cooperative, is working with technology experts to evaluate CO_2 capture and storage for its coal-fired Gerald Gentleman Station. Evaluations are underway to assess the technical, geographic, regulatory, and financial viability of CO_2 capture and geologic storage.

CCS is a nascent but promising technology, and NRECA and its cooperative members have supported its development through advocacy in support of various federal incentives. NRECA has long supported the Section 45Q tax credits for CO_2 sequestration, including increased values and direct payment options for not-for-profit entities enacted as part of the Inflation Reduction Act (IRA). NRECA has also supported Department of Energy (DOE) CCS program reauthorizations and funding, including provisions in the Energy Act of 2020, Infrastructure Investment and Jobs Act (IIJA), and annual appropriations bills. This includes DOE CO_2 capture pilot and demonstration programs and grant funding, established through amendments to the Energy Policy Act of 2005. Additionally, NRECA supported inclusion of CO_2 capture projects as an eligible use of loans, grants, and other financial assistance under the IRA's Empowering Rural America program established at the USDA.

Presently, however, even with these various federal incentives, CCS is not yet a commercially available, adequately demonstrated technology for deployment at a national scale, and certainly not at the capture rates required by EPA's Proposed Rules and not on any compliance timeline contemplated by the Agency.

III. EPA Lacks Authority for the Proposed Standards Under the Plain Language of the Clean Air Act and the "Major Questions" Doctrine.

The Proposed Rules are unlawful because they are inconsistent with the text, structure, and context of CAA Section 111. For the first time, the authority to set performance standards is based on what the Agency believes the future of the sector *could* be instead of what "*has been* adequately demonstrated" and is *actually* "achievable" today. EPA's unlawful interpretation of the CAA, should it stand, would totally reshape the power sector and would have enormous implications for the entire United States' social, economic, energy security, and national security needs.

In addition to exceeding its authority under the CAA, the Proposed Rules plainly run afoul of the "major questions" doctrine, which holds that an agency lacks authority to make such decisions of "vast economic and political significance" without a clear statement from Congress, which is lacking here.[20]

Section 111 simply cannot bear the weight that EPA places on it. EPA's authority under Section 111 must be understood within the context of the overall regulatory framework that Congress enacted. For stationary sources, Congress developed three programs that work together to control emissions: (1) the National Ambient Air Quality Standards Program under Section 110, (2) the Hazardous Air Pollutants Program under Section 112, and (3) the New Source Performance Standards Program (NSPS) under Section 111.

The National Ambient Air Quality Standards Program is the primary means by which EPA, in cooperation with the states, may regulate air emissions. Section 110 requires EPA to set ambient air concentration levels for pollutants "reasonably anticipated to endanger public health and welfare" at the "maximum airborne concentration of [the] pollutant that the public health can tolerate."[21] The states then have primary responsibility to implement the standards to ensure attainment of EPA's health and welfare driven standards.

The Hazardous Air Pollutants Program, Section 112, in turn, mandates technology-based standards designed to reduce risks from pollutants that cause acute and chronic disease. Under Section 112, EPA sets standards for each separate source category responsible for emitting those pollutants.[22] EPA sets those emissions reduction standards based on "the maximum degree of reduction in emissions…that, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, [EPA] determines is achievable" through application of control technology.[23]

In contrast, and as the Supreme Court has explained, Section 111 serves an "ancillary" role to the other two stationary source programs.[24] Both Sections 110 and 112 are goal oriented. They focus on achieving ambient air quality concentrations necessary to protect public health and welfare and establishing emissions reductions that protect the public from illness and disease. Section 111, in contrast, provides a "gap filler" to "regulate harmful emissions not already controlled under the Agency's other authorities."[25] It is focused not on setting robust aspirational standards that would transform the electric sector, but rather ensuring pollutants not directly addressed by the primary, health-based standards, are limited to levels achieved by the best

[20] *Utility Air Regulatory Group v. EPA*, 573. U.S. 302, 324 (2014); *West Virginia v. EPA*, 597 U.S. at __, 142 S. Ct. 2587, 2605 (2022).
[21] *Whitman v. Am. Trucking Ass'ns, Inc*., 531 U.S. 457, 565 (2001), 42 U.S.C. § 7409**.**
[22] 42 U.S.C. § 7412(d)(1).
[23] 42 U.S.C. § 7412(d)(2).
[24] *West Virginia*, 142 S. Ct. at 2602.
[25] *Id.* at 2601.

already-demonstrated technology.[26] That is why the Supreme Court, in striking down EPA's previous attempt to claim vast authority under Section 111, explained that the statute is generally limited to proven measures "that would reduce pollution by causing the regulated source to operate more cleanly."[27] EPA may not require "generation shifting," impose a cap-and-trade program, or force a nationwide transition away from coal or natural gas as a source of electricity.[28] Such authority involves "major questions" of economic and political significance that require a clear statement from Congress.[29]

But EPA is now moving down a road almost identical to the one the Supreme Court rejected. EPA's proposed standards seek to shift the nation away from fossil fuel-fired generation toward energy sources the Agency prefers by setting standards that are unachievable, based on technology that has not been adequately demonstrated, and that are so unproven and aspirational that they require premature closure and/or shifting of generation to another source of generation more favorable to EPA.

For example, under the proposal, if an electric cooperative wants to continue to operate a coal-fired unit past 2040, it must meet emissions limits, beginning in 2030, that are based on the reductions EPA believes CCS will be able to accomplish in the future. But, as discussed in Section IV, while CCS is a promising technology, it is not available to most units today, certainly not at the 90% capture rate EPA would require and will not be available in 2030, particularly absent the necessary pipeline and storage infrastructure which similarly will not be available in that timeframe. In the alternative to this impossible-to-meet standard, EPA would allow coal units to (1) commit to retirement by 2032, (2) commit to retirement by 2035 and reduce their capacity factor to 20%, or (3) transform themselves into natural gas co-firing units. These are not measures to make the units operate more cleanly and is precisely the generation shifting the Supreme Court held that Section 111 did not authorize.[30]

EPA's proposed standards for gas-fired units similarly fail to adhere to Section 111's limitations. Existing gas-fired generating units would be restricted to operating at half of their capacity or would be required in 2032 to begin using "clean hydrogen," i.e., hydrogen produced through a process that has a GHG emissions rate of less than 0.45 kilograms of CO_2-equivalent per kilogram of hydrogen, at levels never before accomplished and that are unachievable. What is more, as described in Section IV, clean hydrogen does not and is not expected to exist in quantities anywhere near necessary to meet the demand for these units and would require construction of a nationwide hydrogen pipeline system that does not exist and will not exist by 2032. New gas-fired units fare no better. They can either limit operations to providing solely a supporting role to renewable generation or they can co-fire clean hydrogen at the same levels mandated for existing gas-fired plants – levels never before achieved or adequately demonstrated. Again, these are not measures to make units operate more cleanly; rather, they require a transformation of the electric sector.

As the Supreme Court has noted, it is "highly unlikely that Congress would leave to agency discretion the decision of how much coal-based generation there should be over the coming decades," let alone through "the previously little-used backwater of Section 111(d)."[31] EPA has never before required technology that is not yet ready and available, required changes in emissions rates or installation of technology years or even decades in the future, or promoted early retirement as a performance standard (except in the rule invalidated

[26] 42 U.S.C. § 7411(a)(1), (b)(1), (d) (defining Section 111 standards as those that "reflects the degree of emission limitation achievable through the application of the best system of emission reduction which … the Administrator determines has been adequately demonstrated").
[27] *West Virginia*, 142 S. Ct. at 2596.
[28] *Id.* at 2596.
[29] *Id.*
[30] *Id.* at 2614-16.
[31] *Id.* at 2613 (citations and internal marks omitted).

by the Supreme Court).

Nothing in Section 111's text, structure, or context authorizes the sweeping authority that EPA claims through the Proposed Rules. In fact, the proposed standards are fundamentally flawed because they are unquestionably focused not on ensuring achievable standards of performance based on the best adequately demonstrated technology of today, but rather transforming the sector into EPA's aspirational view of what the future of electric generation might be. What EPA is attempting to achieve in the Proposed Rules is no less of a "major question" than what it attempted to achieve in the rule invalidated in *West Virginia. West Virginia* requires EPA to demonstrate that its authority to set standards based on technology and infrastructure that does not yet exist is clearly within the meaning of "achievable" and "has been adequately demonstrated." EPA has not done so.

In short, nothing in the CAA allows EPA to set future standards based on what it thinks the industry can accomplish in the future or to force retirements today in anticipation of that future. Had Congress intended for EPA to completely reshape the electric generating sector it would not have buried that authority in an "ancillary" provision of the CAA that focuses on technology that *has been* adequately demonstrated, and is achievable and cost effective today.

IV. The Proposed Rules Violate the Clean Air Act's Requirements for Setting Performance Standards.

A "standard of performance" under CAA Section 111 is one that "reflects the degree of emission limitation achievable through the application of the best system of emission reduction" which, after accounting for costs and "nonair quality health and environmental impact and energy requirements," EPA determines has been "adequately demonstrated."[32] Appropriately broken down to its elements, EPA must demonstrate that its proposed standards: (1) are based on technology that has been adequately demonstrated, (2) are achievable through application of that technology, and (3) are cost effective after considering costs and other nonair quality factors, including "energy requirements." The proposed standards fail each of these factors.

A. The performance standards are not based on technology that has been "adequately demonstrated."

An "adequately demonstrated" system is one that has an operational history showing more than mere technical feasibility.[33] The system must be commercially available, reliable, reasonably efficient, and not exorbitantly costly. Although EPA has some discretion to extrapolate from other industries when determining whether a technology demonstrated in one industry would be adequately demonstrated for another industry, that discretion is limited to narrow, technically sound extrapolation.[34] To be adequately demonstrated for all sources within a category or subcategory, a technology must be available for each source type to which the standard applies.[35]

[32] 42 U.S.C. § 7411(a)(1).
[33] *See Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433-32 (D.C. Cir. 1973).
[34] *See Lignite Energy Council v. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999); *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973).
[35] *See* 70 Fed. Reg. 9,706, 9,712, 9,714, 9,715. (Rejecting certain technology as best system of emission reduction in part because of the unavailability of these options across source types to which the performance standards would apply).

1. Carbon capture and storage

The proposed standards for the CCS pathway have not been adequately demonstrated. Under the Proposed Rules, existing coal-fired units planning to operate beyond 2039 would need to achieve a 90% CO_2 capture rate by January 1, 2030. New natural gas units operating at baseload levels and existing natural gas units 300 MW or greater with at least a 50% capacity factor would have the option to comply by installing CCS at the same capture rate by January 1, 2035, or co-fire unproven and unavailable quantities of "clean hydrogen" (discussed below). To date, there are just two large-scale coal units with CCS, Boundary Dam Unit 3 and Petra Nova.[36] Of those, only Boundary Dam is currently operating – and not at levels that would comply with the Proposed Rules.[37] There are currently no natural gas units with CCS operating.[38]

None of the examples that serve as EPA's basis for showing adequate demonstration meet the definition under the statute. These examples "do not reflect the needs as set forth by EPA as they are examples of slipstream systems, are smaller capacity units, do not employ the full CCS process, and are capturing CO_2 at levels far below 90%."[39] Boundary Dam 3, one of the units EPA uses to assert that CCS is adequately demonstrated, captured just 44% of its emissions in 2021[40] and has consistently captured CO_2 at rates well below its 90% design capacity.[41] The other, Petra Nova, missed its capture targets by about 17%[42] and was plagued by issues that led to the unit being offline for more than a third of the time that it was operational before it was shut down in 2020.[43] It was eventually sold for a fraction of its initial investment.[44] To date there have been no sufficient demonstrations of CCS on natural gas units.[45]

EPA attempts to bolster its determination by citing *industrial* CCS applications to show that CCS is workable,[46] but as described above its legal authority to do so is narrow – and regardless is not relevant in this case since those applications typically involve higher concentrations of CO_2 in the exhaust gas and operate on a smaller scale than utility applications.[47] Utility applications have different challenges to address that make it unreasonable to try to extrapolate from industrial applications. [48]

As explained in detail in the Carbon Storage Appendix submitted as an attachment to these comments, EPA has also not adequately demonstrated that there will be sufficient transportation for CO_2 to potential storage locations, that these locations can be permitted in the timeframe EPA contemplates, or that sources are located close enough to storage locations to make transportation and storage feasible. EPA attempts to justify its speculation that there will be sufficient CO_2 transportation on the basis that the nation's CO_2 pipeline capacity "has steadily expanded, and appears primed to continue to do so," and that there have been recent

