

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Reliability Technical Conference)	
)	Docket No. AD23-9-000
)	

COMMENTS OF PUBLIC INTEREST ORGANIZATIONS

Earthjustice, Natural Resources Defense Council, Sustainable FERC Project, Union of Concerned Scientists, Sierra Club, and Southern Environmental Law Center (together “Public Interest Organizations” or “PIOs”) submit these comments in response to the November 14, 2023 notice inviting comments concerning the November 9, 2023 Commissioner-led Reliability Technical Conference to discuss policy issues related to the reliability of the Bulk-Power System, and the impact of the Environmental Protection Agency’s proposed rule under section 111 of the Clean Air Act on electric reliability.¹ Below, PIOs address a selection of the questions included in the Notice.²

I. Executive Summary

The nation’s electric grid faces serious challenges. Chief among them are the threats posed to system reliability from climate change and extreme weather. Additionally, there is an accelerating shift in generation resources from thermal-based power plants located proximate to load toward a diverse array of renewable resources located throughout the system—from rooftop solar panels located behind the meter to massive wind installations far offshore. Some assert that

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 (proposed May 23, 2023) (to be codified at 40 CFR pt. 60).

² Several PIOs are filing separate comments to in response to Question 3.

the pace and scale of this transition are a major threat to system-wide reliability that requires intervention to protect the existing thermal fleet. But neither the challenges faced nor the fear of reliability in the face of generator transition are new.

For example, in 2017, the Department of Energy issued a Notice of Proposed Rulemaking raising concerns regarding “a significant loss of fuel-secure generation” from the closure of 59 GW of coal generation and 4.6 GW of nuclear generation between 2002 and 2016 as well as the loss of generation caused by the 2014 Polar Vortex.³ At that time the North American Electric Reliability Corporation (NERC) made statements expressing serious concerns about the loss of coal and nuclear resources.⁴ NERC attributed the loss of these resources to the growth in “natural gas, wind, and solar resources” attributable to several drivers, including “federal, state, and provincial policies, low natural gas prices, [and] electricity market forces” that were combining to alter the operating characteristics of the bulk power system. NERC stated that reliability and resiliency would require that changing characteristics be well understood and properly managed.”⁵

As with the shift from coal to gas, the solution to maintaining reliability as the system transitions from gas to renewables over the next two decades does not require resisting the transition or interference with the market and public policy forces driving it. Rather, reliability requires understanding these new characteristics and properly managing them. FERC and the electric utilities have many tools available to them to ensure reliability as these grid changes occur. As Dr. Susan Tierney testified at the recent FERC Reliability Technical Conference, a common theme among prior EPA power plant rules is that industry stakeholders raised reliability concerns. Dr. Tierney noted that “[i]n every instance in the past dozen years, the industry predictably stepped

³ DOE, *Grid Resiliency Pricing Rule*, Notice of Proposed Rulemaking, Docket No. RM17-3-000, Sept. 28, 2017, p. 4 (hereinafter “2017 DOE NOPR”).

⁴ *Id.* at 5.

⁵ *Id.*

up to ensure that reliability was not compromised. In fact, as Dr. Tierney has shown, “the electricity reliability institutions, tools and processes in place today are as good as, if not better than, those in place a decade ago.”⁶

In order to maintain reliability, grid operators and other key stakeholders should prioritize actions to understand the characteristics of the transitioning system and ensure that market rules align with evolving system needs. For example, in 2022, FERC required each ISO and RTO to submit a report to FERC describing its current system needs given a changing resource mix and load profiles and how those needs will change over the next 5 and 10 years.⁷ FERC also asked the ISOs/RTOs about their plans to reform their markets to meet these expected system needs. Each ISO and RTO filed substantive comments indicating key changes they plan for their markets. FERC has yet to act in this proceeding.

FERC-jurisdictional markets must allow all resources that can provide a service to do so and must not create an undue barrier to participation. Grid operators need to facilitate increased participation of demand response and other demand-side resources that can quickly reduce power demand during extreme weather events, decrease dependence on vulnerable fossil fuels, and avoid or delay the need for some grid build-out. The Commission must ensure that the ISOs and RTOs robustly implement Order 2222 requiring that ISOs and RTOs allow aggregated distributed energy resources nondiscriminatory access to their markets. It must also remove an unjust and unreasonable rule that allows states to prohibit demand response from participating in wholesale markets. FERC opened a Notice of Inquiry to remove this so called “opt-out” in 2021 but has not yet acted to remove the provision.

