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Your Touchstone Energy® Cooperatives

Testimony of
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Before the
U.S. House Committee on Energy and Commerce
Subcommittee on Environment, Manufacturing & Critical Materials

"Clean Power Plan 2.0: EPA's Latest Attack on America's Electric Reliability"

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Chairman Johnson, Ranking Member Tonko, and members of the Subcommittee, thank you for the opportunity to testify here today. The Environmental Protection Agency's (EPA) proposed rules to limit greenhouse gas (GHG) emissions from new and existing generating units requires stringent and likely unworkable carbon dioxide (CO2) emissions controls at coal and natural gas power plants. Like the Clean Power Plan issued by President Obama's EPA, the proposed rules – if finalized – would undermine Buckeye Power's mission of providing affordable, reliable power to the communities and consumer-members we serve.

Buckeye Power Overview

Buckeye Power, Inc. is Ohio's generation and transmission cooperative, providing power to 24 Ohio-based electric cooperatives. Formed in 1959, Buckeye Power is focused on providing reliable, affordable electricity to member co-ops, who then deliver service to nearly 400,000 homes and businesses in the state of Ohio. Owned and governed by the cooperatives it serves, Buckeye Power is dedicated to providing its member cooperatives with affordable and responsibly produced power.

Buckeye Power owns a diverse portfolio of baseload generation and peaking facilities, outfitted with best-in-class environmental controls. Included in Buckeye's power mix is coal, natural gas, solar, hydropower, biomass, and other small-scale renewable energy generation. The majority of our generating capacity comes from three coal-fired units located at the Cardinal Generating Facility located near Brilliant, Ohio, with a total capacity of 1,830 megawatts (MW). Buckeye is also committed to researching and investing in economically sustainable sources of renewable power. Buckeye operates all of its generation and serves all of its member load within the PJM Interconnection.

Background on EPA's Proposal

On May 23, EPA published its proposed rules to limit GHG emissions from new and existing fossil fuel-fired electric generating units, also known as the Clean Air Act (CAA) Section 111(b) and (d) rules.[1] The proposal is part of the regulatory strategy of President Biden's Administration to create a carbon-free power sector by 2035 and achieve net zero emissions economy-wide by no later than 2050. Buckeye staff, along with the National Rural Electric Cooperative Association, continue to review these complex and lengthy rules. While this review is far from complete, it is clear that this proposal will further strain America's electric grid and undermine our ability to keep the lights on at a cost our communities can afford. We provide this initial high-level summary of the major provisions to assist members of this Committee in understanding the scope and challenges of the proposed rules.[2]

Starting in 2030, the proposal would generally require more significant CO2 emissions controls at fossil fuel-fired power plants that plan to operate past 2031. The proposal would phase in increasingly stringent CO2 requirements over time. The proposed emissions requirements vary by:

- The type of unit (new or existing, combustion turbine or utility boiler, coal-fired or natural gas-fired);
- The capacity factor at which it operates (baseload, intermediate load, or low load (peaking)); and
- How long it will operate after certain future dates.

New natural gas combustion units: These proposed rules are issued under CAA Section 111(b) New Source Performance Standards (NSPS) and are effective once they are proposed, rather than once they are finalized. New natural gas combustion units that have commenced construction on or after May 23, 2023 would have to comply with new EPA emissions requirements for baseload, intermediate load and low load/peaking units based on capacity factor.

New *baseload* gas units must either significantly co-fire with "clean" hydrogen or implement carbon capture and storage (CCS) starting in the early to mid-2030s. If new units choose to meet these requirements by hydrogen co-firing, they would be expected to co-fire with 30% clean hydrogen by 2032 and increase to 96% clean hydrogen by 2038. If new units choose to implement CCS, they must achieve 90% CO2 capture by 2035. New *intermediate load* units would be required to co-fire with 30% clean hydrogen by 2032. New *low load/peaking* units

[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 FR 33240. 23 May 2023.
[2] United States Environmental Protection Agency. "Fact Sheet: Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants Proposed Rule." https://www.epa.gov/system/files/documents/2023-05/FS-OVERVIEW-GHG-for%20Power%20Plants%20FINAL%20CLEAN.pdf. Accessed 1 June 2023.

would be able to operate without additional emissions controls so long as they use lower emitting fuels.