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[36] EERC at 5-6.
[37] *Id*. at 6-7
[38] *Id*. at 7-8.
[39] *Id.* at 5.
[40] Carlos Anchondo. *CCS 'red flag'? World's sole coal project hits snag.* Energywire. January 10, 2022. Available at: https://www.eenews.net/articles/ccs-red-flag-worlds-sole-coal-project-hits-snag/.
[41] EERC at 6.
[42] *Id.*
[43] Corbin Hiar and Carlos Anchondo. *Biggest CCS failure clouds Supreme Court ruling*. Climatewire. July 11, 2022. Available at: https://www.eenews.net/articles/biggest-ccs-failure-clouds-supreme-court-ruling/.
[44] Kyra Buckley. NRG sells stake in Petra Nova carbon capture project to Japanese company for $3.6 million. Houston Chronicle. September 20, 2022. Available at: https://www.houstonchronicle.com/business/energy/article/NRG-sells-stake-in-halted-carbon-capture-project-17454451.php.
[45] EERC at 5-8.
[46] 88 Fed. Reg. 33,292.
[47] Cichanowicz and Hein at 2-4.
[48] *Id.*

announcements of more than 3,000 new miles of pipeline under development.[49] Due to permitting challenges, public opposition to pipelines, and other obstacles, an announcement of pipelines does not mean they will be built.[50] The simple fact is that the current 5,300 miles of pipeline is less than one-tenth of what is needed, and the announcements will not come close to closing the gap in the timeframe EPA requires.[51] Even if these more than 3,000 miles get built, best estimates are that the nation would need 65,000 miles of CO_2 pipelines to meet the administration's clean energy goals.[52]

Further, EPA has not demonstrated its own ability to permit the necessary geologic storage. Its Class VI permitting program has only approved projects from two applicants since 2010 and there are currently several dozen applications that have been pending for years.[53] EPA believes it can increase the number of states that have been granted primacy, or primary enforcement authority, for Class VI storage in order to accelerate permitting. But it has not demonstrated an ability to act on state applications on a timeline consistent with the compliance requirements of the Proposed Rules, with only two states having been granted primacy. The Agency's drawn-out processing of primacy applications has disincentivized states from applying in the first place.[54] Even assuming more states were granted primacy, the rate of approvals has not demonstrated the ability to put enough geologic storage facilities in operation by 2030.[55]

EPA similarly fails to demonstrate that captured CO_2 can actually be sequestered as required by the Agency. The Agency arbitrarily assumes sources are located 100 kilometers (km) from a border of a state that has geologic storage.[56] This is puzzling, given there is real world data showing the actual locations of the power plants affected by the Proposed Rules. Regardless, being in a state that happens to be within 100 km of another state with storage would not mean that all affected units would only need to transport CO_2 100 km to sequester it.[57] Nor would it mean that the average distance from affected units to a storage location is 100 km. The closest geologic storage locations may not end up viable for storing CO_2 after site characterization, and even if they are viable and can be permitted in time, may be far from the state border on which EPA arbitrarily bases its distance.[58]

2. Clean hydrogen

The clean hydrogen pathway is not adequately demonstrated. Under the Proposed Rules, new natural gas units operating at baseload levels and existing natural gas units 300 MW or greater with at least a 50% capacity factor that are unable or opt not to install CCS would have the option to comply by co-firing clean hydrogen at 30% starting on January 1, 2032, and increasing to 96% on January 1, 2038.

Foremost, no unit has reached hydrogen co-firing at the levels EPA proposes.[59] Despite forecasted development of turbines that will run at 30% blends, none are demonstrated nor commercially available with guaranteed performance today to be a viable option to meet the EPA's proposed requirements.[60] The only basis for EPA's proposed phase 3 requirement – co-firing clean hydrogen at 96% by volume – is

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[49] 88 Fed. Reg. 33,293-33,294.
[50] Cichanowicz and Hein at 23-29.
[51] Princeton University. *Net-Zero America: Potential Pathways, Infrastructure, and Impacts. Final Report.* October 29, 2021.
[52] *Id*.
[53] Carbon Storage Appendix at 14-16.
[54] *Id*.
[55] *Id*.
[56] 88 Fed. Reg. 33,298.
[57] Carbon Storage Appendix at 17-18.
[58] *Id.* at 7-17.
[59] Campbell Hydrogen at 4-5.
[60] *Id*.

manufacturer aspirations about what they hope to make in the future.[61] A National Energy Technology Laboratory (NETL) white paper describes major obstacles to overcome before those aspirations become reality.[62] Those obstacles include dealing with hydrogen's higher flame temperature and faster flame speed, which can cause issues with injectors and other turbine components.[63] EPA has failed to present meaningful real world data that would resolve those obstacles.

EPA also has not demonstrated that there is or will be adequate access to clean hydrogen. The Agency simply assumes that IRA and IIJA incentives will lead to sufficient supply.[64] This assertion is highly speculative, as the regulations defining clean hydrogen for the purposes of the IRA's incentives are not finalized – and have proved controversial.[65] EPA's speculation about the future of this fuel cannot demonstrate, let alone guarantee, sufficient clean hydrogen by the 2032 compliance date.

The only technology to produce low-GHG hydrogen as required under the Proposed Rules that may come to be viable at scale in that time frame is electrolysis.[66] But today, electrolysis is not the method by which most hydrogen is produced. Steam methane reforming (SMR), which produces CO_2 and thus cannot be used for clean hydrogen (unless controlled with CCS), accounts for 95% of today's hydrogen production.[67] EPA fails to show that the challenges of creating a sufficient clean hydrogen supply, including that the electrolysis process requires far more electricity than will be yielded by the end product, the cost of production, and the amount of water necessary for the electrolysis process has been or will be overcome by the compliance deadline.[68]

Further, there is no infrastructure in place to deliver that hydrogen. There are currently just 1,600 miles of hydrogen pipeline in the United States,[69] and over 90% of this is located near the Gulf of Mexico.[70] As EPA notes in the preamble to the Proposed Rules, there are currently more than 3 million miles of pipelines connecting production areas with consumers.[71] EPA erroneously assumes the existing natural gas pipeline network can accommodate the clean hydrogen necessary at up to 5% to 15% by volume.[72] Yet at the same time EPA acknowledges a study for the National Renewable Energy Laboratory that "the appropriate blend concentration may vary significantly between pipeline network systems and natural gas compositions and must therefore be assessed on a case-by-case basis."[73] EPA also acknowledges a study that shows that blending more hydrogen in gas pipelines overall results in a greater chance of pipeline leaks and the

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[61] Kiewit at 12-14.
[62] *Id*.
[63] *Id*.
[64] Environmental Protection Agency. *Hydrogen in Combustion Turbine Electric Generating Units Technical Support Document*. May 23, 2023. pp. 37-38. (EPA Hydrogen TSD) Available at: https://www.epa.gov/system/files/documents/2023-05/TSD%20-%20Hydrogen%20in%20Combustion%20Turbine%20EGUs.pdf.
[65] Nico Portuondo. *The coming Manchin-Biden feud over 'clean hydrogen.'* July 28, 2023. Available at: https://www.eenews.net/articles/the-coming-manchin-biden-feud-over-clean-hydrogen/.
[66] Campbell Hydrogen at 3-4.
[67] U.S. Department of Energy. *Hydrogen Production: Natural Gas Reforming*. (DOE Natural Gas Reforming) Available at: https://www.energy.gov/eere/fuelcells/hydrogen-production-natural-gas-reforming.
[68] Campbell Hydrogen at 3-4.
[69] U.S. Department of Energy. *Hydrogen Pipelines*. Accessed July 21, 2023. Available at: https://www.energy.gov/eere/fuelcells/hydrogen-pipelines..
[70] Congressional Research Service. *Pipeline Transportation of Hydrogen: Regulation, Research, and Policy*. March 2, 2021. p. 5. Available at: https://crsreports.congress.gov/product/pdf/R/R46700.
[71] 88 Fed. Reg. 33,352.
[72] EPA Hydrogen TSD at 26
[73] *Id*. at 26.

embrittlement of steel pipelines.[74] These issues will exacerbate existing permitting challenges and public opposition to pipelines.[75]

In order to accommodate the amount of hydrogen that would be necessary, a vast network of hydrogen pipelines would need to be constructed that is orders of magnitude larger than what exists today.[76] This is partly due to the fact that because of its low energy density, hydrogen would be impractical to transport by other means or store on site (thus making pipelines the only viable means of ready supply).[77] For example, it would take four acres of land to store one day's worth of hydrogen for a single GE H-class unit.[78] Further, the lower energy density of hydrogen compared to natural gas requires more quantity to provide the same generating capacity.[79] Hydrogen pipeline projects would likely encounter more substantial issues with delays than even CO_2 pipelines (or any pipelines for that matter) due to the highly explosive nature of hydrogen and other safety issues.[80] This contravenes EPA's speculation that the clean hydrogen pathway is achievable, since a pipeline network close to the size of the existing and expanding natural gas pipeline would need to be constructed on a timeline never before seen.

3. Natural gas co-firing at existing coal units

In order for the natural gas co-firing pathway to be adequately demonstrated, EPA has to show that all affected plants have access to a sufficient industrial natural gas supply and that there is sufficient pipeline capacity to fuel the level of conversions it contemplates. It does neither. EPA points to the existing natural gas infrastructure to indicate adequacy.[81] But its analysis overlooks the difficulties of constructing pipelines to units that do not currently have access to natural gas, including permitting delays and public opposition to pipelines.[82] According to EIA data, roughly 17% of coal-fired units nationwide are more than 10 miles from even the single nearest natural gas pipeline and nearly one-third are more than five miles.[83] But there is no guarantee that the closest pipeline will work for the unit in question – the pipeline might not have the capacity to accommodate an additional plant or unit.[84] EPA also fails to contemplate challenges in ensuring there is sufficient supply during certain weather events, as recent instances have shown make getting supply when needed difficult.[85]

4. Compliance lead times

The fact that the use of the proposed technology has not been adequately demonstrated is made altogether clear by the fact that EPA does not attempt to require its use until years or even decades in the future. But EPA has no authority to set standards far into the future based on what may be demonstrated and achievable then. Rather, Section 111 requires EPA to set standards and guidelines based on technology that *"has been* adequately demonstrated." Indeed, Congress specifically contemplated that EPA may revisit the new source

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[74] *Id.* at 25.
[75] *See* Cichanowicz and Hein at 23-29 (Discussion of public opposition of pipelines generally) and Kiewit at 18-19 (Discussion of safety challenges of hydrogen pipelines).
[76] Kiewit at 19-20.
[77] *Id.* at 16-17.
[78] *Id*. at 16.
[79] *Id*. at 9-10.
[80] *Id.* at 19.
[81] 88 Fed. Reg. 33,352.
[82] *See* Morris and Weeda Natural Gas at 5 (Citing Energy Information Administration data on the lack of natural gas availability); and Cichanowicz and Hein at 23-29 (Discussing public opposition to pipelines).
[83] *EIA Energy Atlas Interactive Map*. Accessed July 19, 2023. Available at: https://atlas.eia.gov/apps/eia::all-energy-infrastructure-and-resources/explore.
[84] Morris and Weeda Natural Gas at 4-8.
[85] *Id*. at 4.

standards "every 8 years" to address evolving technology.[86] But EPA cannot lawfully act as prognosticator and set standards based on what it hopes will be adequately demonstrated in the future.

