UNITED STATES OF AMERICA
ENVIRONMENTAL PROTECTION AGENCY

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
(ACTION: PROPOSED RULE)

Docket EPA-HQ-OAR-2023-0072

COMMENTS OF THE ELECTRIC POWER SUPPLY ASSOCIATION

AUGUST 5, 2023

These comments are presented by the Electric Power Supply Association ("EPSA")[1] in response to the May 23, 2023 Notice of Proposed Rulemaking ("NOPR") issued by the U.S. Environmental Protection Agency ("EPA"),[2] *New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule*, (Docket EPA-HQ-OAR-2023-0072) ("proposed 111 Rules").

[1] These comments represent the position of EPSA as an organization, but not necessarily the views of any particular member with respect to any issue.
[2] 88 Fed. Reg. 33,240 (May 23, 2023), establishing 60-day public comment period initially ending July 24, 2023, and extended to August 8, 2023.

EPSA is the national trade association representing America's competitive power suppliers. EPSA advocates for well-functioning competitive wholesale electricity markets and believes that markets provide the best foundation to reliably power our nation at the lowest cost while fostering the innovation necessary to achieve critical environmental progress. EPSA members own and operate approximately 150,000 megawatts (MW) of reliable and competitively priced, environmentally responsible generation facilities using a diverse mix of fuels and technologies, including natural gas, wind, solar, hydropower, battery storage, nuclear, and coal. EPSA members' assets represent approximately 20% of the nation's installed capacity.

A proposed rule of this magnitude will attract comments from a broad set of representatives of the economy and the nation. However, we urge the EPA to recognize that at its core the weight, impact, and cost of this proposal falls squarely on power plant owners and operators. It is the generation owners, like EPSA members, that will be required to make decisions about future investments in carbon reduction technologies, reduced output, or retirement of the generating stations that power the country. There is no better source of first-hand information as to how this proposal may impact the production of electricity than generation owners, and we would look forward to further opportunities to engage with the EPA on how the proposed 111 Rules (along with various other EPA initiatives) may affect the generation fleet. EPSA members know their facilities, and they also know the economic and environmental landscape in which they operate. Generators are well-equipped to understand and explain what will be required to undertake major upgrades to their facilities while overcoming the permitting, siting, supply chain, and workforce challenges.

I. IF ENACTED, EPSA BELIEVES THAT THIS RULE WILL LEAD TO THE RETIREMENT OR REDUCED OUTPUT OF EXISTING POWER PLANTS IN A MANNER THAT MEANINGFULLY DEGRADES THE RELIABILITY OF THE ELECTRIC GRID AT A TIME OF GROWING ELECTRIC DEMAND

EPSA and its members anticipate that the proposed 111 Rules will lead to the premature retirement or reduction in output from a significant number of natural gas and coal power plants. This is based on the economics of required investments not accurately reflected in the modeling assumptions, leading to inflated estimates of available capacity.[3] At a time when our nation should be retaining needed existing resources and investing in new infrastructure in response to policy decisions which are driving an increase in electricity demand, this proposal will likely force a substantial amount of generation to either run less (to avoid meeting the threshold of applicability of emissions standards for this rulemaking) or pull the plug on their power plants entirely and shut resources down.

This proposed rule is intended to reduce emissions. However, while indirectly boosting investment in renewable energy, the proposal may negatively impact emissions reductions by rewarding less efficient existing power plants and hampering the use of existing lower emission resources. Further, retirements of existing fossil fuel resources may occur before adequate replacement resources of any/all types are constructed, raising genuine concerns about electric grid reliability in the near- and mid-term. The net result is dispatchable reliability resources will be prevented from operating

[3] EPA-HQ-OAR-2023-0072-0056, Attachment_20

while zero emission intermittent resources are simultaneously relied on to cover the shortfall.