Existing coal units: These proposed rules are issued under CAA Section 111(d) emission guidelines for existing sources. Existing coal units are subcategorized based on the expected retirement date. Those units planning to be operational in 2040 and beyond must meet a CCS standard of 90% CO2 capture by 2030. Units retiring before 2040, 2035 (with certain conditions), and 2032 face a gradient of less stringent, but difficult, measures that must also be met by 2030. Of note, those units retiring before 2040 face the steep hurdle of co-firing with natural gas at a 40% rate beginning in 2030, unless the conditions to retire before 2032 or 2035 are met.

Existing natural gas combustion units: These proposed rules are also issued under CAA Section 111(d) emission guidelines for existing sources. Existing gas combustion units with a nameplate capacity of 300 MW or greater and a capacity factor of more than 50% face similar requirements to new gas units, including compliance deadlines based on technology election of clean hydrogen co-firing or CCS.

Impact to Buckeye and Grid Reliability

Under the proposed rules' emissions guidelines for existing coal-fired electric generating units, plants planning to operate in 2040 and beyond must achieve 90% CCS by 2030. Those planning to operate through 2039 must achieve 40% natural gas co-firing by 2030. While the D.C. Circuit Court of Appeals has stated that the EPA may not adopt a standard which the cost of would be "exorbitant," "greater than the industry could bear and survive," "excessive," or "unreasonable," that's exactly what has been proposed. The proposed GHG rules for power plants require unproven emission control ideas on power plant operators in unrealistic timeframes.

EPA's supporting documents show a seven-year lead time for CCS and calls it an "emerging technology" with very limited full-scale installations making it impossible for plant operators to meet the Agency's timeline for this unknown technology. Of the projects EPA references to demonstrate viability of CCS, none are of the same scale of a large baseload plant like Buckeye's Cardinal Generating Facility and none have demonstrated 90% CCS reliably over an extended period of time.

If enacted, it will jeopardize nearly every coal-fired power plant by 2039 and most by 2030. In our case, Buckeye supplies more than 80% of our annual energy requirements from coal-fired power plants. Buckeye Power will be required to shut down all of our coal-fired units by 2030 with no hope of nearly replacing this energy within that timeframe. Similar unrealistic "green" hydrogen co-firing and CCS requirements for new natural gas plants preclude using natural gas as a substitute for coal plants closed by this rule.

The cost to replace this energy with renewable resources would be several billion dollars of investment. In fact, to replace the energy output of just one 600 MW Cardinal unit would require more than 1,500 MW of solar – requiring at least 6,000 acres of land and requiring an investment of at least $1.5 billion. That is to replace just the energy output, and not the other reliability services our coal units provide, and certainly won't help on the cold winter nights like we experienced this past Christmas.

It is exactly this type of forced retirement of existing generation, and insufficient replacement of readily dispatchable generation, that the North American Electric Reliability Corporation (NERC) has warned will lead to increasing risks of blackouts.[3] In fact, at a hearing last week in the Senate Energy and Natural Resources Committee, when asked whether assets forced to retire early under EPA's regulations could currently be replaced by suitable renewables and transmission, NERC CEO Jim Robb stated flatly "No. Not in the timeframe we're looking at." Similarly, PJM Interconnection CEO Manu Asthana stated "we need to hang on to resources we have today that work, until their replacement is here" and that EPA's proposed GHG power plant rules, as proposed, "will continue to push this generation off the grid."[4]

Additionally, EPA's modeling predicting continued operation of coal plants like Cardinal, either by CCS retrofit or conversion to gas, fails to take into consideration proposed modifications due to other costly EPA rules. For example, the 2023 Effluent Limitations Guidelines (ELG) proposal re-opened the window for facilities to opt-in to retirement by the end of 2028, and those have not been considered by EPA. Imminent decisions made by utilities to retire as a result of those other burdensome, overlapping regulations will be missed by those projections and undervalue this rule's impact on grid reliability.

As 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.