⁶ Statement of Susan F. Tierney, PhD, Analysis Group, November 9, 2023 Commissioner-led Reliability Technical Conference, Docket No. AD 23-9-000, <https://www.ferc.gov/media/susan-tierney-statement>.

⁷ 179 FERC ¶ 61,029 (April 21, 2022).

Market rules must be updated to capture the full potential of flexible battery storage resources to support a more decarbonized grid. Inverter-based resources are capable of providing grid-stabilizing services—often more quickly and accurately than thermal generators—but ISOs/RTOs need to modernize their software and operations to integrate inverter-based resources into market operations. Finally, ISOs and RTOs must ensure their market rules accurately and consistently measure the contributions of all resource types, rather than imposing a double standard that holds inverter-based resources accountable for lack of performance at times of high system risk, but fails to do the same for fossil-fired generation.

Another key role for FERC, the ISOs/RTOs, and other utilities is to ensure that new generation can come online quickly. According to FERC, at the end of 2022, more than 2,000 gigawatts (GW) of generation and storage were waiting to be connected to the grid. That is about as much as the existing electricity generation capacity across the country now. While FERC recently issued a rule which will fix some of the most glaring inefficiencies with the interconnection process, more can and must be done. Grid operators can and should take steps to fast-track replacement generation that reuses the interconnections of retiring generation, identify locations on the existing grid where new generation can connect with minimal network upgrades, and study interconnection applications using realistic models of resource output and system conditions. Most critical, however, is that the current patchwork of siloed processes must evolve into integrated planning that considers generation retirements, new resources, and load growth and develops coherent transmission plans.

Grid operators also have tools to ensure that the existing grid is being used as efficiently as possible to provide wider access to power over longer distances. Grid operators can incorporate higher-capacity conductors, dynamic line ratings, and other advanced transmission technologies

to increase power flows over existing transmission lines, allowing existing generation to access more load and new generation to come online much more quickly. Using these technologies could double the amount of interconnection capacity in the wind-rich Great Plains alone.⁸

Finally, FERC and the grid operators also have the tools to plan for a robust transmission system that meets future energy needs. FERC must quickly finalize a strong rule that ensures that utilities undertake long term planning that considers multiple scenarios—including a business-as-usual scenario to meet the expected future resource mix. But grid operators need not wait for FERC to act. They have existing tools and well-known practices to ensure robust transmission planning, and they know what generation has requested to interconnect to the grid. While historically not all generation in the interconnection queue is built, grid operators should use probabilistic scenarios to plan for transmission to meet the needs of expected new generation. Study after study has also shown growth in electrification and other load changes, and grid operators must start incorporating these foreseeable changes into their transmission plans.

Grid operators must also start planning for transmission between regions to bolster reliability, particularly in the face of increasing climate change-induced extreme weather events. Interregional transmission enables access to a wide variety of resources to provide energy if and when the need arises, and ties together geographically diverse areas with different wind and solar generation profiles to maintain reliability all year long. While FERC has asked questions about interregional transfer in an Advance Notice of Proposed Rulemaking and at a Workshop, grid operators do not have to and should not wait for FERC or congressional action to make progress on interregional transfer standards.

⁸ T. Bruce Tsuchida, Linquan Bai, and Jadon M. Grove, *Building a Better Grid: How Grid-Enhancing Technologies Complement Transmission Buildouts*, Brattle Group, April 20, 2023, 5–6, <https://www.brattle.com/wp-content/uploads/2023/04/Building-a-Better-Grid-How-Grid-Enhancing-Technologies-ComplementTransmission-Buildouts.pdf>.

FERC, NERC, and grid operators have the tools they need to address the energy transition. As explained above, economic factors, magnified by the IRA, are already accelerating the shift to cleaner generation, and FERC and grid operators are beginning to take a hard look at the tools available to see what changes are necessary to maintain reliability. This work has been started and can address any challenges associated with the ongoing energy transition.

II. Commission Questions

1. State of Bulk Power System Reliability with a Focus on the Changing Resource Mix and Resource Adequacy

The transformation of the Bulk-Power System is resulting in significant changes to the nation's power supply portfolio. These changes include increased penetrations of inverter-based resources, the increased use and importance of natural gas generating units for system balancing, and the participation of distributed energy resources. Ensuring the adequate supply of electric energy to service loads during peak hours and during extreme weather conditions is also becoming more challenging in many regions of North America. What should the Commission's top reliability priorities be for the next one to three years? What are potential actions the Commission could take to improve reliability regarding these priorities?