B. The proposed performance standards are not achievable.

EPA must demonstrate that the standards can be achieved by *all sources in the sector*, considering the variables that may affect emissions in different circumstances and at different plants.[87] To be "achievable," the technology must be reasonably available to new sources at the time they are constructed and for existing sources now.[88] The standards must "be capable of being met under most adverse conditions which can reasonably be expected to recur, and which are not or cannot be taken into account in determining the cost of compliance."[89] To that end, EPA must "(1) identify variable conditions that might contribute to the amount of expected emissions and (2) establish that the test data relied on by the agency are representative of potential industry-wide performance, given the range of variables that affect the achievability of the standard."[90] Relatedly, EPA must demonstrate that the technology is available nationwide. That is, in order to be achievable, any new source in any state must be able to achieve that limit.[91] EPA may not base achievability on "mere speculation or conjecture" about what a technology may be capable of accomplishing.[92]

1. Carbon capture and storage

The proposed CCS pathway is not achievable. Units that would be covered by the Proposed Rules cannot achieve the capture rates that EPA proposes. According to the Proposed Rules, the requirement of a 90% capture rate is equivalent to an 88.4% emission reduction in coal units and an 89% emission reduction in natural gas units on an annual basis. Real world experience shows that even though units can be aspirationally designed to capture 90% or more of CO_2, the actual rates achieved are lower due to operational difficulties and availability of the capture unit.[93] EPA wrongly assumes capture systems are available 100% of the time that an EGU will be operational, but that assumption has been disproved by actual applications.[94]

EPA erroneously assumes that affected EGUs will have viable options to take captured CO_2 away from the plant site to be properly stored.[95] Unless an operator is blessed with viable storage under the footprint of a unit – as is the case with Minnkota's Project Tundra – CO_2 will have to be moved by pipeline. In contrast to Minnkota, when Arizona Electric Power Cooperative (AEPCO) investigated its options for CO_2 storage through the West Coast Regional Carbon Sequestration Partnership funded by DOE,[96] the project revealed there was insufficient permeability in the saline formations in the area studied. AEPCO also conducted a desktop study to evaluate the potential for proper sequestration and storage. That work concluded that the area does not provide the correct geologic formations suitable for this use at or near its only generating facility. It is likely that other cooperatives and electric utilities in similarly situated areas will not be able to

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[86] 42 U.S.C. § 7411(b)(1)(B).
[87] *See* 70 Fed. Reg. 9,706, 9,712, 9,714, 9,715. (Rejecting certain technology as best system of emission reduction in part because of the unavailability of these options across source types to which the performance standards would apply).
[88] *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391-92 (D.C. Cir. 1973).
[89] *Nat'l Lime Ass'n v. EPA*, 627 F.2d 416, 433 n. 46 (D.C. Cir. 1980) (internal quotations omitted).
[90] *Sierra Club v. Costle*, 657 F.2d 298, 377 (D.C. Cir. 1981) (citations omitted).
[91] *See Sierra Club*, 657 F.2d at 330 (water-dependent technology cannot be nationwide "best system" due to "disastrous" effects in arid west); *Nat'l Lime*, 627 F.2d at 441-43 (rejecting standards for failure to account for regional variability).
[92] *Lignite Energy Council v. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999).
[93] EERC at 6-7.
[94] *Id*.
[95] 88 Fed. Reg. 33,366.
[96] *See* https://www.westcarb.org/AZ_pilot_cholla.html.

find reasonably suitable geologic storage areas either, necessitating transportation over significant distance via pipeline.

While transporting CO_2 via pipeline may appear straightforward, the lack of infrastructure and storage currently available, and the long timeframes to develop storage locations, show otherwise. The costs associated with developing a pipeline will likely make it unachievable for many operators.[97] A thorough discussion of EPA's incorrect assumptions related to CO_2 storage and transportation is contained in the attached Carbon Storage Appendix. But it is worth mentioning just a few of the issues presented in that document to illustrate why CCS is not currently achievable.

There are two types of geologic storage available under the Proposed Rules: in oil and gas formations at an enhanced oil recovery (EOR) facility that reports under EPA's Greenhouse Gas Reporting Program, or by permanent geologic sequestration. The first option, known as Class II storage,[98] has a better track record of viability, but is too limited to be considered adequately demonstrated as it is only workable in certain areas of the country.[99] The second option, known as Class VI storage, similarly has geographic and technical constraints that render it unavailable to the majority of units in the country. That availability is vastly overstated by EPA.[100]

What is available has been hampered by EPA's glacial Class VI permitting program. In fact, only two applicants have had permits approved since the program began in 2010. There are currently several dozen pending applications.[101] Just two states – North Dakota and Wyoming – have been granted primacy allowing the state to run the program. EPA has been slow to act on these primacy applications – Louisiana originally filed an application in 2020 that has yet to be finalized.[102] Project applications in the rest of the states must be approved by EPA. The inability of applicants to obtain permits from either EPA or their state means that there will be an insufficient supply of storage locations available by the compliance date. Despite these difficulties in creating storage sites, and the fact that the only operational CO_2 storage facility for which EPA has issued a Class VI permit took roughly five years for site characterization alone,[103] EPA somehow projects it will take just two to three years to characterize and permit a storage facility.

EPA's assumption that sufficient storage capacity will somehow come online in the next seven years amounts to speculation that is unsupported by facts and history. Assuming a unit operator can capture CO_2, there are two business models available for storing it. The operator can either establish its own storage facility or contract with a storage provider. The second option is more likely as more plants use CCS because locating, developing, and operating carbon storage is a specialized competency not within the range of expertise of most unit operators. Further, most storage will be off site. There is currently, however, a lack of commercial storage options. Zero commercial Class VI storage sites exist that accept CO_2 from anyone other than the site's owner.[104] While NRECA expects that there will likely someday be more geologic storage options, they simply do not exist today, and there is no evidence they will exist by 2030 or on any other timeframe being considered by the Agency, rendering the proposed standards unachievable.

[97] *See* Section IV.C.1 for a discussion of CO_2 pipeline costs.
[98] Defined under the Underground Injection Control program authorized by the Safe Drinking Water Act. Class II wells are specifically used for EOR applications, whereas Class VI wells are specifically used for deep saline aquifer storage of CO_2.
[99] Carbon Storage Appendix at 1.
[100] EERC at 8-10.
[101] Carbon Storage Appendix at 14-16.
[102] *Id*. at 15-16.
[103] *Id.* at 9-11.
[104] *Id.* at 17.

In reality, an estimated 65,000 miles of pipeline are needed to transport captured CO_2 to storage sites to achieve economy-wide net zero emissions by 2050.[105] Meanwhile, only 5,300 miles of pipeline currently exist.[106] Developing the needed pipeline network to cover even a portion of what is needed under the Proposed Rules is unachievable due to the difficulties and delays associated with pipeline construction, such as siting and permitting.[107]

2. Clean hydrogen

Like CCS, the clean hydrogen co-firing pathway is not achievable. Simply put, natural gas units cannot burn hydrogen at the levels contemplated by EPA. The newest units are designed to co-fire up to 30% hydrogen but have not been shown that they can do that continuously,[108] let alone for the remaining life of the unit. Even more egregious, EPA's assertion that 96% co-firing by 2038 is achievable is based on aspirational goals of combustion turbine manufacturers, not capability that exists today or at any time in the near future.[109] These assumptions are also based on entirely new units, not retrofits of existing units. There are significant design and engineering challenges that will make retrofit unworkable for some existing units.[110] This pathway is further unachievable because there is no indication clean hydrogen transportation and storage systems can be permitted and constructed in the timeframe EPA contemplates for the reasons described in the previous section.

Clean hydrogen – the specific type of hydrogen required under the Proposed Rules – is further unachievable because the state of current technology requires far more electricity to produce clean hydrogen than would result from using clean hydrogen as a fuel. For example, the energy required to produce enough clean hydrogen to fire a single LM6000 Simple Cycle Gas Turbine on 100% hydrogen is nearly four times the output power of that natural gas unit.[111]

Another reason the clean hydrogen pathway is unachievable is that there will not be sufficient clean hydrogen supply for units opting for this pathway on the timeline EPA has proposed. As discussed earlier, the Agency merely assumes that the IRA and the IIJA will provide the right mix of incentives to foster supply.[112] This is prognostication that does not guarantee, let alone demonstrate, that there will be sufficient clean hydrogen produced, particularly by the 2032 compliance date. Electrolysis is the only technology that could possibly come to scale in that timeframe, but that method currently accounts for just a fraction of total hydrogen production.[113] Rather, SMR, which produces CO_2 and thus would not meet EPA's proposed clean hydrogen standard without CCS, currently accounts for 95% of production.[114] A massive build out of electrolysis capability would be needed to meet EPA's Proposed Rules. But the current challenges of ramping up electrolysis, including the production process requiring far more electricity than will be produced by the end product, the cost of production, and the amount of water necessary for the production process, are not sufficiently accounted for by the Agency.[115] Nor are the challenges with the unprecedented infrastructure

[105] Princeton University. *Net-Zero America: Potential Pathways, Infrastructure, and Impacts. Final Report.* October 29, 2021.
[106] Pipeline and Hazardous Materials Safety Administration. *Annual Report Mileage for Hazardous Liquid or Carbon Dioxide Systems*. July 3, 2023. Accessed July 21, 2023. Available at: https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-hazardous-liquid-or-carbon-dioxide-systems.
[107] Carbon Storage Appendix at 17-22.
[108] Campbell Hydrogen at 4.
[109] Kiewit at 12-14.
[110] *Id*. at 18.
[111] Campbell Hydrogen at 3-4.
[112] EPA Hydrogen TSD at 37-38.
[113] Campbell Hydrogen at 3.
[114] *See* DOE Natural Gas Reforming.
[115] Campbell Hydrogen at 3-4.

development that would need to take place in order for the hydrogen supply to reach operators, as discussed in the previous section. These challenges will have to be overcome to meet the Agency's proposed supply demands.

3. Natural gas co-firing at existing coal units

Similarly, the natural gas co-firing pathway for coal-fired EGUs retiring before 2040 is unachievable for many units. Fuel switching to natural gas is not practical for many generators due to lack of access to natural gas, even when there is a natural gas source nearby.[116] EPA's technical analysis of natural gas co-firing understates the engineering challenges associated with converting coal units to co-fire natural gas. While EPA acknowledges that the process involves an engineering analysis,[117] it fails to consider that in practice these analyses can reveal engineering challenges that are insurmountable.[118] As such, natural gas co-firing cannot be considered achievable for all affected units.

C. The proposed performance standards are not cost effective, especially after considering nonair quality factors and energy requirements.

EPA has also violated the CAA because the Proposed Rules are not cost-effective. After identifying adequately demonstrated, achievable technology that can be used by a source category to reduce emissions, EPA may select a performance standard that "represents the best balance of economic, environmental, and energy considerations."[119] EPA must consider cost and any nonair quality health and environmental impact and energy requirements, and in doing so, EPA must ensure that the standards do not give a competitive advantage to one state over another.[120]

Across the range of proposed compliance pathways, EPA has not considered the impact of increased demand on cost. As power plants attempt to comply, they will be competing for available material, equipment, land, and other resources. This competition for limited resources will necessarily drive prices higher over the implementation period. EPA acknowledges "demand for inputs by the electricity sector" in its regulatory impact analysis but does not demonstrate that costs were adjusted to reflect that increased demand.[121] By failing to account for this, EPA has substantially underestimated the cost to comply with the Proposed Rules.

1. Carbon capture and storage

The proposed standards for the CCS pathway are not cost effective. EPA's cost analysis for CO_2 capture contains significant flaws and inconsistencies. A thorough discussion of these issues is contained in the *Analysis of Post Combustion CO_2 Capture, Transport, and Storage Costs in EPA's Proposed Power Plant Greenhouse Gas Emissions Rule* document accompanying these comments.[122]

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[116] Morris and Weeda Natural Gas at 4-8.
[117] Environmental Protection Agency. *Greenhouse Gas Mitigation Measures for Steam Generating Units Technical Support Document*. May 23, 2023. p. 9. (EPA Steam Unit TSD) Available at: https://www.regulations.gov/document/EPA-HQ-OAR-2023-0072-0061.
[118] Morris and Weeda Natural Gas at 8.
[119] *Sierra Club*, 657 F.2d at 330.
[120] *Id*. at 325.
[121] Environmental Protection Agency. *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*. May 2023. p. 5-1. (RIA) Available at: https://www.epa.gov/system/files/documents/2023-05/utilities_ria_proposal_2023-05.pdf.
[122] *See* Morris and Weeda CCS in its entirety.