While several EPSA members are making substantial investment in the technologies underpinning this proposal, the Best System of Emissions Reduction ("BSER") – carbon capture or hydrogen cofiring – are emerging technologies and not yet widely "available," "adequately proven," or established in any meaningful sense today. While there have been demonstration and pilot projects, the industry has not yet matured on a commercial scale to allow the upgrades envisioned by the EPA to occur in the proposed compliance timeframe. Several challenges are facing the industry, including permitting, siting, supply chain, and fundamental economics that will prevent many asset owners from committing to be "first movers" in the deployment of these technologies. Additionally, competition for new equipment combined with the lack of a trained, available workforce for emerging technologies to complete the needed retrofits for existing resources makes compliance with the proposed rule even more challenging. Instead, asset owners are likely to simply curtail or self-limit a plant's output, or even retire the asset – both of which run contrary to what is needed to support electric grid reliability.

The EPA proposes this rule as the electric grid is facing and will continue to face material reliability challenges. Although some may dismiss the concerns voiced by generators, these reliability challenges have been well documented by multiple agencies and authorities whose primary responsibility is electric system reliability: the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), and the Independent System Operators/Regional Transmission

Organizations (ISO/RTO).[4][5] These are non-profit, non- and bi-partisan, independent neutral arbiters squarely focused on ensuring electric grid reliability. Each has strongly expressed the need to recognize that grid reliability must be addressed, and although EPSA members are traditionally focused on issues affecting competitive markets, reliability concerns are being identified in non-restructured regions as well.

During recent Congressional testimony, FERC Commissioner Mark Christie noted that the U.S. is "heading for a reliability crisis. I do not use the term 'crisis' for melodrama, but because it is an accurate description of what we are facing. I think anyone would regard an increasing threat of system-wide, extensive power outages as a crisis."[6] The President & CEO of NERC echoed similar reliability concerns in front of Congress several weeks after Commissioner Christie's testimony, stating that "NERC is concerned that the pace of change is overtaking the reliability needs of the system. Unless reliability and resilience are appropriately prioritized, current trends indicate the potential for more frequent and more serious long duration reliability disruptions, including the possibility of national consequence events."[7]

We encourage the EPA to recognize the importance of listening to the reliability regulators whose own concerns reflect those of the generation community – both EPSA and our individual members – when considering how to proceed with this proposed rulemaking.

[4] https://www.nyiso.com/-/press-release-%7C-nyiso-study-finds-reliability-need-in-2025-for-new-york-city-region
[5] https://insidelines.pjm.com/pjm-details-resource-retirements-replacements-and-risks/
[6] https://www.ferc.gov/media/opening-statement-mark-c-christie-commissioner-federal-energy-regulatory-commission-ferc
[7] https://www.energy.senate.gov/services/files/D47C2B83-A0A7-4E0B-ABF2-9574D9990C11

EPSA and our member companies support efforts to address climate change through transparent, open, and nondiscriminatory competitive markets that have produced significant consumer savings and driven clean energy investment. These markets are a powerful and readily available foundation to encourage development and operation of least-cost generation, integrate new technology, and foster the innovation needed to meet future energy challenges.

EPSA firmly rejects the notion that the clean energy transition is a zero-sum game in which fossil fuel resources are replaced by renewable resources. That notion ignores the importance of flexible, dispatchable, energy-secure generation used to complement investment in resources dependent on the weather to generate electricity. Our country has lived through numerous episodes in the last few years that illustrate the essential nature of balancing resources on the system, instances that proved time and again that a diversity of generation and storage assets must be part of a reliable and clean energy future.

II. NATURAL GAS RESOURCES POSSESS COMPLEMENTARY OPERATING CHARACTERISTICS TO RENEWABLE, VARIABLE RESOURCES

In the coming years, dispatchable generation like natural gas will be even more critical to electric grid reliability in an era of evolving climate priorities and transformation of the generation resource mix. Wind and solar resources are not dispatchable without complementary technologies. Yet, they will comprise a greater percentage of our nation's generating capacity and electricity production. As the nameplate capacity of

wind and solar resources on the electric grid increases, the potential volatility of real-time renewable energy production increases as well. Put another way, as more renewable energy is added to the system, the delta between the maximum and minimum output (zero) of renewable energy will continue to rise. While renewables may grow as a share of daily, weekly, monthly, or annual production, responsible and prudent system planning dictates that dispatchable, flexible resources (*e.g.*, assets that can ramp up and down quickly) exist to smooth out increases in output volatility. To a large extent, that will continue to be primarily natural gas generation. Fast ramping natural gas plants become the best complement to the fluctuations of renewable energy output.