- a. What trends and risks identified in NERC's 2023 State of Reliability Report and the 2023 ERO Reliability Risk Priorities Report warrant the most attention and effort?

ANSWER

There will be new but surmountable challenges for grid operators running the future grid, which will run on variable renewable energy, gas power plants will operate at lower capacity factors, and electrification will require more generation to come online. However, these challenges are more pertinent to the long-term landscape, spanning beyond the next one to three years. In the near-term, avoiding continued over-dependence on poorly performing fossil fuels and acting on the urgent need for more interregional transmission should be the top reliability priorities for the Commission.

The need to avoid over-dependence on fossil fuel is reflected in NERC's 2023 State of Reliability Report's ("NERC Report"). The NERC Report's first key finding is that conventional

fossil generation, mostly thermal power plants, is increasingly challenged by extreme weather.⁹ NERC notes that in 2022, “conventional generation experienced its highest level of unavailability (8.5%) overall since NERC began gathering GADS data in 2013.”¹⁰ Thermal plant outages are more pronounced during the winter, as evidenced in the last two winter storms—Winter Storm Elliott in 2022 and Winter Storm Uri in 2021. According to PJM’s final Winter Storm Elliott Report, the storm took out nearly a quarter of the region’s power supply, 40 gigawatts (GW) of which was coal and natural gas.¹¹ Ultimately, natural gas plants accounted for more than 70 percent of unplanned outages.¹² Some gas plants could not get fuel; other plants’ equipment froze with the sudden drop in temperatures; still others failed to start at all. Coal plants fared hardly better in the extreme conditions, with over 10 GW reporting outages during Elliott due to boiler problems, tube leaks, and other equipment issues.¹³ Coal plants are also known for their inflexibility and lengthy start up times, which limit their contribution to reliability on short notice.¹⁴

The Commission has before it several opportunities to ensure that capacity accreditation methods used by grid operators fully account for correlated outage risks presented by thermal generators—which remain the overwhelming majority of installed capacity throughout the nation. In addition to various recent and pending Section 205 proceedings, the Commission has been presented with a broadly supported request to hold a technical conference on capacity accreditation issues, which would enable the Commission, states, and regulated community to discuss how to

⁹ North American Electric Reliability Corporation, *2023 State of Reliability Overview* at 7 (June 2023), available at https://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/NERC_SOR_2023_Overview.pdf.

¹⁰ *Id.*

¹¹ PJM, *Winter Storm Elliott: Event Analysis and Recommendation Report* at 50 (July 17, 2023). This report is available at <https://pjm.com/-/media/library/reports-notice/special-reports/2023/20230717-winter-storm-elliott-event-analysis-and-recommendation-report.ashx>.

¹² *Id.* at 49.

¹³ *Id.* at 51.

¹⁴ Jason Frost et al., Synapse Energy Economics, Inc., *The Impact of Resource Inflexibility on Capacity Accreditation in New England* (Mar. 7, 2023), https://www.synapse-energy.com/sites/default/files/Capacity%20Accreditation%20for%20Inflexible%20Resources%202023_03_07.pdf.

redesign accreditation rules in a way that supports the most acute threats to reliability today, and throughout the energy transition.¹⁵

Similarly, the 2023 ERO Reliability Risk Priorities Report (“ERO Report”) includes resilience to extreme events as one of five primary risks.¹⁶ The ERO Report notes that “recent cold weather events (like in ERCOT, MISO, and SPP) as well as heat events, such as the 2020 California event, underscore that extreme events pose challenges due to their nature, breadth, duration, and frequency” and that “[i]mpacts from recent weather-related events have resulted in longer duration load loss and exacerbated consequences for customers.”¹⁷ For example, Elliott caused multiple grid operators in the Southeast to implement rolling blackouts and brought several large Regional Transmission Organizations to the brink of shedding load.¹⁸ Along with Uri,¹⁹ this marked the second significant loss of load event in less than two years, and adds to a growing tally of other rolling blackouts and near-misses due to severe weather: the 2011 cold snap that caused rolling outages in ERCOT and the Southwest, the 2014 Polar Vortex, the 2018 Bomb Cyclone, the

¹⁵ Petition of the American Clean Power Association for Technical Conference on Capacity Accreditation, Docket No. AD23-10-000 (filed Aug. 22, 2023).

¹⁶ NERC, *2023 ERO Reliability Risk Priorities Report* at 29-34 (Aug. 17, 2023), available at https://www.nerc.com/comm/RISC/Related%20Files%20DL/RISC_ERO_Priorities_Report_2023_Board_Approved_Aug_17_2023.pdf.