EPA uses the most optimistic cost assumptions that do not reflect reality. As an example, EPA cites a $50 per metric ton cost for CCS.[123] This figure is from a study that assumes a 90% capacity factor for a unit operating CCS.[124] CCS costs drop significantly as capacity factor increases. But a 90% capacity factor is not realistic, and not consistent with real world examples. As the analysis referenced above explains, EIA data indicates in 2022 the average coal unit capacity factor was 47.8%. The Agency's assumption is inconsistent with EPA's own modeling, which includes ranges of between 40% and 70%.[125] A similar example is EPA's assumption of an impossible 100% availability of the CO_2 capture unit, which also helps drive down the projected per ton cost of CO_2 captured.[126] In reality, CCS equipment has run into significant reliability issues. For example, the CCS equipment at Boundary Dam 3 was only available 64.5% of the time from the first quarter of 2021 through the first quarter of 2023.[127]

Among the issues with EPA's estimate is a misrepresentation of the Section 45Q tax credit of $85 per ton of CO_2 captured and stored. EPA assumes that the tax credit is immediately applicable and cuts a flat $85 off the cost of captured and stored CO_2. This misrepresents how the tax credit works in practice. EPA wrongly assumes that every project can meet the requirements to qualify. This is not the case as there are a variety of apprenticeship, prevailing wage, and domestic content requirements that must be met. In some instances, these may not be possible, such as if domestic supply of needed materials fails to keep up with the increased demand resulting from the Proposed Rules. Further, the tax credit is only available for 12 years while the life cycle of any unit built or retrofit with CCS to obtain the credit would be considerably longer. For cooperatives, this poses the risk of having the unit become a stranded asset once the credit expires.[128] EPA additionally fails to consider the costs associated with the tax credit's reporting requirements.

Those are just the most glaring flaws on the CO_2 capture side of the CCS equation. EPA's assumptions about the costs of CO_2 transportation and storage are similarly problematic. EPA uses natural gas pipeline costs as a proxy for CO_2 pipeline costs, even though the latter operate at higher pressure and need to be made with a higher strength, higher cost steel.[129] Even assuming natural gas pipelines are a good proxy, EPA's estimated cost is lower than the industry's experience.[130] EPA's range is $1.2 million to $7.2 million per mile. Industry experience shows a range of $2 million per mile to as much as $13 million.[131] This discrepancy has significant implications for EPA's estimated pipeline costs.

For CCS system-wide costs, EPA relies on NETL studies based on NETL's *Quality Guidelines for Energy System Studies*.[132] While these guidelines work well for comparing project costs to each other, they have significant limitations for estimating total project costs due to a range of contingencies that can affect projects and necessary costs that are not included in those studies' scopes. The costs unaccounted for in the NETL guidelines include demolition or relocation of existing structures, measures to deal with extreme temperatures, and offsite storage. A full discussion of the limitations of NETL's guidelines for the purpose to which EPA uses them is available in the accompanying *Analysis of National Energy Technology Laboratory*

[123] 88 Fed. Reg. 33,299.
[124] Global CCS Institute. *Technology Readiness and Costs of CCS*. Available at https://www.globalccsinstitute.com/wp-content/uploads/2021/03/Technology-Readiness-and-Costs-for-CCS-2021-1.pdf.
[125] EPA Steam Unit TSD at 39.
[126] Morris and Weeda CCS at 4.
[127] Cichanowicz and Hein at 8-9.
[128] Morris and Weeda CCS at 7.
[129] Carbon Storage Appendix at 19.
[130] *Id*.
[131] *Id*.
[132] National Energy Technology Laboratory. *NETL Quality Guidelines for Energy System Studies*. February 2021. Available at: https://www.netl.doe.gov/projects/files/QGESSCostEstMethodforNETLAssessmentsofPowerPlantPerformance_022621.pdf.

Cost Estimation Guidelines and Comparison with Alternate Estimate from the Energy Information Administration, Sargent & Lundy. As that assessment explains, a more complete estimate of project costs for CO_2 capture systems is available from EIA.[133] This estimate contains a fuller scope of project costs and is 68% higher ($5,876/kW versus $3,482/kW) than NETL's estimate.[134]

2. Clean hydrogen

The clean hydrogen pathway is also not cost effective. To begin with, EPA has identified a fuel that requires four times more energy to produce than it yields[135] as a "best" option in the Proposed Rules. But as with CCS, EPA has made inaccurate assumptions about the associated costs of co-firing clean hydrogen – including using NETL's guidelines discussed above to serve as a complete estimate, which is not the intention of the guidelines.[136]

EPA wrongly anticipates that units burning clean hydrogen will be able to operate at the same capacity as units do when burning natural gas.[137] Hydrogen has a lower energy density than natural gas despite its higher heating value.[138] This difference in energy density means that for a combustion turbine to achieve the same capacity burning hydrogen as it would with natural gas, it would need to use significantly more hydrogen.[139] According to the attached *Technical Comments on Hydrogen and Ammonia Firing*, when a unit is burning 96% percent hydrogen, as the Proposed Rules would require in 2038, it can only produce about 65% of the energy output that it could if using natural gas.[140] EPA acknowledges hydrogen's lower energy density, yet dismisses that impact on capacity for reasons that are not clear.[141]

EPA also erroneously assumes that there will be no need for a dedicated hydrogen pipeline network. As discussed earlier, EPA incorrectly assumes existing natural gas pipelines can be utilized.[142] The dedicated pipeline network needed for clean hydrogen would have to use more specialized equipment throughout, including compressors that operate at three times the speed of natural gas compressors.[143] This means that existing pipelines cannot be repurposed to accommodate pure clean hydrogen. The Agency has also not adequately accounted for natural gas unit operational challenges associated with the transition to co-firing clean hydrogen. This includes the likelihood of increased maintenance and equipment replacement costs associated with hydrogen's higher flame temperature.[144]

3. Natural gas co-firing at existing coal units

EPA has not shown natural gas co-firing to be cost effective either, as it has not completely assessed the cost for existing coal-fired EGUs without a current supply of natural gas to access it.[145] As discussed earlier, EPA

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[133] U.S. Energy Information Administration (via Sargent & Lundy). *Capital Cost and Performance Characteristics for Utility Scale Electric Generating Units*.
[134] Campbell NETL at 9.
[135] Campbell Hydrogen at 3.
[136] *Id*. at 2-3.
[137] Environmental Protection Agency. *Resource Adequacy Analysis Technical Support Document*. May 23, 2023. p. 8. (Resource Adequacy Analysis TSD) Available at: https://www.epa.gov/system/files/documents/2023-05/Resource%20Adequacy%20Analysis%20TSD.pdf.
[138] Kiewit at 9-10.
[139] *Id*.
[140] *Id*. at 10.
[141] *Id*. at 9-10.
[142] *Id*. at 19-21.
[143] Campbell Hydrogen at 6.
[144] Kiewit at 13-15.
[145] Morris and Weeda Natural Gas at 4-8.

has failed to consider the additional costs that will be incurred from likely delays associated with permitting and public opposition to pipelines.[146] EPA also underestimates the engineering challenges associated with co-firing conversions, which can add significant costs to projects.[147] Combined, these costs will be substantial and will prove to be uneconomical for units given the investment will only be amortized over 10 years before retrofitted units shut down by 2040.

For example, Arkansas Electric Cooperative Corporation estimates that to continue operating one of their coal-fired units until 2040, less than its remaining life, they would need to invest $70 million to $120 million by 2030 just to bring natural gas to the plant site in order to co-fire with natural gas. Necessary retrofits to the plant to enable co-firing would require additional investment.[148] In the case of AEPCO in Arizona, steam unit 2 of the Apache Generating Station has been converted to natural gas, but additional firm natural gas transportation is not available on the natural gas supply pipeline. If coal-fired steam unit 3, which is the same size as steam unit 2, were converted to natural gas, the current metering station, piping, and transportation contracts would require modifications to reliably deliver additional gas to the site. To convert unit 3, AEPCO would more than likely have to purchase spot delivered market natural gas exposing them to market volatility in fuel pricing.[149]

4. Reliability

In addition, the Proposed Rules are not cost effective and fail to account for "energy requirements" due to the negative impacts on reliability expected from their implementation and the errors associated with EPA's Integrated Planning Model (IPM) model. As detailed in Section VIII, the Proposed Rules will necessarily degrade reliability – and EPA, by its own definitional distinction, has only examined resource adequacy. Should EPA adopt the Proposed Rules as published, affected operators would be forced to expend limited resources on unproven and costly technologies. This is an especially pressing concern for electric cooperatives, which – by necessity – will have to pass increased costs directly to consumer-members.

As discussed in Section VIII.B of these comments, EPA's IPM Updated Baseline contains 66 retirements erroneously attributed to the IRA (as opposed to the Proposed Rules) identified in 2028 and 2030. By linking those retirements to the IRA, EPA substantially underestimates the Proposed Rules' direct impact on the retirement of the generation necessary to ensure reliability.[150]

EPA also underestimates the parasitic load associated with CCS, or the electricity consumed to power the capture unit and related equipment that is not available for grid use. EPA assumes an 18% parasitic load,[151] but a 25% to 30% assumption is more appropriate.[152] This difference has meaningful implications as it would reduce net power output by up to an additional 12% percent across the fleet, further straining reliability.

5. Building of more, smaller units

Another flaw in EPA's evaluation of nonair quality, environmental, and energy requirements is its failure to grapple with the significant inefficiencies that the proposal will cause. As demonstrated in the attached *Technical Comments on Hydrogen and Ammonia Firing*, EPA's combustion turbine requirements are likely

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[146] Cichanowicz and Hein at 23-29.
[147] Morris and Weeda Natural Gas at 8.
[148] *Id*. at 8.
[149] *Id*. at 9.
[150] Marchetti Comments at 19.
[151] Resource Adequacy Analysis TSD at 9.
[152] Weeda at 4; Walsh at 4.

to lead to the construction of multiple combustion turbines that operate at less than 50% capacity.[153] EPA's own flawed IPM model shows the industry building more than 50% more small combustion turbines than the base case.[154] This is highly inefficient from an environmental, energy, and economic perspective. Building larger, more efficient units is generally less costly, more efficient, and results in less externalities than building multiple smaller units. EPA's decision to create standards based on undemonstrated, unachievable emissions standards makes the construction of more, smaller units inevitable.

D. The proposed emissions standards cannot be applied to emissions sources.

The Proposed Rules are also unlawful because they would require the construction and procurement of equipment "outside the fence" of sources. Performance standards under Section 111 apply to "sources, " not owners and operators or society as a whole.[155] "Source" is specifically defined as an individual physical "building, structure, facility, or installation."[156] Indeed, until the unlawful Clean Power Plan was struck down by the Supreme Court, EPA consistently interpreted Section 111 to refer "*exclusively* to measures that improve the pollution performance of individual sources, such that all other actions are ineligible to qualify as [the best system of emissions reduction.]"[157] But the proposed standards require actions that are not measures that improve the pollution performance of individual sources. As described above, they would require the unprecedented construction of entirely new CO_2 and hydrogen pipeline networks. They would require the creation of entire new industries to handle and sequester CO_2 and to manufacture and transport clean hydrogen. Those pipeline networks and new industries are not measures that can be applied to individual sources and therefore exceed EPA's authority.[158]

For similar reasons, EPA's alternative requirement that sources limit operation or declare retirement exceeds EPA's authority. Neither of those options are measures that can be applied to a source to improve its performance. It is the curtailment of their performance altogether in favor of other forms of generation that EPA prefers. That is exactly the kind of "generation shifting" that the Supreme Court held exceeded EPA authority under Section 111.

V. EPA's Proposed Compliance Timeline is Unrealistic.

As NRECA has demonstrated in these comments and the associated attachments, EPA's determination that CCS, clean hydrogen, and natural-gas co-firing are best systems of emission reduction fails to meet the CAA's requirements. Even if these standards were viable, however, the Agency's compliance timeline is unrealistic, and would be unworkable on any timeline contemplated by EPA.

The Proposed Rules' requirements for existing coal-fired EGUs would have to be met by January 1, 2030. Assuming the proposed emission guidelines are adopted on the timeline laid out in the most recent Unified Agenda of Regulatory and Deregulatory Actions,[159] state plans would not be approved by EPA (or go into effect) until April of 2027 at the earliest. Only at that point can existing units have the regulatory certainty to proceed with compliance efforts. Those EGUs operating beyond 2039 (long-term units) and 2034 (medium-term units) would not have the time to implement the required technologies, CCS and natural-gas co-firing

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[153] Kiewit at 5.
[154] *Id*.
[155] *E.g.* 42 U.S.C. § 7411(a), (d), (b).
[156] *Id.* § 7411(a)(3).
[157] *West Virginia*, 142 U.S. at 2596.
[158] *Id*. at 2611-12.
[159] Office of Information and Regulatory Affairs. *Spring 2023 Unified Agenda of Regulatory and Deregulatory Actions*. June 13, 2023. Available at: https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=2060-AV09.

respectively, in less than three years. In fact, even if those units began those efforts *today*, they would be very unlikely to be in compliance by the beginning of 2030. However, EPA cannot expect EGUs to take action toward compliance until EPA signs off on state plans to implement the standards.