The U.S. Energy Information Administration's (EIA) 2023 *Annual Energy Outlook* (AEO) analysis shows that, under a variety of scenarios, the system will need additional natural gas generation. The AEO states that "we see stable growth in U.S. electric power demand through 2050 in all cases we considered because of increasing electrification and ongoing economic growth…Across the span of AEO cases, relative to 2022, natural gas generating capacity ranges from an increase of between 20% to 87% through 2050."[8] This isn't just about building a few more power plants in key locations. The future grid will require significant additions and upgrades in generation capabilities, making any regulatory action with the potential to shut down or reduce availability of existing interconnected facilities that would otherwise remain economically viable a step in the wrong direction.

[8] https://www.eia.gov/outlooks/aeo/narrative/index.php#ExecutiveSummary

Of course, electric battery storage is becoming a larger share of national and regional capacity, and electricity storage will play an increasingly important role. The AEO notes that "In the Reference case in 2050, 160 gigawatts (GW) of standalone battery storage capacity will be deployed, and deployment varies between 40 GW and 260 GW in the other cases." However, the battery storage assets that currently exist are limited to periods of multiple *hours*, typically four hours or fewer. Long duration storage solutions, both inter-day and inter-seasonal, that can augment the short-duration, intra-day battery storage assets that exist today are not yet commercially viable at scale.

III. SIGNIFICANT HURDLES REMAIN TO THE USE OF IDENTIFIED CARBON REDUCTION TECHNOLOGIES; RELIANCE ON SUBSIDIES TO FURTHER DEVELOP THIS INDUSTRY ONLY EXACERBATES EXISTING CHALLENGES

The keystone of the proposed 111 Rules is EPA's assumption of the ability of affected generation facilities to retrofit their assets with either carbon capture and sequestration (CCS) or hydrogen cofiring technologies. These technologies are the lynchpin, the entire foundation, in fact, of the expectation that power plants will and can comply with the rule and maintain the reliability of the electric grid.

Carbon capture and hydrogen cofiring are emerging technologies and have the potential to play an important role in future carbon reduction efforts. However, as noted above, as a practical matter, robust CCS/hydrogen cofiring industries will need to be built almost from scratch and the proposed rule requires those technologies be counted on in an unworkable and unrealistic timeframe.[9] They are not "adequately demonstrated" by any real-world definition, and it is critical that the fundamental impediments to the technologies given the timelines outlined in the proposal be addressed and mitigated.

The significant "flexibility" provided to states to achieve compliance cannot be used when the compliance option is investing in retrofits to avoid degraded electric reliability (*i.e.,* unit retirements or choosing to run less) – an option based on the aspirational development of an entire industry out of whole cloth, and largely outside the control of power generators. The EPA is already minimizing states' ability to make decisions on aspects of their generation mix through the Remaining Useful Life and Other Factors (RULOF) rulemaking and incorporating the RULOF effort into the proposed 111 Rules further reduces options available to states.

[9] Regarding the manner in which hydrogen is produced, is important to highlight that "green" hydrogen necessitates the use of clean energy resources, requiring either new, dedicated investment in clean resources or diverting output from existing assets to meet this demand. Further, it is expected that hydrogen producers will comingle hydrogen produced from a variety of production methods, allowing no way to determine the method of hydrogen production. Hydrogen production may be better addressed at the producer level rather than placing the onus the consumers of the fuel.

