

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

**Modernizing Electricity
Market Design**

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Docket No. AD21-10-000

COMMENTS OF THE ELECTRIC POWER SUPPLY ASSOCIATION

The Electric Power Supply Association (“EPSA”)¹ respectfully submits these comments in response to the six individual reports² submitted to the Commission on October 18, 2022, pursuant to the Order Directing Reports³ issued on April 21, 2022, by the Federal Energy Regulatory Commission (“FERC” or “Commission”) in the above-referenced docket. The Order Directing Reports set out the context for twelve multi-part questions posed to each of the six FERC-jurisdictional regional organized electric power markets seeking information on their current system needs, assumptions regarding changes to those needs, and all market reforms underway or under consideration over multiple forward-looking time horizons to address changes to the system.

¹ EPSA is the national trade association representing competitive power suppliers in the U.S. EPSA members provide reliable and competitively priced electricity from environmentally responsible facilities using a diverse mix of fuels and technologies. EPSA seeks to bring the benefits of competition to all power customers. This pleading represents the position of EPSA as an organization, but not necessarily the views of any particular member with respect to any issue.

² Report of the California Independent System Operator Corporation, (October 18, 2022) (“CAISO Report”).

Report of ISO New England Inc., (October 18, 2022) (“ISO-NE Report”).

Report on Modernizing Electricity Market Design of the Midcontinent Independent System Operator, Inc., (October 18, 2022), (“MISO Report”).

Response of the New York Independent System Operator, Inc. to Order Directing Reports, (October 18, 2022) (“NYISO Report”).

Report of PJM Interconnect, L.L.C., (October 18, 2022) (“PJM Report”).

Report of Southwest Power Pool, Inc., (October 18, 2022) (“SPP Report”).

Collectively referred to as “ISO/RTO Reports.”

³ Order Directing Reports, 179 FERC ¶ 61,029, (April 21, 2022) (“Order Directing Reports”).

As the Order Directing Reports reflects, the questions posed by the Commission to its jurisdictional regional system operators are based on an existing extensive record of comments in this proceeding which includes three sets of comments from EPSA. Herein EPSA addresses the issues raised by the reports as a whole, focused on the factors driving changes to the existing electricity system, and highlighting the urgency to address market enhancements which maintain the competitive wholesale market structure while improving the market's ability to signal investment in the resources needed to support a more dynamic grid in order to maintain reliability into the future.

EPSA has submitted extensive comments on capacity market design issues, resource adequacy constructs, and improvements to Energy & Ancillary Services markets ("E&AS") in its submissions to the record in this docket.⁴ In these comments, we will focus on the ISO/RTO responses submitted in their reports as directed by the Commission, as well as highlighting issues that have changed expected or foreseeable impacts to system reliability.

I. INTRODUCTION

EPSA appreciates the Commission's efforts in this broad proceeding, opened nearly two years ago,⁵ to initiate a comprehensive discussion about how competitive electricity markets can meet changing system needs reliably and cost effectively, and

⁴ Post-Technical Conference Comments of the Electric Power Supply Association, Docket AD21-10-000, (April 26, 2021), responding to March 23, 2021 technical conference on *Resource Adequacy in the Evolving Electricity Sector*;

Post-Conference Comments of the Electric Power Supply Association, Docket AD21-10-000, (July 19, 2021), responding to the May 25, 2021 technical conference on *Resource Adequacy in the Evolving Electricity Sector: ISO New England*;

Post-Technical Conference Comments of the Electric Power Supply Association, Docket AD21-10-000, (February 4, 2022), responding to September 14, 2021, and October 12, 2021 technical conferences on *Energy and Ancillary Services in the Evolving Electricity Sector*.

⁵ Notice of Technical Conference on Resource Adequacy in the Evolving Electricity Sector, *Modernizing Electricity Market Design*, Docket AD21-20-000, (February 18, 2021).

whether and what reforms may be needed or are underway to address these changing circumstances. As the reports from the Independent System Operators (“ISOs”) and Regional Transmission Organizations (“RTOs”) (“ISO/RTO Reports”) indicate, each system operator is considering and undertaking market reforms to address the system changes as experienced in its region. Importantly, all of the ISOs/RTOs are doing so within the context of and in a manner that maintains the structure of their competitive wholesale organized market. As NYISO explains, “Going forward, the competitive market framework will continue to serve as an efficient and effective platform to facilitate expanded policy goals and integrate advanced clean energy resources.”⁶

Aside from comments and submissions this proceeding, it has been well established over the past few years that there are several forces particularly impacting the reliability of the Bulk Power System (“BPS”) – extreme weather events that are forecast to occur more often and persist for longer durations, changes to demand which may increase due to the electrification of the economy, and the increasingly rapid changeover of the resource mix providing power to the system. Notably, the resource mix transition garners the bulk of attention in the ISO/RTO reports as the system transformation is in large part motivated by environmental concerns seeking to lower emissions in the electric sector. This objective thus reflects state policies and zero emission targets which greatly impact the resource mix but take place outside of the system.⁷

⁶ NYISO Report, p. 20.