EPA proposes a timeline of five years to deploy CCS and related infrastructure and equipment.[160] But this timeline is anything but reasonable. For purposes of installing CO_2 capture equipment on an EGU, EPA wrongly assumes that procurement of the equipment occurs prior to permits being issued. In most cases, units will need to secure financing in order to obtain equipment, and financing is unlikely to be secured until all permits are in place.[161] The Agency also fails to recognize that much of the best geologic storage is located under federal lands (therefore requiring NEPA review which averages more than four years) and that many state governments have not settled how they will deal with pore space ownership.[162]

EPA's timeline is based on an arbitrarily "expedited" version of a longer timeline developed by Sargent & Lundy and cited by the Agency. The longer Sargent & Lundy schedule shows a timeline of six to seven years.[163] Yet even this longer timeline "does not include the scope associated with the development of CO_2 off-take/storage (including transportation, sequestration, enhanced oil recovery utilization, and/or utilization)."[164]

Neither of the timeframes discussed above comport with real world CCS capture system deployment, based on summaries of DOE-funded front-end engineering and design schedules.[165] These studies are consistent with discussions NRECA has had with several engineering, procurement, and construction firms in the CCS industry under ideal circumstances.[166] There are unknown hurdles regarding timing that will only be identified as the technology matures. So, while history may be a more realistic guide than EPA's timeline for a single project in a suitable location, it is still not a realistic timeframe for the full development and deployment of dozens of systems across the country that would be required – particularly given the necessary outside the fence line infrastructure.

Similar problems arise with the proposed guidelines for medium-term coal-fired EGUs. Most of these EGUs do not have access to natural gas, which means that a pipeline would need to be constructed.[167] As just discussed with regard to CCS, building a pipeline requires lengthy timelines, assuming projects are eventually completed. Even coal-fired EGUs that do have access to natural gas may not be able to obtain the quantities of natural gas needed to co-fire at this level on a reliable basis as recent weather events have demonstrated (or even at all depending on the pipeline and infrastructure).[168]

Affected natural gas units will fare no better under the EPA's compliance timeframe. The challenges presented for those considering CCS are similar to those mentioned above for coal units, though there are zero such units operating CCS currently. That essentially leaves the clean hydrogen pathway as the only option. But even assuming that clean hydrogen was adequately demonstrated, compliance could not be achieved by the phase 2 requirement of January 1, 2032.

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[160] EPA Steam Unit TSD at 36.
[161] EERC at 11.
[162] *Id.* at 11.
[163] *Id*. at 12.
[164] Sargent & Lundy. *CCS Schedule (Coal Boilers or NGCC)*. 2023. (Available in the rulemaking docket as an attachment to the EPA Steam Unit TSD).
[165] Cichanowicz and Hein at 30-39.
[166] Walsh at 4.
[167] Morris and Weeda Natural Gas at 4-8.
[168] *Id*. at 4.

As discussed in Section IV, the timeframe for clean hydrogen to be produced at scale in time for operators to comply with EPA's requirement is unsupported due to its failure to address the fact that hydrogen takes more electricity to produce than it yields, the cost of production, and the water volumes necessary.[169] It is also not realistic to design, procure, permit, and construct the vast pipeline network needed for compliance, essentially from scratch, in less than nine years.[170]

These unrealistic timelines mean that the practical effect of the Proposed Rules is that coal units will be forced to pursue the compliance pathways associated with imminent or near-term units and retire prematurely. Existing natural gas units will be forced to opt to lower their capacity factors to 20% or below and become low load units. Further, EPA's decision to choose a capacity factor of 20% as the threshold for low load units is arbitrary, since trends indicate that simple cycle combustion turbines – those often used as "peaking" units – continue to run at increasing capacity factors, and in the summer of 2022 the average capacity factor of simple cycle units surpassed 20%.[171] This combination of premature retirements from coal units and (arbitrarily) low capacity factors from natural gas units will exacerbate the reliability issues discussed later.

VI. EPA's Proposed Applicability Dates are Incorrect as a Matter of Law.

As the Proposed Rules correctly recognize, "the CAA defines an 'existing source' as 'any stationary source other than a new source,'" and that the proposed emission guidelines for existing sources "would not apply to any EGUs that are new after January 8, 2014, or reconstructed after June 18, 2014, the applicability dates of 40 CFR part 60, subpart TTTT."[172]

Yet, on June 12, 2023, EPA issued a "Memo to the Docket" entitled *Applicability of Emission Guidelines to the Existing Stationary Combustion Turbines: FAQs*.[173] In this memo, EPA unlawfully states that the above applicability interpretation only applies to coal units. It goes on to say that "stationary combustion turbines that commenced construction or reconstruction before May 23, 2023, are existing sources that may be affected EGUs" under the proposed emission guidelines for existing units.[174]

Section 111(a)(6) of the CAA defines an "existing source" as "any stationary source other than a new source."[175] A "new source," in turn, is "*any* stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing *a* standard of performance under this section which will be applicable to such source."[176] This statutory text is clear and unambiguous. A source cannot be both "new" and "existing." Stationary combustion turbines constructed after January 8, 2014, are "new" sources that complied with Subpart TTTT. These units cannot be both "existing" and "new" under the CAA. Combustion turbines constructed after January 8, 2014, whose CO_2 emissions were subject to Subpart TTTT are "new sources" under Section 111, cannot be existing sources because those sources are already subject to "*a* standard of performance" for CO_2 under Section 111.

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[169] Campbell at 3.
[170] Kiewit at 19-21.
[171] Energy Information Administration. *U.S. simple-cycle natural gas turbines operated at record highs in summer 2022*. March 1, 2023. Available at: https://www.eia.gov/todayinenergy/detail.php?id=55680.
[172] 88 Fed. Reg. 33,342.
[173] Environmental Protection Agency. *Applicability of Emission Guidelines to the Existing Stationary Combustion Turbines: FAQs.* June 12, 2023. Available at: https://www.regulations.gov/document/EPA-HQ-OAR-2023-0072-0143.
[174] *Id.* at 2.
[175] 42 U.S.C. § 7411(a)(6).
[176] 42 U.S.C. § 7411(a)(1) (emphasis added).

Further, it is arbitrary and capricious for EPA to say (correctly) that steam generating units that complied with Subpart TTTT are "new" sources (and thus not subject to the proposed emission guidelines) while stationary combustion turbines that complied with that same provision are "existing" sources that are subject to the proposed emission guidelines. EPA needs to make clear that any EGU – whether a steam generating unit or a stationary combustion turbine – that commenced construction prior to January 14, 2014 (or that commenced a reconstruction or modification after June 18, 2014) and was subject to Subpart TTTT is *not* an existing source for the purposes of the proposed emission guidelines.

VII. The Proposed Rules Illegally Restrict States' Discretion to Evaluate the 'Remaining Useful Life and Other Factors.'

The CAA requires that EPA's implementing regulations under Section 111(d) shall "permit the State in applying a standard of performance to any particular source under a plan submitted [under Section 111(d)] to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies."[177] EPA therefore cannot deny a state discretion to take remaining useful life into consideration and cannot restrict that consideration in the Proposed Rules.

Despite this clear statutory language, the Proposed Rules unlawfully impose restrictions on state consideration of remaining useful life and other factors that will effectively prevent them from exercising the discretion guaranteed by Section 111(d)(1). First, EPA's proposal to exclude sources that have been given less stringent emission limitations because of their remaining useful life from any potential state emissions allowance trading program is arbitrary and capricious. Those sources can easily be included in trading programs—the budget for that source could simply be derived by considering its emissions limitation, as adjusted for its useful life remaining. Second, EPA has suggested that a state may not consider "impacts on the energy sector" while making remaining useful life determinations because EPA already considered those impacts while analyzing the best system of emission reduction.[178] But the CAA requires states to consider local "energy requirements" when setting standards of performance for existing sources.[179] Congress specifically recognized that states, not EPA, have the expertise and authority to evaluate their own energy requirements. States may have energy-related reasons (such as grid reliability) for keeping an older plant open, even if it is used infrequently, that necessitates developing a source specific emissions standard based on the plant's remaining useful life.

Additionally, the Proposed Rules could be read as asserting that states may not consider remaining useful life and other factors when using flexible compliance mechanisms to satisfy EPA's required level of stringency. Those flexible compliance mechanisms might allow particular sources to emit at higher levels by obtaining allowances while still resulting in the state as a whole satisfying EPA's presumptive level of emissions stringency.[180] EPA cannot foreclose such flexibility. Instead, it should clarify that if a state plan meets the required level of emissions reductions in a way that permits certain plants to exceed their emissions limitations, the plan will still be approved as "satisfactory."[181]

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[177] 42 U.S.C. § 7411(d)(1).
[178] 88 Fed. Reg. 33,382 n.628.
[179] 42 U.S.C. § 7411(a)(1).
[180] *See* 88 Fed. Reg. 33,383 (Noting "a State may not invoke RULOF to provide a less stringent standard of performance for a particular source if that source cannot apply the BSER but can reasonably implement a different system of emission reduction to achieve the degree of emission limitation required by the EPA's BSER determination").
[181] *See* 87 Fed. Reg. 79,176, 79,198 (Suggesting that a state need not rely on the remaining useful life and other factors analysis when demonstrating that a group of facilities "would, in the aggregate, achieve equivalent or better reductions than if the state instead imposed the presumptive standards required under the [emission guideline] at individual designated facilities.").

VIII. The Proposed Rules Will Exacerbate Existing Challenges to Reliability.

The Proposed Rules, and their reliance on promising but unproven technologies on an unachievable timeline, will directly jeopardize the ability of electric cooperatives to provide affordable, reliable electricity to their consumer-members. As discussed in Section II.B, providing affordable, reliable, and safe electricity is paramount for electric cooperatives. It is incumbent upon EPA to consider the reliability impacts of their regulatory actions and mitigate them to the fullest extent possible. Unfortunately, EPA has not come close to doing either in contemplating its Proposed Rules. EPA has failed to adequately assess the Proposed Rules' impacts on reliability, relied upon deficient modelling that understates the proposal's impact on always available generation, and inconsistently applied the IRA in projecting changes in electric sector.

A. EPA fails to adequately assess the Proposed Rules' impacts on reliable electricity.

1. EPA did not analyze the Proposed Rules' impacts on reliability.

The preamble to the Proposed Rules acknowledges the critical need for reliability.[182] However, there is no reliability analysis accompanying the Proposed Rules. Instead, the Proposed Rules rely upon "design elements," EPA's intention to exercise its enforcement discretion, and a resource adequacy analysis. The deficiency in the design elements is discussed in Sections IV and V above and the ineffectiveness of the proposed enforcement discretion is discussed in Section VIII.A.3 below.

At the outset, the Proposed Rules are deficient by failing to specifically analyze and address reliability. The Proposed Rules provide a resource adequacy analysis to presumably demonstrate that the Proposed Rules will not adversely impact reliability, yet resource adequacy is different from reliability. As EPA itself explains, "the term resource adequacy is defined as the provision of adequate generating resources to meet projected load and generating reserve requirements in each power region, while reliability includes the ability to deliver the resources to the loads, such that the overall power grid remains stable."[183] The Grid *Reliability* Considerations in the preamble to the Proposed Rules explain that "[t]o support these proposed actions, the EPA has conducted an analysis of *resource adequacy*…" set forth in the Resource Adequacy Analysis Technical Support Document (TSD).[184] The TSD does not analyze reliability.