Before we discuss the importance of federal subsidies for emissions reduction technologies, assuming that the economics are viable for a generation owner to invest in either CCS or hydrogen cofiring technologies, several hurdles remain to any meaningful deployment of these investments across hundreds and hundreds of generation turbines in the United States:

A. Permitting and Siting

The permitting and siting process is difficult, time consuming, expensive, and remains one of the most daunting barriers to the nation's clean energy expansion. In the *Fiscal Responsibility Act of 2023*, Congress made meaningful improvements to the permitting process under the National Environmental Policy Act (NEPA).[10] However, permitting under NEPA is still fraught with inefficiencies, delays, and the never-ending threat of litigation furthered by those whose concerns are not focused on electric grid reliability or the effect that the rising cost of electricity has on millions of American households.

Pipelines are at (or near) the top of the list of energy infrastructure opposed by those that seek to use the NEPA process to slow or defeat investment in energy infrastructure. Yet extensive, significant new pipeline investment will be needed to transport both CO_2 and hydrogen, as well as natural gas to support additional generating units. Carbon dioxide will need to be shipped from where it is procured (or captured) to where it will be stored. And hydrogen will need to be transported to a power

[10] https://www.congress.gov/bill/118th-congress/house-bill/3746/actions?s=1&r=3&q=%7B%22search%22%3A%5B%22fiscal%22%2C%22responsibility%22%2C%22act%22%2C%22of%22%2C%222023%22%5D%7D

plant similar to how natural gas is typically transported from points of production (or import) in the United States. It is necessary to recognize that the extensive and successful barriers to natural gas pipeline development that we have seen will likely form the playbook for how opponents will seek to obstruct pipelines for carbon dioxide and hydrogen. However, without pipeline infrastructure, the EPA's assertion that electric grid reliability will be maintained collapses.

Specific to carbon capture, sequestering carbon dioxide (requiring a Class VI well permit) can only be done under specific geologic conditions. Assuming that the economics of a carbon capture project pencil out, and assuming that a pipeline can be permitted and constructed, and assuming that a suitable site for a Class VI well can be obtained, the objective cannot be achieved if the permitting process remains broken. If you can't build a well, you can't store the CO_2, and you can't build a well if you can't get a permit.

B. Concerns Over Supply Chain and Availability of Materials; Reliance on Subsidies to Develop the Industry is Risky and Subject to Political Turnover

The proposed 111 Rules rely on carbon capture and hydrogen cofiring technologies currently not used on any meaningful scale in the United States. Yet there are hundreds of electric generating units at dozens of locations across the country that will require retrofits for the EPA's proposal to be successful.

However, retrofitting turbines will require physical materials which do not exist in any meaningful quantity, and there are questions about where the materials will come from, how this supply chain will develop, and how unforeseen shortages or bottlenecks in the development process will be solved. Generation owners are up against a compressed (and poorly designed) timeframe to arrange for and incorporate these retrofits. If impediments, whether foreseen or unforeseen, hamper the acquisition of sufficient materials, there is no reliability offramp in the proposal to allow the carbon capture and hydrogen cofiring industries to catch up.

Nurturing emerging technologies is often laudable. The federal incentives included in the *Inflation Reduction Act* (among other legislation) are touted as the sparkplug to ignite the carbon capture and hydrogen cofiring industries. However, there is significant misalignment of important compliance dates in the proposed 111 Rules with key incentives in the *IRA*. If, as expected, the EPA finalizes this proposal in April 2024, states will likely be expected to submit compliance plans by 2026, leaving an illogically short window to take advantage of the incentives in the *IRA*. In a study released in April 2023, the U.S. Department of Energy (DOE) stated that the "45Q tax credit is the largest and most certain incentive for carbon management in the world."[11] However, DOE also notes that the 45Q credit requires "that qualified projects commence construction by the end of 2032." Yet, per the proposed rule, compliance timeframes for some plants to retrofit extend well through the next decade – long after the 2032 deadline of the 45Q credit to commence retrofit activities.