¹⁷ *Id.* at 29.

¹⁸ See, e.g., <https://www.pjm.com/markets-and-operations/winter-storm-elliott>. See also <https://rmi.org/wasted-wind-and-tenable-transmission-during-winter-storm-elliott/>.

¹⁹ See, e.g., Peter Aldhous et al., *The Texas Winter Storm And Power Outages Killed Hundreds More People Than The State Says*, BuzzFeed News (May 26, 2021), <https://www.buzzfeednews.com/article/peteraldhous/texas-winter-stormpower-outage-death-toll>. In addition to the lives lost in Uri, power outages due to extreme weather events also led to the deaths of over 1,000 people in Puerto Rico from Hurricane Maria. See Eliza Barclay, *1,427 deaths: Puerto Rico is coming clean about Hurricane Maria’s true toll*, Vox (Aug. 9, 2018), at <https://www.vox.com/2018/8/9/17670762/puerto-rico-hurricane-maria-death-toll-congress>.

2018 South Central cold snap event, the 2019 Polar Vortex, Hurricane Ida in 2021,²⁰ and Western heat waves in 2020 and 2022.²¹

Expanded interregional transmission could have greatly reduced if not eliminated the reliability risks during these weather events, providing a lifeline to those for whom reliable power is a matter of life and death. Winter Storm Uri showed the value of interregional transmission for electric reliability and resilience. Grid operating regions with strong interconnections to neighbors, like MISO, were able to weather the storm with minimal loss of load, while those with weak transmission ties, like ERCOT, fared far worse. During Uri, MISO was able to import 15 times as much power as ERCOT.²² Severe weather is increasingly harming electric reliability, and threats from physical and cyber-attacks and other unexpected events have also increased in recent years. Because all of these threats tend to have a limited duration and geographic scope, transmission ties that increase the ability to import power from neighboring regions are an essential part of the solution.

Transmission has several attributes that make it uniquely well-suited for addressing such risks. Transmission can deliver electricity in both directions, so both connected regions benefit. For example, transmission flows flipped from westward to eastward as Winter Storm Elliott moved

²⁰ Eleven people are estimated to have died as a result of power outages in New Orleans during Hurricane Ida linked to the failure of all 8 transmission lines serving the city as well as the natural gas plant Entergy claimed would serve as a blackstart resource. See Max Blau et al., *Entergy Resisted Upgrading New Orleans' Power Grid. Residents Paid The Price*, NPR (Sept. 22, 2021), <https://www.npr.org/2021/09/22/1039110522/entergy-resisted-upgrading-new-orleans-power-grid-residents-paid-the-price>.

²¹ See, e.g., A root cause analysis of the event determined that while there was energy availability in the north that could have alleviated the crisis, “transmission constraints ultimately limited the amount of physical transfer capability into the CAISO footprint.” See The Brattle Group and Grid Strategies, *Transmission Planning for the 21st Century: Proven Practices that Increase Value and Reduce Cost*, at 10 (Oct. 2021) (citing California Independent System Operator (CAISO), California Public Utilities Commission (CPUC), and California Energy Commission (CEC), *Root Cause Analysis: Mid-August 2020 Extreme Heat Wave*, Final, January 13, 2021, p 48, at <http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>).

²² See FERC-NERC, Presentation on February 2021 Cold Weather Grid Operations: Preliminary Findings and Recommendations, at Slide 7 (Sept. 23, 2021) (“Overall, MISO’s and SPP’s ability to transfer power through their many transmission ties with adjacent Balancing Authorities in the Eastern Interconnection helped to alleviate their generation shortfalls, preventing more severe firm load shed.”).

eastward across the country, as has happened during past severe weather events. Similarly, power flows into the Southeast during Elliott were in the opposite direction of those during Uri, when the Southeast was largely unaffected by the extreme cold and was exporting power to the west. During extreme weather events or potential infrastructure disruptions, fossil-based resources offer a reduced capacity contribution because their reliance on fuel deliveries makes them subject to the same correlated outage risk as existing fossil generators. Consequently, new or existing fossil generators offer little marginal reliability value in addressing these kinds of reliability threats because they are fueled from the same gas fields and pipelines that are subject to disruptions and capacity constraints. The capacity of transmission lines also increases during cold and windy conditions, in contrast to generators that are often derated during extreme weather.