The Resource Adequacy TSD states that it "describes projected resource adequacy and reliability impacts of the Proposed Rules."[185] Yet as previously stated, the TSD defines "resource adequacy" and "reliability" differently, and states that the TSD "is meant to serve as a *resource adequacy* assessment of the impacts of the final rule and how projected outcomes under the final rule compare with projected baseline outcomes in the presence of the IRA."[186] Moreover, reliance on the IRA to jumpstart the clean hydrogen and CCS infrastructures that are critical to any EGU retrofits in order to comply with the Proposed Rules is overly optimistic, cannot be factually supported, and therefore is flawed and cannot be relied upon when reliability of the grid is at stake. EPA's analysis fails under the weight of its own assumptions that current technologies can be scaled up in the future to the magnitude of current operations, infrastructure can be permitted and

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182 88 Fed. Reg. 33,246-33,247.
183 Resource Adequacy Analysis TSD at 2.
184 88 Fed. Reg. 33,415 (emphasis added); *see also*, RIA at 3-25, 3-26, n. 90 (After stating projected coal retirements as a result of the Proposed Rules, the RIA states that "[t]hese compliance decisions reflect EGU operators making least-cost decisions on how to achieve efficient compliance with the rules while maintaining sufficient generating capacity to ensure grid reliability . . .For further discussion on how the rule is anticipated to integrate into the ongoing power sector transition while not impacting *resource adequacy*, see section XIV(F) of the preamble, and the Resource Adequacy Analysis TSD included in the docket." (emphasis added)).
185 Resource Adequacy Analysis TSD at 2.
186 *Id.*

constructed more rapidly than ever before in the past, technology and infrastructure will be paid for without question, and that the process will unfold smoothly according to the unrealistic timeline EPA has developed.

Rather than undertake a reliability analysis, EPA points to studies that purportedly demonstrate "how reliability continues to be maintained under high variable renewable penetration scenarios."[187] Even assuming these third party studies are correct, which may or may not be the case, the ability to maintain reliability with an influx of new intermittent renewable resources does not address the reliability impacts of potential retirement of significant volumes of existing baseload fossil fuel-fired generation or operation of new generating resources at lower capacity factors, as a result of implementation of the Proposed Rules. Accordingly, the Proposed Rules fail to provide an analysis of reliability impacts.

2. Forcing baseload resources to make retirement decisions further threatens electric reliability.

EPA contemplates that some EGUs will be retired as a result of the Proposed Rules.[188] The IPM Updated Baseline projects total coal retirements between 2023 and 2035 of 104 GW (or 15 GW annually), while total coal retirements under the Proposed Rules between 2023 and 2035 are projected to be 126 GW (or 18 GW annually), as compared to an average historical retirement rate of 11 GW per year from 2015-2020.[189] As discussed in Section VIII.B, EPA erroneously attributes these retirements to the IRA instead of the Proposed Rules. These retirements will impact electric cooperatives' ability to reliably serve consumer-members at the end of the line. For example, as Buckeye Power Inc. described in June 6, 2023 congressional testimony, the Proposed Rules will cause a costly shutdown of all of Buckeye Power's coal-fired units by 2030 with no ability to replace the energy in that timeframe.[190] Buckeye CEO Patrick O'Loughlin framed the reliability challenge facing his cooperative this way: "[a]s someone who has worked in the electric power industry for decades, I know that despite what EPA has claimed, this rule will in fact have a serious negative impact on the reliability of our electric system and will result in a dramatic increase in costs to Ohio's electric cooperative members. It is imperative that EPA change course."

Further, the ability of existing generators to comply with the Proposed Rules will depend in significant part on the ability to schedule outages for EGUs in order to install controls. However, RTOs and independent system operators (ISOs) are already warning that the ability to take maintenance outages is limited in many regions. As the Midcontinent Independent System Operator (MISO) recently warned with respect to EPA's proposal to deny applications by certain generation plans for an alternate linear demonstration regarding coal combustion residuals surface impoundments:

> MISO faces increasing challenges to system reliability and the ability to commit sufficient resources to supply electricity customers within the Midcontinent region. Even with the growth of alternative and renewable energy sources, MISO continues to be concerned about the looming shortfall of generation needed to ensure grid reliability in the region. Within the MISO region, the retirement of generation plants is occurring faster than new energy sources with

[187] *Id.*
[188] 88 Fed. Reg. 33,416.
[189] *Integrated Proposal Modeling and Updated Baseline Analysis*. July 7, 2023. p. 16. Available at: https://www.regulations.gov/document/EPA-HQ-OAR-2023-0072-0237.
[190] Testimony of Patrick O'Loughlin, President and CEO of Buckeye Power Inc. and Ohio Rural Electric Cooperatives, House Energy and Commerce Subcommittee on Environment, Manufacturing and Critical Materials. June 6, 2023, at 3. Available at: https://energycommerce.house.gov/events/environment-manufacturing-and-critical-materials-subcommittee-hearing-clean-power-plan-2-0-epa-s-latest-attack-on-america-s-electric-reliability.

> equivalent attributes, whatever the fuel source, can be developed, constructed and brought online.[191]

MISO further explained that "retirement/suspension requests as well as planned outages will require particular attention to ensure continued grid reliability and resource adequacy."[192]

As discussed in Sections IV and V of these comments, compliance under the Proposed Rules is infeasible on any timeframe EPA is considering. Indeed, EPA's proposals are among several fundamental changes to the energy industry in the federal regulatory pipeline. There are several policies from EPA alone, either proposed or recently implemented, that will compound the detrimental effect of the Proposed Rules on reliability. As discussed in Section II, the steam electric effluent limitations guidelines rule, the coal combustion residuals rule, and the ozone transport rule, have the potential to accelerate and increase the 40 GW of retirements contemplated by PJM.[193] Moreover, the Federal Energy Regulatory Commission (FERC) recently finalized comprehensive reforms to its procedures for interconnecting generation to the grid[194] and is also addressing transformative changes to transmission planning and cost allocation.[195]

As one RTO has explained, "[m]aintaining an adequate level of generation resources, with the right operational and physical characteristics, is essential for PJM's ability to serve electrical demand through the energy transition."[196] The Proposed Rules will only increase and exacerbate these threats to reliability.

3. EPA's approach is insufficient to address or mitigate the adverse impacts on reliability that will result from the Proposed Rules.

The measures in the Proposed Rules do not enable responsible authorities to maintain electric reliability. As discussed in Section IV and V, the compliance requirements are based on a deficient, unreasonable, and arbitrary analysis. Moreover, measures identified in the Proposed Rules to purportedly preserve electric reliability are insufficient to mitigate adverse impacts to reliability. The Resource Adequacy Analysis TSD acknowledges that some EGU owners may determine that retiring and replacing an asset is a more economic option than making substantial investments in emissions controls in order to comply with the Proposed Rules.[197] But, there is no guarantee that a resource retirement would be accompanied by a similarly adequate replacement from a reliability perspective. In fact, given transmission queue delays, permitting delays, and unprecedented electric supply chain disruptions and lead times, it is highly unlikely.[198]

Furthermore, EPA unreasonably relies on the retirement process in place by the relevant RTO, balancing authority, or state regulator to protect electric system reliability. The EPA contends that its Proposed Rules provide the flexibility needed to avoid reliability concerns.[199] However, EPA's expectation that these entities

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[191] Comments from Midcontinent Independent System Operator, Inc. Regarding the United States Environmental Protection Agency's Request for Comments re Docket ID Nos. EPA-HQ-OLEM-2021-0283, EPA0HQ-OLEM-2021-0282, EPA-HQ-OLEM-2021-0280, dated April 10, 2023 at 4-5.
[192] *Id.*
[193] Energy Transition in PJM at 7.
[194] RM22-14-000; Order No. 2023 Improvements to Generator Interconnection Procedures and Agreements, 184FERC ¶ 61,054 (Issued July 28, 2023).
[195] RM21-17-000, Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection, Advanced Notice of Proposed Rulemaking, 176 FERC ¶ 61,024 (2021), 86 Fed. Reg. 40,266; RM21-17-000, Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection, Notice of Proposed Rulemaking, 179 FERC ¶ 61,028 (2022), 86 Fed. Reg. 26,504.
[196] Energy Transition in PJM at 1.
[197] Resource Adequacy Analysis TSD at 3.
[198] Marchetti Comments at 11-16.
[199] 88 Fed. Reg. 33,415.

will “use their powers to ensure that electric system reliability is protected” is far from sufficient to address, let alone analyze, the adverse impacts on reliability that will result from generators who opt for retirement as the only feasible option. Significantly, in such instances, EGU owners have the right to retire their facilities subject to notice provisions. Because RTOs have no authority to order EGUs to continue operating rather than retire,[200] existing retirement processes simply cannot provide assurance against reliability impacts as EGUs retire in response to the Proposed Rules.

EPA’s intention to exercise its enforcement discretion to address instances where individual EGUs might need to temporarily operate for reliability reasons is also insufficient protection against adverse reliability impacts from the Proposed Rules.[201] As a general premise, EPA’s assertion that it may exercise enforcement discretion in some unforetold circumstances is cold comfort. Discretionary action by the Agency holds no guarantees and provides stakeholders little avenue for review. Among other reasons, the exercise of enforcement discretion necessarily involves political and policy judgments that are subject to change based on the results of elections and who holds the decision-making authority. To provide any reasonable relief from reliability concerns, EPA would need to promulgate regulations setting forth the rights and obligations of stakeholders and allow for swift judicial review of the Agency’s decisions.

In the instant situation, EPA’s explanation demonstrates that the outcome of exercising discretion in enforcement is uncertain and may be so time-consuming as to render it useless in many instances as a stop-gap measure to protect against adverse reliability impacts of the Proposed Rules. The Proposed Rules describe a case-by-case process in which an affected EGU that is required to run in violation of a state plan requirement can negotiate an administrative compliance order (ACO) with EPA.[202] The Proposed Rules include a set of minimum conditions to qualify for an ACO. The conditions will make it challenging, at best, for EGUs to obtain an ACO in instances of urgent reliability needs.

Among other things, the ACO would be conditioned on the owner/operator of the affected EGU requesting, “in writing and in a timely manner” (1) an enforceable compliance schedule in an ACO; (2) a written analysis and documentation of reliability risk if the unit were not in operation that would include a compliance schedule, with written concurrence of the reliability analysis from the relevant electric planning authority; (3) a demonstration that the need to operate for reliability is due to factors beyond the EGU owner/operator’s control; (4) a demonstration that all increments and milestones in the state plan have been met; and (5) a demonstration that there is insufficient time to address the reliability risk and potential noncompliance through a revision to the state plan.[203] If EPA deems it appropriate to do so, it would then issue an ACO that would include an expeditious compliance schedule and operational limits.[204] But there are no guarantees that EPA would even act on such a request in a timely manner, especially since the Agency has given itself no deadline and presumably would argue any decision not to exercise its enforcement discretion is not subject to judicial review.

EPA’s ACO proposal is particularly unworkable for purposes of addressing more immediate reliability needs. For example, for EGUs in an RTO/ISO region, the notification that units are needed for urgent reliability needs, or even short-term reliability needs, may not be provided sufficiently in advance for the EGU owner to prepare all of the documentation required by EPA.[205] Moreover, the requirement to provide a written analysis and documentation of the reliability risk if the unit were not in operation is in most instances

[200] Energy Transition in PJM at 6.
[201] 88 Fed. Reg. 33,415.
[202] 88 Fed. Reg. 33,401.
[203] 88 Fed. Reg. 33,401-33,402.
[204] 88 Fed. Reg. 33,402.
[205] All regional planning authorities would face such challenges.

information that the EGU owner would not possess but instead would require information and analysis from the regional entity or state. The EGU owner may not be able to obtain an analysis from the regional entity or the state that meets EPA's specifications, and particularly not in a timely manner, as there may be requirements to request the analysis. The same is true of the requirement to demonstrate that there is insufficient time to address the reliability risk and potential noncompliance through a state plan revision.

Finally, on this issue, the case-by-case approach proposed by EPA, with a possibility of additional conditions beyond those stated, leaves EGUs with little to no assurance that they will be permitted to continue operating for reliability at a time when such continued operation is critical. EGU owners would face a "Hobson's choice" between the consequences of noncompliance with the state plan or the consequences of not being available for reliability, and the electric grid might be deprived of a resource when it is most needed for reliability. If EPA expects the ACO process to in fact assist in maintaining reliability of the grid, EPA should defer to comments from the RTOs and other regional entities.

4. Even assuming that the Proposed Rules are lawful, it would be necessary to improve measures protecting against the adverse reliability impacts.