[11] https://liftoff.energy.gov/wp-content/uploads/2023/04/20230424-Liftoff-Carbon-Management-vPUB_update.pdf?utm_medium=email&utm_source=govdelivery

Further, despite the DOE's asserted certainty, federal incentives are subject to the decisions of policymakers. The U.S. will conduct multiple national elections during the period in which the proposed 111 Rules are finalized, state compliance plans are developed, decisions about compliance or retirement are made, and compliance deadlines are reached. Elections can result in the elevation of policymakers that oppose the federal government leaning in on favored technologies and resources, including through funding support. The removal or reduction of existing incentives for carbon capture and hydrogen technologies would further frustrate an already untenable situation. The replacement of the previously promulgated Clean Power Plan with the Affordable Clean Energy (ACE) proposal is an excellent example of elections shifting policy priorities. This proposed 111 Rule replaces the ACE proposal – leading to uncertainty in the generator community as to what policy changes may occur between now and the end of the proposed compliance period.

C. A Properly Trained Workforce Must Be Available to Install Necessary Upgrades During Certain Periods and Generation Must be Offline to Do So

Even if the economics of investing in retrofits are favorable, and even if asset owners can successfully navigate the permitting process, and even if the necessary materials are available, the industry still must find and attract trained and suitable workers to handle the physical installation of the infrastructure. As this is relatively new technology to this industry, workers will need to be trained and develop experience to appropriately work on these upgrades – for all intents and purposes, these jobs do not exist in any meaningful numbers today.

Exacerbating the already compressed timeframe to conduct these upgrades, ISOs/RTOs generally do not want power plants to come offline for maintenance during the summer and winter months when electricity demand is greatest. “Shoulder seasons” typically occur in the spring and fall when electricity demand is generally lower and are likely to be when power plant outages would be scheduled to shut down for maintenance and upgrades, creating a rush to hire skilled workers over the span of 4-6 months each year. An additional engineering workforce with the requisite knowledge and skills to properly install the equipment to reduce carbon emissions must be available or else the carbon reduction requirements will not be met.

IV. THE EPA’S PROPOSAL DOES NOT PROPERLY CONSIDER THE CHALLENGES OF THE ENERGY TRANSITION

It has become commonplace for those dismissing reliability concerns to claim that the generation community simply opposes each new proposal and is unwilling to consider ways to meaningfully achieve emissions reductions. In reality, industry has continually made the investments necessary to maintain reliability in the face of various system evolutions. However, the proposed 111 Rules present challenges unique to this rulemaking – challenges that have not been present during prior electric grid transitions.

A. *Fossil Resources Remain an Invaluable Source of Dispatchable Generation, and Resources Whose Output Relies on the Wind and the Sun Have Starkly Different Operating Characteristics*

The shale gas revolution has led to a natural evolution – and decarbonization – of the nation's power plant fleet, which has been transitioning away from coal and oil resources and toward natural gas resources. For instance, in New England, coal and oil resources combined to produce 40% of New England's in-region generation in 2000; however, in 2022, coal and oil produced less than 2.5%. During that same period, natural gas generation skyrocketed from roughly 1/6th of the region's generation to 52%.[12] New England's experience is neither unique nor isolated – similar transitions have occurred across the country.

Natural gas has become – and remains – an indispensable source of electricity generation. In its assessment of the most recent winter heating season (2022-2023), the EIA highlighted that "U.S. electricity generation from natural gas reached a record-high 619 billion kilowatthours…averaging more than 120 BkWh per month and accounting for 38% of the country's electricity generation mix."[13] EIA notes that natural gas was responsible for 35% of the nation's electricity output the prior winter (2021-2022). Nationwide, in 2022, natural gas produced approximately 2 in every 5 megawatt-hours of electricity, and combined with coal-fired generation, those two resources produced 58% of the United States' electricity last year.[14]

[12] https://www.iso-ne.com/about/key-stats/resource-mix/
[13] https://www.eia.gov/todayinenergy/detail.php?id=56740
[14] https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php#:~:text=Natural%20gas%20was%20the%20largest,in%202022%E2%80%94about%2018%25.