Concerns with EPA's Proposed "Best System of Emission Reduction"

As stipulated by Congress, CAA Section 111 standards must be based on the "best system of emission reduction" (BSER) that has been adequately demonstrated and can be used at a unit. The standards must be achievable, commercially viable, and costs justified. They should *not* be intended to be transformative tools to reshape the power sector. Despite these clear statutory limitations, EPA has proposed that CCS (for both coal and natural gas power plants) and

[3] North American Electric Reliability Corporation. *2022 Long-Term Reliability Assessment*. December 2022. https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2022.pdf
[4] United States Senate. Committee on Energy & Natural Resources. Hearing entitled "Full Committee Hearing to Examine the Reliability and Resiliency of Electric Services in the U.S. in Light of Recent Reliability Assessments and Alerts." 1 June 2023. 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

hydrogen co-firing for natural gas units are the BSER upon which it bases its 111(b) and 111(d) rules.

Carbon Capture and Hydrogen are Not Adequately Demonstrated

For existing coal unit carbon capture, EPA can only point to two "large scale" carbon capture facilities in North America, both of which have had significant technology issues that led to units having to go offline for significant periods of time and spotty operating records, treating less than 50% of flue gas from each unit. Petra Nova's project, the only coal power plant carbon capture project in the U.S. that has operated, is currently shut down. It relied on significant Department of Energy (DOE) funding and has been dependent on oil prices to sell the CO2 for enhanced oil recovery.[5] Canada's SaskPower Boundary Dam project has also had challenges and operates on a unit that is only 115 MW – much smaller than most coal units.[6] These projects used the CO2 for enhanced oil recovery (EOR), and it is unclear if the proposed rules would allow EOR or require captured CO2 to be geologically stored.

EPA attempts to bolster its determination on coal carbon capture by citing about half a dozen projects "in the early stages of assessing the merits of retrofitting" units, mostly front-end engineering and design studies. The remaining natural gas projects on which EPA bases its determination are all only proposed or planned. EPA itself recognizes CCS is not yet ready for deployment, stating in the proposed rules' preamble that staggered CCS compliance deadlines are needed to allow for deployment of CCS infrastructure and to accommodate increased demand for specialized labor to build CCS equipment.[7]

For hydrogen, the fuel has not been shown that it can be used at levels even close to what EPA has proposed to require and not at durations needed for 24/7, baseload power operations. Recent *tests* of natural gas power plant hydrogen co-firing that I am aware of have been less than 30% hydrogen blends for only a few minutes, not for months, weeks, or even days. There is not nearly enough low-carbon power to supply the amount of "clean" hydrogen required to meet EPA's hydrogen co-firing standards. Numerous other technical challenges related to energy density, storage temperature, and pressure control, and leakage throughout the supply chain, must be addressed.

Carbon capture for coal and natural gas power plants and hydrogen co-firing have not yet been proven to be achievable, commercially viable, or cost justified. Seemingly acknowledging this,

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[5] Frazin, Rachel. "Biden counting on two little-used technologies to fight climate change." *The Hill,* 13 May 2023, https://thehill.com/policy/energy-environment/4002549-biden-counting-on-two-little-used-technologies-to-fight-climate-change/. Accessed 31 May 2023.
[6] Anchondo, Carlos. "CCS 'red flag?' World's sole coal project hits snag." *E&E News,* 10 January 2022, https://www.eenews.net/articles/ccs-red-flag-worlds-sole-coal-project-hits-snag/#:~:text=Boundary%20Dam's%20CCS%20facility%20first,months%20of%20August%20and%20September. Accessed 31 May 2023.
[7] 88 FR 33240. 23 May 2023.

EPA bases its standards on the unrealistic presumption that these technologies will be ready for primetime by the dates required.

Outside-the-Fenceline Infrastructure Challenges

Much of what will be needed for power plants to comply with EPA's proposed rules depends entirely upon the infrastructure that is outside the fenceline of power plants and outside of their control. According to a Princeton study, approximately 65,000 miles of CO2 pipelines will be needed to transport captured CO2 to storage sites to achieve economy-wide net zero emissions in the United States by 2050.[8] According to the Pipeline and Hazardous Materials Safety Administration, only 5,300 miles of CO2 pipelines currently exist and those pipeline networks are concentrated in only a few states.[9,10]

There are currently only 1,600 miles of hydrogen pipelines according to DOE.[11] Existing natural gas pipelines would have to be modified to accommodate hydrogen, according to EPA.[12] Even for existing coal units that retire by 2040 and will co-fire natural gas, getting connected to a source is costly and not entirely in a power plant owner's control. EPA broadly assumes without evidence that this vast network of CO2, hydrogen, and natural gas pipeline infrastructure will be able to be planned, sited, permitted, and constructed in a timeframe to meet the requirements of these proposed rules. It similarly assumes that an already strained supply chain will be able to meet the demands for this new pipeline infrastructure and on-site equipment in a timely and cost-effective way.