Unfortunately, most if not all existing transmission planning processes consider only normal system conditions by assuming typical weather year conditions, and do not adequately consider infrequent, extreme events.²³ This approach misses out on cost-effective benefits of transmission, which provides half of its benefits during extreme weather events.²⁴ The failure to evaluate extreme weather-related benefits of interregional transmission compounds existing deficiencies in transmission planning processes, namely the widespread failure to conduct proactive multi-value transmission planning, and to broadly allocate the cost of regionally beneficial transmission to all beneficiaries. Interregional transmission planning processes are

²³ The Commission has taken modest steps to improve planning for extreme events by requiring one-time information reports from system operators on their practices regarding extreme weather vulnerability assessments. *One-Time Informational Reports on Extreme Weather Vulnerability Assessments*, Order No. 897, 183 FERC ¶ 61,192 (2023) (“Order No. 897”). The Commission has also required NERC to develop a new or modified reliability standard for transmission system planning for extreme weather conditions over wide geographical areas, including studying the impact of concurrent failures of generation and transmission facilities and implementing corrective actions as needed. *Transmission Sys. Planning Performance Requirements for Extreme Weather*, Order No. 896, 183 FERC ¶ 61,191 (2023) (“Order No. 896”).

²⁴ See LBNL, “The Latest Market Data Show that the Potential Savings of New Electric Transmission Was Higher Last Year than at Any Point in the Last Decade” (Feb. 7, 2023), <https://emp.lbl.gov/news/latest-market-data-show-potential-savings-new> (“LBNL 2023”).

plagued by the above problems, as well as even thornier issues due to inconsistent planning assumptions between regions and disputes over cost allocation. As one example, in March 2023 MISO and PJM decided that a “long-term Interregional Market Efficiency Project (IMEP) study will not be conducted in 2023 because no interregional constraints were identified after RTOs coordinated modeling updates,”²⁵ despite abundant real-world evidence of transmission constraints between those two RTOs.

More interregional transmission will improve reliability and resiliency in the face of increasing extreme weather events and will maximize benefits across regions.²⁶ However, existing barriers to interregional transmission planning make it virtually impossible to do so. As PIOs pointed out in our reply comments in response to initial comments to the Commission’s July 15, 2021 Advanced Notice of Proposed Rulemaking (“ANOPR Reply Comments”), this is primarily because of the current structure in most planning regions of first addressing local, then regional, then (if even considered at all) interregional needs. As a result, local and regional reliability-only needs drive more than 90% of transmission projects, which are then implemented without a comparative assessment of economic costs and benefits of larger, interregional projects.²⁷

The multistage approval process creates another barrier in implementing interregional projects that requires a proposed solution to go through a coordinated interregional process as well as two separate regional approval processes, the so-called “triple hurdle” problem.²⁸ Because potential solutions must successfully meet three separate benefit-to-cost ratios, it is almost

²⁵ March 24, 2023, email to stakeholders from MISO and PJM (available upon request).

²⁶ ANOPR Reply Comments at 21-22.

²⁷ *Id.* at 23-24, citing Brattle Roadmap Report at B9.

²⁸ PIOs ANOPR Reply Comments at 24-25 (noting that MISO and SPP have a joint planning committee responsible for carrying out a process that may arrive at identified solutions, at which point “each RTO considers the recommended inter-regional transmission solutions in its respective regional transmission planning process.” Midcontinent Independent System Operator, Inc., Southwest Power Pool, Inc., 168 FERC ¶ 61,018, ¶ 2 (July 16, 2019)).

impossible for all three processes to result in one agreed-upon solution, and thus these projects are almost never built. In addition, interregional coordination processes only allow for the evaluation of projects that address an identical need in both regions. Thus, an interregional project meeting a reliability need in one region but not a reliability need in another region cannot be considered, even if it provides some other benefit in that region.

Finally, cost allocation for interregional projects is especially challenging given that regions have different approaches to cost-allocation for projects that are within their borders, and because of the risk that one region may seek to unfairly impose costs on a neighboring region through this process.

PIOs urge the Commission to issue a rulemaking to require actual interregional planning process and improve upon the current interregional coordination process, which has essentially become a box-checking exercise that has produced no significant interregional projects since Order No. 1000 was issued. Alternatively, PIOs urge the Commission to act on establishing a minimum requirement for Interregional Transfer Capacity for public utility transmission providers in transmission planning and cost allocation processes. Since the December 2022 technical conference convened by FERC on this topic,²⁹ the need for Commission action to establish a minimum requirement has only grown more compelling.³⁰ In the NOPR preceding FERC's rule requiring the North American Electric Reliability Corporation ("NERC") to set Reliability Standards for extreme weather, FERC stated that "[i]ncreasing interregional transfer capability may be a particularly robust option for planning entities attempting to mitigate the risks associated

²⁹ Staff-Led Workshop Concerning Establishing Interregional Transfer Capability Transmission Planning and Cost Allocation Requirements, Docket No. AD23-3-000 (Dec. 5-6, 2022).