While economics, efficiency, and emissions profile may differ among thermal power plants, most power plants (e.g., natural gas, coal, oil, nuclear) typically work to convert a physical fuel into electricity, which is in contrast to renewable technologies which rely on favorable weather conditions to generate electricity. As mentioned above, a diverse resource mix is critical to achieving both reliability and environmental goals. However, there is a significant difference in the operating characteristics of thermal versus renewable resources – highlighted by differences in the capacity factors assumed for thermal and renewable resources by system planners and electric grid operators.[15]

Critics of reliability advocates note that transitions in energy generation have happened before without a detrimental effect on reliability. *However, prior transitions occurred among different types of fossil fuel generation – i.e., plants with roughly similar operating characteristics which are dispatchable by a grid operator.* The proposed 111 Rules represent an entirely different transition from the past. The proposal would meaningfully shift the generation mix from natural gas and coal plants – whose storable physical inventory of fuel inputs enables them to respond to timely dispatch instructions – to a system that depends on the weather being conducive to renewable power generation.

[15] In 2021, combined cycle gas turbines and coal-fired steam units had annual capacity factors of 55% and 49.1% respectively, while photovoltaic solar and wind had annual capacity factors of 24.4% and 34.4%, respectively. (https://www.eia.gov/electricity/annual/html/epa_04_08_a.html; https://www.eia.gov/electricity/annual/html/epa_04_08_b.html)

Fossil fuel generation subject to the proposed rule – like natural gas and coal – is not the same as wind and solar. They do not share operating characteristics that are needed by grid operators. And while a diverse resources mix is the goal, in the near and mid-term renewables cannot replace thermal resources in the same way that new, more efficient thermal resources have replaced older thermal resources during earlier transitions. The changes required by the proposed 111 Rules would create an entirely new operating paradigm and thus cannot be measured against prior evolutions in electricity generation.

B. Economywide Electrification Policies Will Require Dramatic Increases in Electricity Production, and it is Irresponsible to Assume a Relatively Static Level of Electricity Demand in the Coming Decades

EPSA recognizes that electrification efforts across the economy – from transportation to home and commercial heating to appliances – are crucial to meeting greenhouse gas reduction goals. However, the electric grid transition, whether accomplished by executive fiat or more efficient wholesale market signals, is not about a static level of demand being met by a dynamic and evolving generation fleet.

Electrification policies are going to continue to increase demand for electricity generation. Shifting demand from other forms of energy (*e.g.*, liquid fuels, natural gas, or home heating oil) to electricity while simultaneously regulating a reduction in electricity generating resources is not sound public policy. Any discussion of electrification must be coupled with a plan for how the electric grid will handle the

increase in electricity demand and dispelling the notion that investing in weather-dependent, non-dispatchable resources alone will be sufficient to keep the lights on.

While there are many estimates of what future demand will look like, one of the most illuminating is the National Renewable Energy Laboratory's (NREL) 2021 *Electrification Futures Study*.[16] NREL found that that various electrification efforts could increase electric demand by as much as 81% in 2050 from 2018 levels.

Electrification policies will require significantly more electricity production than is currently available, and efforts should focus on how to expand, not restrict, power generation. To their credit, many grid operators (including ISOs/RTOs) are trying to get a handle on the impact of electrification in their territories. When individual grid operator estimates are aggregated, the magnitude of electric grid investment needed nationwide to accommodate electrification policies and the magnitude of investment in the electric grid will be extraordinary.

High electrification scenarios provide important illustrations of the continuing need for traditional thermal resources. For instance, imagine millions of Americans leaving their offices at 5:30 p.m. on a cold January day. The first thing they do when they pull into their garage is plug in their car. Perhaps their smart thermostat is set to activate their electric heat pump around the same time. And the push to transition away from natural gas in kitchens is going to add a third point of demand on the grid – electric appliances. So, within a span of just a few minutes, car charging, heat pumps, and electric appliances will send demand for electricity soaring. And that January late afternoon isn't conducive to generation from solar facilities, as most of the United States

[16] https://www.nrel.gov/docs/fy21osti/79094.pdf

is covered in darkness. And if the wind isn't blowing during the dinner hour, the electric grid will be dramatically dependent on dispatchable generation.