Effectively Requires Fuel Switching for Certain Units

EPA's proposed standards would effectively require existing large natural gas units to switch fuels from natural gas to hydrogen in order to comply with the regulations if they cannot or decide against installing carbon capture by 2035. Under EPA's standards, by 2032, existing natural gas units would have to co-fire with 30% clean hydrogen. At some point between 2032 and 2038, the unit would need to become a hydrogen unit, co-firing with natural gas. And by

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[8] *Net-Zero America: Potential Pathways, Infrastructure, and Impacts. Final Report.* Princeton University, 23 October 2021, https://www.dropbox.com/s/ptp92f65lgds5n2/Princeton%20NZA%20FINAL%20REPORT%20%2829Oct2021%29.pdf?dl=0. Accessed 31 May 2023.

[9] United States, Department of Transportation Pipeline and Hazardous Materials Safety Administration. "Annual Report Mileage for Hazardous Liquid or Carbon Dioxide Systems." 1 May 2023, https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-hazardous-liquid-or-carbon-dioxide-systems. Accessed 31 May 2023.

[10] *Net-Zero America: Potential Pathways, Infrastructure, and Impacts. Final Report.* Princeton University.

[11] United States, Department of Energy. "Hydrogen Pipelines." https://www.energy.gov/eere/fuelcells/hydrogen-pipelines#:~:text=Approximately%201%2C600%20miles%20of%20hydrogen,operating%20in%20the%20United%20States. Accessed 31 May 2023

[12] United States, Environmental Protection Agency. "Hydrogen in Combustion Turbine Electric Generating Units: Technical Support Document". 23 May 2023. https://www.epa.gov/system/files/documents/2023-05/TSD%20-%20Hydrogen%20in%20Combustion%20Turbine%20EGUs.pdf.

2038, that hydrogen unit would need to utilize 96% clean hydrogen and could only co-fire up to 4% natural gas.

EPA's proposal for existing coal units continues a "retire or else" trend that it is has used in several other regulations it has recently proposed. As with these proposed rules, EPA imposes stringent, unworkable, and costly regulations and technologies on these units. But then offers lesser or no requirements for units that commit to retirement by a certain year. While each rule purports to have its own flexibility within the rule, EPA's new suite of regulatory actions appear to be motivated by a desire to accelerate the retirement of coal-fired power plants by the mid- to late-2030s.[13] In 2009, Ohio had 21 coal-fired power plants in operation providing much-needed baseload capacity to the grid. Today, only four such plants remain in production. A similar trend can be seen across much of the county. This EPA proposal only threatens to accelerate the premature retirement of power plants like Cardinal while offering no viable replacement to ensure grid reliability.

Inflation Reduction Act Assumptions are Too Speculative

EPA pins its hopes on CCS and hydrogen being cost effective almost entirely on funding that has been provided through the "Inflation Reduction Act" (IRA). Many IRA programs will directly benefit interested electric co-ops, such as direct access to energy tax incentives for co-ops and a new voluntary grant and loan program at the U.S. Department of Agriculture for electric co-ops to support rural energy innovation. However, due to the speculative nature of the IRA's effects and uncertainty surrounding its full implementation, EPA should not model and incorporate IRA impacts into the baseline of the final rules. Finally, while EPA uses the IRA to minimize the direct economic impact of its regulations, the agency's modeling does not adequately account for the level of infrastructure replacement this rule would require or for load growth associated with increased electrification of the economy that is a goal of the IRA and several of the Administration's efforts.