³⁰ See Comments of Nat. Res. Def. Couns. et al., Docket No. AD23-3-000, May 15, 2023, Accession No. 20230515-5136 ("PIOs' ITC Comments") at 1-2.

with concurrent generator outages over a wide area”³¹ and explicitly said that transmission can mitigate reliability concerns caused by extreme weather in the final rule.³²

The requirement in the debt ceiling legislation that NERC prepare an interregional transfer capacity study should not be the basis for Commission inaction or delay. According to the timeline set forth in the legislation, NERC is required to prepare a report within eighteen months examining whether more transmission capacity is needed between regions. The Commission must then seek comment and provide Congress a report on its conclusions and include recommendations, if any, for statutory changes.³³ Although this report is largely unnecessary given numerous previous studies documenting the lack of interregional connections between Order No. 1000 planning regions, including the Department of Energy Transmission Needs Study,³⁴ the NERC study could be used by some to ask FERC to delay any action on this issue until FERC issues its report, effectively delaying any action on this issue for several years.

PIOs are encouraged by Chairman Phillips’ testimony before the House Energy, Climate, and Grid Security Subcommittee Hearing that he is “not aware of any requirement that [FERC] wait” for completion of the NERC study and that it is “not [his] intention to wait.”³⁵ While PIOs strongly encourage the Commission to work in tandem with NERC to ensure that the study process moves quickly, FERC need not wait for this process to play out. It can and should move forward with a rule establishing a minimum Interregional Transfer Capability requirement now.

³¹ *Transmission System Planning Performance Requirements for Extreme Weather*, Notice of Proposed Rulemaking, 87 FR 38,020 (June 27, 2023), 179 FERC ¶ 61,195 at P 85 (2022).

³² *Transmission System Planning Performance Requirements for Extreme Weather*, 183 FERC ¶ 61,191 at P 162 (2023).

³³ Fiscal Responsibility Act of 2023, Pub. L. No. 118-5, § 322, Stat. 46, 137 (2023).

³⁴ See Department of Energy, *Transmission Needs Study*, 88 Fed. Reg. 13811 (Oct. 30, 2023).

³⁵ *Oversight of FERC: Adhering to a Mission of Affordable and Reliable Energy for America: Hearing Before Energy, Climate, and Grid Sec. Subcomm.*, 118TH CONG. (2023) (statement of Willie Phillips, Chairman, Federal Energy Regulatory Committee) available at <https://www.youtube.com/watch?v=BZu41UWWwI&t=3199s> beginning at 52:15.

- c. NERC has highlighted essential reliability services (e.g., frequency response, voltage control, and ramping capability) as core to maintaining reliable operation of the grid. How does the changing resource mix and characteristics of load affect the needed amount and provision of these essential reliability services? What actions, and by whom, are necessary to ensure adequate levels of these services?

ANSWER

Essential reliability services like frequency response, voltage control, and ramping capability are critical for efficient and reliable electric service. The Commission must be vigilant to ensure that energy and ancillary services (E&AS) markets, which provide these services, are procuring what is needed for a reliable grid, allow all resources that are capable to provide the services to do so, and fairly and efficiently compensate all resources providing these needed services. Thus, E&AS markets must allow participation by all resources that are technically capable of providing these services and send price signals that compensate resources for the full cost of producing and generating electricity and for being available as operating reserves at the right time and place.

Numerous studies have shown that intermittent resources, such as wind and solar, are fully capable of providing numerous ancillary services, including but not limited to: reactive and voltage support, frequency stabilization, frequency restoration, frequency regulation, disturbance ride-through, and slowing and arresting frequency declines.³⁶ Not only can renewables provide these services, many are able to provide these services more accurately and quickly than fuel burning resources.³⁷

³⁶ See Milligan, Michael. 2018. "Sources of Grid Reliability Services." *The Electricity Journal* 31 (9): Table 1; see also California ISO, National Renewable Energy Laboratory, and Avangrid Renewables, "Demonstration of Capability to Provide Essential Grid Services," (March 2020); California ISO, National Renewable Energy Laboratory, and First Solar, "Using Renewables to Operate a Low-Carbon Grid: Demonstration of Advanced Reliability Services from a Utilityscale Solar PV Plant," (November 2017).