Our nation has never experienced a transition of this scale. So, pointing to prior transitions as a harbinger of success for this transition lacks an understanding of how much additional electricity supply will be required to meet our future needs.

C. Extreme Weather is Increasing in Intensity, Frequency, and Scope, and the Electric Grid Will Need to be Designed, Planned, and Operated for a Remarkably Different Future

The EPA itself believes in climate change, and dedicates significant attention to the consequences of climate change on its website, noting that "[s]cientific studies indicate that extreme weather events such as heat waves and large storms are likely to become more frequent or more intense with human-induced climate change." [17] The EPA identifies a myriad of adverse consequences of climate change, including more extreme heat waves, heavier precipitation, and effects on both flooding and drought. The National Oceanic and Atmospheric Administration states that "[n]ationwide, the cost of weather and climate-related disasters is already rising, and the trend is likely to continue as many extreme events become more frequent and severe."[18] A recent report from ICF on future weather "projects the potential for warmer and wetter extreme weather" and finds that under certain scenarios, "Americans could experience on

[17] https://www.epa.gov/climate-indicators/weather-climate
[18] https://www.climate.gov/news-features/understanding-climate/global-warming-frequently-asked-questions#hide26

average up to 53 days with temperatures above 95° F degrees and 3.5 inches during extreme three-day precipitation events by midcentury."[19]

Given these forecasts, it is curious to overlook the need to plan the future electric grid for more extreme weather than today (and certainly weather patterns several decades ago). Looking back at prior evolutions of the electric grid and using them as a baseline for what the future holds contradicts the belief that climate change will present new and heightened dangers to the electric grid. And increases in the intensity, frequency, and scope of extreme weather events will require a greater quantity of resources than in the past to ensure a sufficient degree of redundancy – and therefore resiliency – in the electric system given that a greater proportion of resources could be affected by a single weather event across a broader footprint.

The electric grid is facing a future with more resources available on an intermittent basis, significantly increased demand due to electrification, extreme temperatures impacting equipment, and operating in a more challenging environment due to extreme weather events. To compare this dramatic evolution over the coming decades to the shift from coal to natural gas generation a few decades ago ignores the fundamental differences among these resources as well as the critical importance of growing our nation's generating capacity while also preparing for the loss of generation during extreme weather.

[19] https://www.icf.com/insights/climate/new-climate-study-reveals-warmer-wetter-future?utm_medium=email&utm_source=thirdparty&utm_campaign=3224-New-Climate-Data-Heat-UD&utm_content=image

To modify a phrase from the investing community, past performance should be fundamentally disconnected from future results. And similar to investing, a diverse and broad portfolio of assets is a responsible and prudent strategy for future success.

V. EPA's OWN ANALYSIS OF THE PROPOSED RULE FURTHERS EPSA'S CONTINUED SUPPORT FOR EMISSIONS REDUCTION EFFORTS TO BE ACHIEVED THROUGH COMPETITIVE WHOLESALE MARKETS

EPSA appreciates the importance of the nation's clean energy transition. Our members have invested billions of dollars in clean energy projects including wind, solar, and electric storage. We are mindful of the importance of this transition as we undertake investments that affect the cost and reliability of electricity.

EPSA has continuously supported policies that harness the power of competition to foster innovative and efficient emissions reductions. EPSA firmly believes that competitive wholesale markets are the most efficient and effective way for the electric grid to meet policy – and reliability – objectives. Well-designed markets can achieve goals far more efficiently than regulatory dictates with arbitrary and random mandates and deadlines that burden ratepayers with the cost of unnecessary, inefficient, or ill-considered investments. In competitive markets, EPSA members and their investors and shareholders bear the responsibility for their investments without the safety net of a guaranteed rate of return borne by electricity customers. Generation owners operating in competitive markets that are required to undertake the carbon reduction investments envisioned by the proposed 111 Rules will similarly not have the assurance of ratepayer

support, and the EPA should consider the financial effect of those investments in regions with competitive markets.