The discussion regarding EPA's coordination with DOE under the Memorandum of Understanding (MOU) on Interagency Communication and Consultation on Electric Reliability is insufficient to address the risks to reliability posed by the Proposed Rules.[206] Coordination between EPA and FERC, the agency charged with ensuring reliability, is important. However, the MOU and Proposed Rules do not guarantee that there will be any meaningful steps to ensure that EPA's Proposed Rules take reliability into account and that the Agency will adopt mitigation measures that protect against adverse impacts on reliability. If EPA is serious about addressing the adverse impacts on reliability, it should put the Proposed Rules on hold and implement the MOU with DOE by conducting a series of technical conferences with FERC, NERC, states, regional entities and other stakeholders.[207] The following suggestions would be ripe for discussion at technical conferences.

First, as currently drafted, the ACO proposal is unworkable. As detailed in Section VIII.A.3, in order for the ACO process to function, it must provide EGUs with reasonable opportunities to obtain the requisite documentation from the applicable regional entity or the state, as appropriate. This is particularly important in the case of a threat to immediate reliability needs. In that instance, as opposed to requiring the EGU owner to demonstrate the need for its EGU to run for reliability and the implications if it does not do so, EPA should provide that the condition can be met if the RTO or other relevant electric entity has declared a reliability issue (such as a System Emergency).

Second, the definition of System Emergency should be revised to include all instances where EGUs are required to operate by the local grid operator for circumstances beyond the EGU owner's control.[208] The current definition in the Proposed Rules is restricted to instances where the local grid operator determines the EGU is essential to maintain reliability.[209] Additionally, in the event that an EGU operating pursuant to a System Emergency under the Proposed Rules exceeds its annual emissions limitations under other applicable EPA regulations, EPA should clarify the EGU shall not be deemed in violation and subject to penalties or changes to its subcategorization under such other requirements.

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[206] *Memorandum of Understanding on Interagency Communication and Consultation on Electric Reliability*. March 9, 2023. Available at: https://www.epa.gov/power-sector/electric-reliability-mou.
[207] Public interagency discussions were part of the Clean Power Plan process and should be required for the rule. Indeed, Congressional requests for exactly this type of public forum have already been addressed to FERC. *See* Letter from Senators Barrasso and Capito to FERC Chair Phillips and Commissioners Danly, Clements, and Christie. June 30, 2023.
[208] 88 Fed. Reg. 33,333.
[209] *Id.*

Third, the process for coordination with stakeholders, including federal and state agencies, should be more formal and publicized, with an opportunity for comments and requirements for periodic reports by EPA and/or FERC or other agencies, regarding maintaining reliability with implementation of the Proposed Rules.

Finally, any final rules in this docket should formalize a process with adequate opportunity and time for NERC to render a reliability assessment to be provided to EPA and other agencies as part of the coordination for implementation of the rule.

B. EPA's Integrated Planning Model understates the impacts of the Proposed Rules.

EPA uses its IPM to develop projections out to 2050 on future outcomes of the electric power sector. The modeling relies on input data and assumptions from the Post-IRA 2022 Reference Case.[210] Based on the output of EPA's model, the Agency determines that the IRA is responsible for much of the retirements in fossil fuel power generation over the foreseeable future. Accordingly, EPA projects the Proposed Rules to have only minor effects. This projection is incorrect.

An analysis performed for the Power Generators Air Coalition, of which NRECA is a part, examines how IPM modeled individual units' retirement decisions.[211] Due to time constraints, worsened by EPA's July 7 modeling update, the analysis only looks at how coal units were modeled for 2030 – when IPM predicts a significant drop in coal unit capacity. This analysis found that EPA's Updated Baseline used to measure the impacts of the Proposed Rules on electric generation assets is seriously flawed, mainly attributed to EPA's assumptions regarding IRA implementation. Most notably, IPM incorrectly projected the retirement of 66 coal units which represent 40% of the retired Updated Baseline coal capacity in 2030. This incorrect projection seriously compromises the baseline. IPM also projected the retrofit of units with CCS by 2030, which is impossible for the reasons explained in detail earlier in these comments and its accompanying attachments.

Table 1 summarizes the IPM retirement errors in the 2028 and 2030 modeling runs. Specifically, IPM incorrectly projected the retirement of 41 coal units (18.1 GW) by 2028 and an additional 25 coal units (15.9 GW) by 2030 in the Updated Baseline. No public statements or filings related to integrated resource plans for these 66 units have been made indicating they intend to retire, including statements and filings made subsequent to the passage of the IRA. This indicates that even though unit operators are aware of the IRA's financial incentives, neither the incentives themselves nor the lack of certainty about their implementation is likely to result in the retirements EPA projects. Again, these 66 retirement errors (34.0 GW), account for almost 40% of the modeled retirements in the Updated Baseline. This extremely high percentage of erroneous coal retirements is attributed to EPA's unreasonable assumptions of IRA implementation, which results in the Updated Baseline being significantly compromised.

Table 1

IPM Modeled Coal Retirement Errors in the Updated Base Case

Year	IPM Retirements	Retirement Errors
2028	108	41
2030	58	25
Total	166	66

[210] Environmental Protection Agency. *Documentation for Post-IRA 2022 Reference Case*. April 5, 2023. Available at: https://www.epa.gov/power-sector-modeling/documentation-post-ira-2022-reference-case.
[211] Marchetti Comments at 17-22.

The analysis, submitted in full along with these comments, also found errors with at least three units that, according to EPA's Updated Baseline case, were modeled to have installed CCS by 2030, but would be retired due to the Proposed Rules. Given the limited scope of the analysis, it is possible other aspects of the modeling – such as how natural gas units would be affected – contain errors. In any event, the significant errors in EPA's IPM model render any analysis based on that model arbitrary and capricious.

C. EPA inconsistently models impacts from the Inflation Reduction Act.

While EPA uses the IRA to minimize the direct economic impact of its regulations in rulemakings, including this one, where it has incorporated the IRA's effects in its modeling, the Agency's modeling does not adequately account for the load growth associated with increased electrification of the economy that is a goal of the IRA and the administration's policy efforts.

EPA's model relies on the electricity demand projections from the EIA's Annual Energy Outlook 2021. This edition was published in February 2021, 18 months before the IRA's passage. The IRA was designed to drive electrification faster than EIA assumed in February 2021 – by incentivizing a more rapid adoption of technologies like electric vehicles (EVs), heat pumps, and electrolysis for clean hydrogen production – yet the demand impacts associated with this acceleration are not reflected in EPA's modeling. Concurrently, the administration has proposed a number of regulatory efforts that will incentivize increased electrification, including tailpipe emissions and fuel economy standards for vehicles, efficiency standards for various home and commercial appliances, and even standards for federal buildings. Taken together with the IRA's incentives, these actions will result in significant increases in electricity demand.

In particular, it is important for EPA to recognize that electrification of the transportation sector, and the associated increased demand, will require substantial distribution infrastructure investment over time to meet increased average local electric demand and to meet increased demand in new locations (e.g., EV charging stations). Significant transmission infrastructure investment may also be required to meet increased average electric demand and changes in the spatial distribution of electric demand among load centers.[212]

As such electrification takes place, cooperatives must maintain always available generation to keep up with this increased demand in a way that ensures an adequate supply of affordable, reliable, and safe electricity. The result of these arbitrary decisions is that the Agency has failed to model the increase in load growth from the IRA's policies while at the same time using the IRA to increase expected retirements in the Updated Baseline, as described above. This fails to give a reasonable projection of the energy mix and strain on reliability. Further, the costs associated with electrification in EPA's analysis are grossly understated and undercut EPA's assertion that affordable electricity will be possible under these Proposed Rules.

IX. EPA's Environmental Justice Analysis is Lacking.

Although EPA claims that the impacts of its Proposed Rules will be distributed across demographic groups, it has overlooked key issues affecting environmental justice communities and has failed to substantively engage with stakeholders advocating on behalf of those communities.

First, EPA has not examined the full picture of how the Proposed Rules will impact electricity prices. Costs associated with emissions controls factor into overall power plant costs, which are then reflected downstream in electricity prices for consumers. This is particularly true of electric cooperatives, which must pass any

[212] Weeda at 5-7.

added costs along to their consumer-members. So, the Proposed Rules' application to electric generators will inevitably increase electricity prices. And these additional costs will impact low-income families more acutely and disproportionately. Low-income households spend a larger portion of household budgets on energy costs. For example, households are thought to have a "high energy burden" if more than 6% of the household income is spent on energy costs, and energy burdens are higher for "communities of color, rural communities, families with children, and older adults."[213] These high energy burdens affect housing conditions, which in turn, impact "physical and mental health, nutrition, and local economic development."[214]

Second, the Proposed Rules are expected to significantly impact reliability, as noted in Section VIII. This will disproportionately affect low-income families and disadvantaged communities. In the face of reliability impacts, many commercial consumers will resort to emergency back-up generators, which would disproportionately harm air quality affecting individuals that live in disadvantaged communities near those industrial sites. Meanwhile, lower-income residents would be unable to avail themselves of backup generators and would instead suffer the consequences of unreliable electricity. This violates basic energy justice principles which protect the ability of all people to have a "reliable, safe, and affordable source of energy."[215]

Third, EPA did not give sufficient consideration to concerns raised by environmental justice community stakeholders about the potential impacts of CCS and clean hydrogen infrastructure. As with most major infrastructure projects, the pipelines and storage facilities necessary for compliance under the Proposed Rules will have to go through state and federal permitting processes with robust community engagement. In light of the massive scale of CCS and clean hydrogen infrastructure deployment necessitated by the Proposed Rules, however, EPA's consideration of these issues thus far has been perfunctory and does not fulfill its obligations to meaningfully engage with stakeholders.

X. EPA Has Not Provided Sufficient Opportunity for Comment.

The Administrative Procedure Act (APA) requires agencies to "give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments."[216] Federal courts have interpreted this to mean that EPA must "make available to the public, in a form that allows for meaningful comment, the data the agency used to develop the proposed rulemaking."[217] The CAA contains similar requirements.[218] The CAA requires that "[a]ll data, information and documents [EPA relies on] shall be included in the docket *on the date of publication of the proposed* rules."[219] And in order for the public to have a meaningful opportunity to comment, it must have sufficient time to review, study, absorb, identify flaws with, and present counter-evidence to EPA's data. Congress, "after all, intended to provide 'thorough and careful procedural safeguards to [e]nsure an effective opportunity for public participation in the

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[213] American Council for an Energy-Efficient Economy. *How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States*. pp. 2, 5. September 2020. Available at: https://www.aceee.org/sites/default/files/pdfs/u2006.pdf.
[214] *Id*. at 5.
[215] Aladdine Joroff. *Energy Justice: What It Means and How to Integrate It Into State Regulation of Electricity Markets.* p. 1. November 2017. Available at: https://elpnet.org/sites/default/files/2020-04/energy_justice_-_what_it_means_and_how_to_integrate_it_into_state_regulation_of_electricity_markets.pdf.
[216] 5 U.S.C. § 553(c).
[217] *Engine Mfrs. Association v. EPA*, 20 F.3d 1177, 1181 (D.C. Cir. 1994).
[218] 42 U.S.C. §§ 7607(d)(3),(5).
[219] *Id.* § 7607(d) (emphasis added).

rulemaking process.'"[220] As explained below, EPA's truncated comment period fails to provide stakeholders a meaningful opportunity to comment and is therefore unlawful.

EPA published the Proposed Rules on May 23, 2023, with a 60-day comment deadline of July 24. The next day, NRECA and the American Public Power Association (APPA) submitted a request to extend the deadline by an additional 60 days.[221] The original comment period was inadequate for at least three important reasons.

First, the Proposed Rules are not a single action – rather they are five actions.[222] The information to read and analyze include a 181-page preamble, a 359-page regulatory impact analysis, eight technical supporting documents (some of which contain several attachments), and dozens of other docket materials.

Second, EPA has repeatedly recognized that significantly longer comment periods are required for rules of similar complexity and significantly. For example, in previous versions of GHG performance standards for power plants under Section 111 of the CAA, EPA provided much longer comment periods. When EPA proposed the NSPS in January 2014, it provided a 120-day comment period following a 60-day extension of the original 60-day comment period. And when EPA proposed emission guidelines for existing sources later that year, the Agency provided a 165-day comment period, following a 45-day extension of the original 120-day comment period. Importantly, those comment periods were not concurrent – the NSPS comment period ended more than a month before the comment period for the proposed emission guidelines opened. The Proposed Rules are equally significant and EPA's arbitrary decision to shrink the comment period represents a significant and unreasoned departure from the Agency's prior interpretation of its public comment obligations.