³⁷ *Id.*

In addition, the Commission should focus on ensuring that market rules enable demand response to fully participate in providing reliable system flexibility. This means that RTOs/ISOs must enable the use and eligibility of demand response beyond just as a capacity market product for emergencies. Placing demand response in the narrow box of an emergency-only resource, rather than encouraging it to offer its full flexibility, hinders competition and leaves consumer savings on the table. Lastly, the growth in hybrid resources, much of which is solar plus energy storage,³⁸ will itself provide some of the needed flexibility. The Commission should require RTO/ISOs to develop hybrid resource market participation models, as they will be essential to adding system flexibility.

As PIOs explained in our comments in the Commission's docket on Modernizing Wholesale Electricity Market Design, the following recommendations should be implemented with respect to these essential reliability services.³⁹ First, all resources that are technically capable of providing ancillary services must be allowed to compete to provide those services. This is currently not the case in all RTOs/ISOs. For example, in the Midcontinent Independent System Operator (MISO), wind and solar resources are categorically excluded from providing ancillary services, which reduces competition and thereby harms consumers. This exclusion also provides a distorted picture of how these resources can contribute to the reliability of the system. This must change.

Second, FERC and the RTOs/ISOs should focus on improving the design of existing ancillary services before considering whether new products are needed. This should include

³⁸ Approximately half of the capacity entering the queue (369,439 MW) as well as close to half already in the queue (851,127 MW) across all regions in 2022 came from hybrid resources. *See, e.g.,* Lawrence Berkley National Lab, *Generation, Storage, and Hybrid Capacity in Interconnection Queues*, available at: <https://emp.lbl.gov/generation-storage-and-hybrid-capacity>.

³⁹ Comments of Clean Energy Organizations, Technical Conference on Modernizing Electricity Market Design: Resource Adequacy in the Evolving Electricity Sector, Docket No. AD21-10-000.

modifying ancillary services so that reserves are dynamically determined over time and sized based on current forecasted conditions. To minimize costs to consumers, it is important to improve forecasting of weather and load, modeling of resources, and visibility of distributed energy resources (“DERs”) so that only the amount needed at the time is procured rather than charging consumers day-in and day-out for the maximum amount of reserves that are ever needed. This should also include splitting bidirectional ancillary services into “up” and “down” products to enable greater competition and more accurate pricing with respect to what are distinct services. Improving the design of existing products and then evaluating the remaining, un-procured needs will help to avoid redundancy across ancillary service products and capacity procurement that would impose excessive rates on consumers.

Third, the full value of needed services should be reflected in the price, in order to signal appropriate operations in the near term and investment in the long term. While long-term contracting is usually the main driver of investment rather than spot markets, RTOs cannot depend on load-serving entities to always have contracted for their full needs, so appropriate value-based prices in energy and ancillary services markets need to reflect the short- and long-term value of flexible resources. Scarcity pricing based on concepts of value of lost load and loss of load probability provide these signals.

FERC should take the following actions based on these recommendations:

1. To more fully explore the issues raised in these comments, the Commission should require each RTO/ISO to submit information related to the ability for all resources to participate in energy and ancillary services in their markets that includes an explanation of any existing resource restrictions as well as steps required to lift them.

2. Based upon these responses, FERC should initiate targeted Federal Power Act (FPA) section 206 proceedings to remedy undue discrimination in some markets, like MISO, where participation rules arbitrarily exclude certain resources from providing ancillary services.

3. FERC should require RTO/ISOs to develop energy and ancillary service market participation models for hybrid resources.

4. FERC should also require, potentially through a Policy Statement, that when RTOs/ISOs file modifications to their energy and ancillary services rules, they demonstrate that there are no barriers to any resource providing these services if technically capable of doing so.

5. FERC should encourage, through a rulemaking or Policy Statement, certain policy principles that apply to energy and ancillary service market design across RTO/ISOs, such as those discussed above.

- e. In recent years, reliance on natural gas as a fuel for electric generation has steadily increased. At the Commission's recommendation, the North American Energy Standards Board (NAESB) held forums between August 2022 and July 2023 to discuss the growing interdependence between the natural gas and electric sectors. NAESB issued recommendations to enhance market coordination to address challenges posed by this growing interdependence. Should the Commission prioritize pursuing any specific NAESB recommendation?