EPSA has been a strong supporter of internalizing the externalities of carbon emissions via an economy-wide, technology-neutral price on carbon.[20] When applied to wholesale electricity markets, a price on carbon should account for the characteristics or attributes needed for system reliability while also meeting stated environmental goals of policymakers and allowing competitive markets to deliver efficient and innovative outcomes. Desired resource characteristics should certainly include both reliability (particularly through dispatchable, flexible, and balancing resources) and environmental attributes.

In the last few years, carbon pricing has moved from an academic discussion to an issue receiving far greater consideration from regulators and the administrators of wholesale power markets. In 2021, FERC released a policy statement (following an earlier technical conference and proposed policy statement) noting that "it is the policy of this Commission to encourage efforts of RTOs/ISOs and their stakeholders—including states, market participants, and consumers—to explore and consider the value of incorporating state-determined carbon prices into RTO/ISO markets."[21] For years, ISO New England has advocated for carbon pricing, and last year finalized an analysis that determined the most efficient (and least cost) way to achieve a defined emission reduction goal by 2040 is through carbon pricing.[22] The State of New York is currently attempting to advance a "cap-and-invest" program through the New York ISO's

[20] https://epsa.org/wp-content/uploads/2021/03/EPSA_AD20-14-000_REPLY_12012020-1.pdf
[21] https://www.ferc.gov/media/ad20-14-000-041521
[22] https://www.iso-ne.com/static-assets/documents/2022/04/schatzki-et-al-pathways-final.pdf

wholesale markets; California has operated a carbon reduction program stemming from its AB 32 law in 2006; and for almost 15 years, the Regional Greenhouse Gas Initiative has been operating an allowance trading program among Northeast and MidAtlantic states.

Given the proposed rule's requirements, it merits mentioning that the difference in carbon emission reductions between the business-as-usual case, in which current regulations are projected to adversely impact many fossil facilities, and the proposed rule's additional carbon emissions reductions, only amounts to 617 million metric tons of CO_2e or ~6.6% of forecast emissions reductions compared to business-as-usual. This means that only 6.6% more carbon will be reduced for a large capital cost that will result in higher electricity prices for consumers.

As federal and state governments are increasingly directing tax dollars for hundreds of billions in targeted technologies and investments, the likelihood increases that inefficient or unnecessary investments will be made. A carbon price not only incentivizes the most efficient way to achieve an articulated emissions reduction but does so by shifting the burden for innovation and costs from the general public – who are taxpayers, ratepayers, and customers – to market participants.

However, if this proposal is advanced in its current form, EPSA requests that the EPA establish a platform that allows states to harness larger economies of scale to accomplish compliance across broader footprints. EPA should develop a model trading rule that would allow states to incorporate the rule into the state plan. EPA has experience developing trading rules that states do not and having a consistent approach developed by the EPA would provide certainty about the approvability of such an approach. A model rule that could be easily adopted provides for trading compliance obligations over multiple states is preferable to a narrow, siloed compliance regime that deprives states of broader options for meeting the goals of the proposed rule. This is not dissimilar to the benefits wholesale markets bring to the efficiency, reliability, and emissions reductions in restructured regions.

VI. CONCLUSION

EPSA urges the EPA to strongly consider the significant detrimental effects on electric grid reliability of the proposed 111 Rules and begin initial engagement with stakeholders on the reliability challenges facing the grid.

However, if the EPA chooses to proceed with this rulemaking, the following should be considered:

- Recognize the significant differences between dispatchable and non-dispatchable resources and their impact on electric reliability;
- Recognize the challenges to building a carbon reduction (CCS and hydrogen cofiring) industry from the ground up and provide a more realistic and expanded compliance timeframe;

- Appreciate why this proposal to reduce emissions from the generator sector is unlike past power plant rulemakings which based regulations on available technology and existing infrastructure; and
- Consider providing a model trading rule that allows markets to establish an economy-wide, technology-neutral carbon price would be a more efficient way to achieve desired emission reductions.

Respectfully Submitted,

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