Third, there were three other proposed rules concurrently open for comment directly affecting fossil fuel-fired EGUs.[223] The timing of these comment periods effectively reduced the time that cooperatives, and other segments of the electricity sector, could devote to their consideration of the Proposed Rules.

EPA has only paid lip service to these concerns. On June 12, EPA notified NRECA that the Agency had extended the comment period a mere 15 days to its current deadline, August 8. NRECA and APPA asked for a further 45-day extension noting that several entities, including the ISO/RTO Council, had requested more time to assess impacts of the Proposed Rules on reliability considerations.[224] No response was received.

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[220] *Sierra Club v. Costle*, 657 F.2d 298, 398 (D.C. Cir. 1981).

[221] Comments submitted by National Rural Electric Cooperative Association (NRECA) and American Public Power Association (APPA). May 24, 2023. Available at: https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0072-0062.

[222] "The EPA is proposing revised new source performance standards (NSPS), first for GHG emissions from new fossil fuel-fired stationary combustion turbine EGUs and second for GHG emissions from fossil fuel-fired steam generating units that undertake a large modification, based upon the 8-year review required by the CAA. Third, the EPA is proposing emission guidelines for GHG emissions from existing fossil fuel-fired steam generating EGUs, which include both coal-fired and oil/gas-fired steam generating EGUs. Fourth, the EPA is proposing emission guidelines for GHG emissions from the largest, most frequently operated existing stationary combustion turbines and is soliciting comment on approaches for emission guidelines for GHG emissions for the remainder of the existing combustion turbine category. Finally, the EPA is proposing to repeal the Affordable Clean Energy (ACE) Rule." 88 Fed. Reg. 33,240.

[223] These actions are: Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 88 Fed. Reg. 18,824 (March 29, 2023), with comments due May 30; National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review, 88 Fed. Reg. 24,854 (April 24, 2023), with comments due June 23; and Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31,982 (May 18, 2023), with comments due July 17.

[224] Comments submitted by National Rural Electric Cooperative Association (NRECA) and American Public Power Association (APPA). June 29, 2023. Available at: https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0072-0159.

What is more, EPA added significant new data and information to the docket more than halfway through the 75-day comment period. This independently violates the APA's and CAA's requirement that EPA provide stakeholders a meaningful opportunity to comment. On July 7, EPA posted a memorandum to the docket titled "Integrated Proposal Modeling and Updated Baseline Analysis." The document, and the numerous attachments associated with it, updated EPA's analysis of the Proposed Rules' impacts. The updated modeling introduced significant changes to EPA's baseline modeling, which is critical to EPA's assessment of the impacts and viability of the proposals. But the D.C. Circuit has explained that if "documents of central importance upon which EPA intended to rely had been entered on the docket too late for any meaningful public comment period prior to promulgation, then both the structure and spirit of section 307 would have been violated."[225]

EPA's unexpected mid-comment-period modeling update required NRECA and other stakeholders to begin their analysis anew to identify changes between the two model runs. Even though the CAA requires EPA to make all "data, information, and documents" it relies on available to the public,[226] EPA did not provide parsed files so that stakeholders could easily determine how individual units were modeled in the Updated Baseline and policy cases; this work had to be done manually with insufficient time. Indeed, as noted in Section VIII.B, NRECA had to limit its analysis of the IPM due to the lack of available information and time to review.

And there is good reason to believe that additional time would enable stakeholders to address the flaws in EPA's data and analysis. In a third joint extension request with APPA, NRECA explained the problems the updated modeling had introduced and expressed concern the remaining comment period is insufficient for a proper analysis that can be effectively incorporated into comments.[227] In addition, we alerted the Agency that we had uncovered issues that call into question the accuracy of certain aspects of the modeling mentioned earlier in these comments. These issues included at least three units that, according to EPA's Updated Baseline case, were modeled to have installed CCS by 2030.[228] Yet, in the policy case, these units show up as retired in 2028 or 2030. This result defies logic because a unit that EPA assumes would install CCS by taking advantage of the IRA's Section 45Q tax credit in the Updated Baseline should remain operational under the policy case.

In summary, EPA failed to provide stakeholders sufficient opportunity to provide comment given the breadth of the Proposed Rules, their significance, and the fact that EPA updated its underlying modeling more than halfway through the 75-day comment period. EPA's failure is in violation of the APA and the CAA, and the Agency has acted arbitrarily and capriciously in its determination not to give the public more opportunity to meaningfully comment.

XI. EPA Improperly Determined the Proposed Rules Would Not Significantly Impact Small Entities.

Under the RFA, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA), EPA must assess the impacts of rules on small businesses, small not-for-profit organizations, and small

[225] *Sierra Club*, 657 F.2d at 398; *see also Kennecott Corp. v. EPA*, 684 F.2d 1007, 1019 (D.C. Cir. 1982) (EPA violated the CAA's notice and comment requirements by failing to make updated forecast data available until one week before promulgation); *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 540 (D.C. Cir. 1983) (EPA improperly added evidence to the record near the end of the comment period).
[226] 42 U.S.C. § 7607(d)(3)
[227] Comments submitted by National Rural Electric Cooperative Association (NRECA) and American Public Power Association (APPA). July 18, 2023. Available at: https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0072-0174.
[228] Marchetti Comments at 21.

governmental jurisdictions (collectively, small entities). If EPA determines that a proposed rule will have a "significant economic impact on a substantial number of small entities," it must convene a Small Business Advocacy Review (SBAR) panel[229] before the rule is proposed and prepare an initial regulatory flexibility analysis (IRFA).[230] If EPA determines that a proposed rule will not have a significant economic impact on a substantial number of small entities, the EPA Administrator may certify to such a conclusion and need not prepare an IRFA.[231] The certification statement must include a "factual basis for the certification."[232]

In order to determine if a rule will have a significant economic impact on a substantial number of small entities, EPA conducts "screening analysis" to determine if it can certify the rule.[233] The four steps in EPA's screening analysis, include: 1) determine which small entities are subject to the rule's requirements; 2) select appropriate measures for determining economic impacts on these small entities and estimate those impacts; 3) determine whether the rule may be certified as not having a significant economic impact on a substantial number of small entities; and 4) document the screening analysis and include the appropriate RFA statements in the preamble.[234]

While EPA held a Pre-Panel Outreach Meeting for Small Entity Representatives (SER) on December 9, 2022, which included 10 NRECA members, it subsequently decided not to proceed with the SBAR panel process. EPA accepted comments following the Pre-Panel Outreach Meeting,[235] but then came to the inaccurate conclusion that this rulemaking would *not* have a significant economic impact on a substantial number of small entities, choosing to abandon their obligation to convene a SBAR panel. EPA then improperly certified the Proposed Rules as ones that will not have a significant economic impact on a substantial number of small entities.

EPA's certification lacks a factual basis. EPA did not correctly determine which small entities would be subject to the rule's requirements and did not properly estimate costs. The supporting spreadsheet for EPA's RFA screening analysis only includes two electric cooperatives, Basin Electric Power Cooperative and Old Dominion Electric Cooperative, in the spreadsheet labeled "Small Entities." Inexplicably, EPA's sheet labeled "Final" only identifies PowerSouth Energy Cooperative, an electric cooperative that was not included in the "Small Entities" spreadsheet, as the sole affected electric cooperative.[236] These estimates are particularly surprising given that 10 electric cooperatives participated in the Pre-Panel Outreach meeting, an indication these cooperatives potentially have interest in building new natural gas units that may be covered

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[229] 5 U.S.C. § 609(b).
[230] 5 U.S.C. § 603.
[231] *Id*. at § 605(b).
[232] *Id*. The panel is comprised of a representative from the EPA, a representative of the Office of Advocacy of the U.S. Small Business Administration, and a representative from the Office of Information and Regulatory Affairs at the Office of Management and Budget. *Id*. at § 609(b). The panel provides SERs with a draft of the proposed rule as well as any analysis of small entity impacts and regulatory alternatives and collects advice and recommendations from the SERs. The panel must report on the SERs' comments and its findings. The report is made part of the rulemaking record.
[233] Environmental Protection Agency. *EPA's Action Development Process: Final Guidance for EPA Rulewriters: Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act*. November 2006. Available at https://www.epa.gov/system/files/documents/2021-07/guidance-regflexact.pdf.
[234] *Id*. at 12.
[235] NRECA also participated in the Pre-Panel meeting and submitted comments on behalf of its members. Letter from Rae E. Cronmiller, Environmental Counsel, National Rural Electric Cooperative Association to the Environmental Protection Agency (Jan. 9, 2023). In addition, Western Farmers Electric Cooperative submitted comments. Those comments are available in the docket. *See* EPA-HQ-OAR-2023-0072-0023.
[236] EPA also includes Seminole's Electric Cooperative's plant on the spreadsheet titled "Additional HW capacity" but incorrectly classifies Seminole as a large entity.

by the Proposed Rules. In addition, for several North American Industry Classification Codes, EPA applied outdated SBA size standards.[237] In February 2023, SBA issued a final rule updating these size standards.[238]

Further, EPA severely underestimates compliance costs. First, EPA hides the true economic impacts of the Proposed Rules by only estimating the economic impact of the NSPS on small EGU entities in one year – 2035.[239] Clearly, the cost impacts of the Proposed Rules will not be limited to one year. In addition, EPA neglected to develop adequate projections for key direct costs associated with the Proposed Rules, including materials, permitting, and construction of infrastructure necessary for compliance. These failures have been explained in detail in Section IV of these comments. By underestimating these direct costs, EPA erroneously determined using its screening analysis process that the cost-to-revenue or cost-to-sales test was satisfied, and that no affected small entities would experience annual compliance costs in excess of 1% of revenues.[240] These errors have resulted in the Agency incorrectly determining the Proposed Rules would not significantly affect small entities and improperly certifying.

While EPA maintains the certification decision is correct, the Agency's actions belie that claim. On July 27, 2023, EPA convened a SBAR panel with a SER meeting scheduled to take place on August 10, *after* the comment period closes. A final SBAR panel report must be completed within 60 days of the panel being convened.[241] EPA must make that report available for public comment. Furthermore, it should redo all of its economic impact analysis, including its threshold analysis and publish an IRFA for public comment by issuing a supplemental notice of proposed rulemaking (SNPRM) with an adequate comment period so that the public can weigh in on EPA's analysis and any alternatives provided and discussed by SERs. If EPA fails to issue an SNPRM with the alternatives, then under the APA those alternatives cannot be considered for inclusion in a final rule – which would violate EPA's obligations under the RFA and SBREFA to develop alternatives for proposed rules.

XII. EPA Should Not Consider Options to Make the Proposed Rules More Stringent.

Throughout the Proposed Rules, EPA asks for public comment on whether to make certain requirements more stringent. These include alternatives lowering the MW threshold for existing natural gas units and accelerating the retirement deadlines in the subcategories presented for existing coal EGUs. NRECA urges the Agency to avoid any such measures.

As discussed at length in these comments, the Proposed Rules in their entirety are unworkable as published and will jeopardize electric cooperatives' ability to provide affordable, reliable, and safe electricity. Making any aspect of the Proposed Rules more stringent would only exacerbate these challenges.

XIII. Conclusion

EPA's Proposed Rules clearly violate the CAA and Supreme Court precedent. The Agency relies on unproven technologies not yet commercially viable or available in many parts of the country. The Proposed Rules are based on inadequately demonstrated technology and unachievable emissions reductions that must occur on unworkable timelines. They are grounded in speculative assumptions that these technologies will somehow be economical and widely available at some point years in the future. EPA also fails to recognize

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[237] RIA at 5-8. The codes are: 221111, 221112, 221113, 221114, 221115, 221117, 221118, 221121, 221121, 221122, and 221210.
[238] Small Business Size Standards: Manufacturing and Industries With Employee-Based Size Standards in Other Sectors Except Wholesale Trade and Retail Trade, 88 Fed. Reg. 9,970.
[239] RIA at 5-5.
[240] RIA at 5-5-5-11.
[241] 5 U.S.C. § 609(b)(5).

the massive infrastructure development necessary to support these technologies. Accordingly, EPA should withdraw the Proposed Rules in their entirety.

NRECA appreciates the opportunity to comment on EPA's Proposed Rules. Should you have any questions, please contact Dan Bosch, regulatory affairs director, at dan.bosch@nreca.coop, or Bobby Hamill, senior director, environmental policy, at bobby.hamill@nreca.coop.

Sincerely,

Jim Matheson
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