EPA Must Change Course

Extend the Comment Period for the Proposed Rules

Despite the extremely complex and transformational nature of the proposed rules, EPA has only provided a 60-day comment period, open until July 24. The proposal includes the more than 500-page proposed rules, a 359-page regulatory impact analysis, and includes several lengthy technical supporting documents. EPA has also solicited comment on more than 100 topics in the proposed rules' preamble. In addition to the proposed rules, there are or have been overlapping

[13] German, Ben. "EPA floats path on electricity CO2 emissions – with an asterisk." *AXIOS*, 11 March 2022, https://www.axios.com/2022/03/11/epa-electricity-co2-emissions. Accessed 2 June 2023. (quoting EPA Administrator Regan at the CERAWeek by S&P Global conference) ("'The industry gets a chance to look at this suite of rules all at once and say, is it worth doubling down in investments in this current facility, or operation, or should we look at that cost and say, now it's time to pivot and invest in the clean energy of the future.'")

open comment periods on other complex EPA rules directly affecting Buckeye and other electric cooperatives. These include the steam effluent limitation guidelines (ended May 30), mercury and air toxics risk and technology review (ends June 23), coal combustion residuals legacy units regulations (ends July 17), and GHG standards for heavy duty and light duty vehicles that will impact grid reliability and infrastructure (June 16 and July 5).

Given the significant economic and operational implications of these proposed power plant GHG rules, EPA should extend the current comment period by at least an additional 60 days to ensure there is adequate time to fully evaluate and comment on this proposal. When EPA first proposed NSPS for fossil fuel-fired electric generating units in 2014, it provided a 120-day comment period following a 60-day extension. And when EPA proposed emissions guidelines for existing sources later that year, the agency's initial 120-day comment period was later extended by an additional 45 days. Importantly, those comment periods were *not concurrent* – the NSPS comment period ended more than a month before the comment period for the proposed emissions guidelines opened.

EPA claims to have spent 18 months preparing this proposed rule and yet proposes to provide the effected industry only 60 days to review and respond to their proposal. Providing half of that comment period on this most recent power plant proposal as previous proposals would be woefully insufficient for the type of input EPA has requested, particularly because the package includes five actions in one.

Provide Sufficient Time for Comprehensive Reliability Assessments

DOE Secretary Granholm and EPA Administrator Regan in March of 2023 signed a Memorandum of Understanding on electric sector resource adequacy and reliability coordination, with a shared objective of supporting the continued delivery of "a high standard of reliable electric service." Achieving that objective is impossible, given the limited and impractical comment periods provided not only for these proposed rules but also the numerous other rules that will impact grid reliability through regulations on coal and natural gas power plants.

It is imperative that the North American Electric Reliability Corporation, Regional Transmission Organizations/Independent System Operators and other reliability entities, in coordination with DOE and power companies and relevant trade associations, have the opportunity to evaluate the *collective* impact on reliability of all EPA's so-called "suite of regulations" for coal and natural gas power plants.

Hold an Official Small Business Panel on the Proposed 111(b) Regulations

Under the Regulatory Flexibility Act (RFA), EPA must assess the impacts of rules on small businesses, small not-for-profit organizations, and small 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.[14]

For EPA's proposed 111(b) NSPS for new natural gas units, EPA failed to perform the SBAR panel following a Pre-Panel Outreach Meeting, in which Buckeye and several other small entity electric co-ops and municipal utilities participated. EPA accepted comments for the Pre-Panel, then came to the inaccurate conclusion and improperly certified this rulemaking by determining it would *not* have a "significant economic impact on a substantial number of small entities". While SBAR panels should occur before a rule is proposed, there is nothing that prevents EPA from conducting a panel after proposing a rule. EPA should work together with the Small Business Administration's Office of Advocacy and Office of Management and Budget's Office of Information and Regulatory Affairs to follow the requirements of the RFA and hold an official SBAR panel on its proposed NSPS rule.

Conclusion

The more than 500-page proposed rules recently issued follow three other major environmental rules either proposed or finalized by EPA aimed at fossil-fired power plants this year. All with questionable support from both an economic and technical viewpoint. Our entire office staff is about 80 people, charged with running a generation and transmission utility to meet our members' needs for reliable and affordable power. We are not a regulatory review company staffed to review a new proposal from EPA every month as we have been forced to do this year. Our company, and ultimately our members can't afford to implement full-scale science experiments at our power production facilities as EPA proposes we must or shut down by 2030.

Thank you again for this opportunity to testify. Buckeye and America's electric cooperatives look forward to working with you to ensure that actions to improve our nation's environment are pursued in a way that also advances our mission of providing affordable and reliable power to the communities we serve.

[14] 5 U.S.C. § 609(b).