ANSWER

The increasing vulnerability of the nation's gas-based energy system to catastrophic outages during extreme weather events has been demonstrated repeatedly and with deadly consequences. The primary causes behind and logical solutions to these system vulnerabilities are well known. Despite FERC reports in 2011, 2014, 2018, and 2021 laying out specific patterns of failure causing system outages and repeated calls on the industry to take specific steps to address critical areas of coordination and necessary weatherization, there has been no progress on voluntary standardization by the gas and electric industries to address known vulnerabilities. Most recently, the chairs of the North American Energy Standards Board (NAESB) Gas Electric

Harmonization Forum concluded that reliance on consensual solutions for key problems such as weatherization standards has been in vain and has called for “more significant, structural solutions... [to] accelerate the harmonization of the natural gas and electric power industries.”⁴⁰ The chairs of the NAESB-sponsored Gas Electric Harmonization Forum set forth a number of recommendations in a July 28, 2023 report that call upon FERC to enact a number of requirements to address systemic disconnects between the natural gas and electric industries. PIOs support many of NAESB’s recommendations, which generally involve taking steps to increase necessary transparency between the industries and improve planning and contracting requirements, as well as make necessary improvements in weatherization.

In particular, PIOs agree that FERC should require the gas industry to take concrete steps that will increase information accessibility as set forth in Recommendations 1-3, 5, and 15. PIOs also support improvements to contracting terms to encourage weatherization and better facilitation of gas capacity release during periods of system stress as set forth in Recommendations 4, 6, and 14. It is also essential that gas production and transportation facilities must be required to operate on a 24/7 basis in preparation for an during extreme weather events as set forth in Recommendation 7. And the system is in need of long-term planning requirements as set forth in Recommendation 12.

While the Gas Electric Harmonization report also made a number of recommendations for the study of whether there are sufficient financial incentives and infrastructure for increasing capacity and storage of the natural gas system, these recommendations must be considered in light of market realities. The nation’s bulk electric system is in the midst of a generational transition

⁴⁰ NAESB Report at 2-3. This is despite the November 2021 report by FERC, NERC, and Regional Entity Staff addressing the causes of Winter Storm Uri and the letter from Chairman Glick and NERC President Jim Robb to NAESB requesting that it establish a forum to address the activities set forth in Recommendation 7 of that report.

from fossil fuel-based power to one that will be powered primarily by renewable energy resources such as wind, solar, and storage. This transition is being fueled both from state and federal policies targeted at reducing the sources of climate change-causing emissions but has sped up tremendously even in states without such policies because the levelized cost of such resources is now lower than their fossil fuel counterparts. Just as cheap shale gas did more to render coal plants uneconomic than did federal policies, so too market forces are now the primary driver of change that will lead to decreased utilization of gas plants and infrastructure. Consequently, while study of the system is valuable for understanding where natural gas storage and hardened infrastructure may be necessary as a bridge to a renewable energy future, ultimately these sorts of investments must be narrowly tailored to address needs only where other cheaper alternatives, such as speeding up an already-planned for expansion of renewable storage or generating resources, are unavailable.

III. Conclusion

PIOs appreciate the opportunity to provide these comments in response to the November 9, 2023 Commissioner-led Reliability Technical Conference to discuss policy issues related to the reliability of the Bulk-Power System and ask that the Commission consider the recommendations made herein in any future rulemaking.

Respectfully submitted,

/s/ Cullen Howe

Cullen Howe
Senior Attorney
Natural Resources Defense Council
40 West 20th Street
New York, NY 10011
chowe@nrdc.org

/s/ John Moore

John Moore
Director
Sustainable FERC Project
1125 15th Street NW
Washington DC 20005
Moore.fercproject@gmail.com

/s/ Danielle Fidler

Danielle Fidler
Senior Attorney
Earthjustice
48 Wall Street, 15th Floor
New York, NY 10005
dfidler@earthjustice.org

/s/ Sam Gomberg

Sam Gomberg
Manager of Transmission Policy
Union of Concerned Scientists
1825 K Street NW, Suite 800
Washington, D.C. 20006
sgomberg@ucsusa.org

/s/ Nicholas J. Guidi

Nicholas J. Guidi
Federal Energy Regulatory Attorney
Southern Environmental Law Center
122 C St. NW, Suite 325
Washington, DC 20001
nguidi@seclcdc.org

/s/ Casey Roberts

Casey Roberts
Senior Attorney
Sierra Club
1536 Wynkoop Street, Ste. 200
Denver, CO 80202
Casey.roberts@sierraclub.org