⁷ See e.g., CAISO Report references to Senate Bill 100 which requires zero-carbon resources to supply 100 percent of electric retail sales to end-use customers by 2045 (p. 12, fn 14 re Senate Bill 100, “The 100 Percent Clean Energy Act of 2018,”);

State policymakers and utility commissioners, alongside their federal counterparts at the Commission, have saturated power markets with new policies that are no longer consistent with the goals and objectives of the markets when they were initiated. Some policymakers go so far as to say that ISOs/RTOs are failing to ensure reliability, fail to deliver cost-effective electricity, and are therefore no longer appropriate market structures. In other parts of the country, such as California and New England, policies have passed that directly impact the power system and the organizations charged with ensuring its reliable operation. These policies have included subsidies to specific resources, requirements for certain generation resources to be deployed while driving the retirement of dispatchable power, and emission reduction targets that disproportionately impact dispatchable resources. Those states have threatened to take action unless the ISOs/RTOs accommodate preferred resources and policies.

The problematic result is that a system designed to deliver economic benefits to customers is now being undermined by a patchwork of policies intended to meet climate targets without adequate attention paid to reliability. In short, the market is not broken – it was never designed to operate in this manner or accommodate these external

ISO-NE Report chart summarizing legislatively-mandated emission reduction goals of five of the six New England States, p. 2; “Five of the six New England States have enacted legislation setting carbon dioxide emission reduction targets at levels of at least 80% below 1990 levels by 2050,” p. 2, fn 2.;

NYISO Report, “New York State public policy requires an economy-wide approach to addressing climate change and decarbonization, mandating that 70% of New York electricity consumed be produced from renewable resources by 2030 (“70x30”) and 100% emissions-free electricity supply by 2040 (“100x40”) while promoting electrification in other sectors of the economy. The New York grid will require unprecedented levels of investment in both new supply and transmission resources to achieve these policy objectives,” p. 1.

MISO Report, “Policy goals will also drive changes in the grid. At the moment, 17 utilities within the MISO footprint have clean energy goals at 90% or higher, four states have 100% clean energy goals, and one (1) state has a 100% clean energy law,” pp. 7-8.

objectives which market detractors and those who implement the distortive policies fail to acknowledge.

The grid operators are placed between Scylla and Charybdis, alternately squeezed or demonized for failing to do the impossible. While the ISOs/RTOs are not without some culpability for failing to defend the market, their capitulation to the pressure from states and federal regulators has been an attempt to limit greater intervention and damage to market operations and reliability. Policymakers and regulators trying to force aspirational policies on a reality-based, physically constrained system must be honest with their constituents about the limits of their ambitions, the timeline to achieve the policy goals, and the likely cost to consumers to achieve these policy ambitions.

Irrespective of the purpose or value of these policies, the impacts of these actions on regional electricity systems, the penetration of non-dispatchable resources, and disincentives for new and existing dispatchable resources, must be addressed.

II. COMMENTS

As recent events have demonstrated, the grid must adapt to increasingly extreme weather events and climate impacts,⁸ demand increases due to electrification,⁹ and changes to the makeup of generating resources on the system as increasing amounts

⁸ Electric Power Research Institute (“EPRI”), *Exploring the Impacts of Extreme Events, Natural Gas Fuel and Other Contingencies on Resource Adequacy*, Technical Update January 2021, Paper 3002019300;

EPRI Journal, *Preparing the Power System for a Changing Climate: EPRI Launches the Climate READI Initiative*, by Chris Warren, (Posted June 13, 2022).

⁹ California Energy Commission, *2021 Integrated Energy Policy Report*. For State Mid-Demand Case, see Form 1.2 at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=241215>. For State High Demand Case, see Form 1.2 at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=241206>;

PJM Interconnection L.L.C., *Energy Transition in PJM: Emerging Characteristics of a Decarbonizing Grid*, (May 17, 2022), pp. 14-15 regarding electrification impacts on peak day load.

of variable resources supported by out-of-market subsidies and legislated funding mechanisms are added to the grid. This pace of change has been well documented over the past several years and is only increasing as we look ahead.¹⁰ In fact, we are approaching a precipice in terms of system reliability which must be acknowledged. The need to reform power markets to address planning parameters, operational issues, and flexibility needs is no longer a theoretical exercise but an imminent concern that must be addressed. Additionally, the lessons of Winter Storms Uri in 2021 and Elliott just a few weeks ago shine a bright and unavoidable light on ongoing coordination problems between the electricity and natural gas systems, which are likely to intensify as the system becomes increasingly dependent on dispatchable resources including natural gas-fired generation.

A. Competitive Wholesale Markets Can Address Changing Factors

As succinctly explained by the New York ISO, its centralized organized markets “harness competitive forces to improve the economic efficiency of operations and investment and encourage innovation.”¹¹ These benefits are not unique to New York and have long been extolled by EPSA and delivered by the nation’s centrally organized ISOs and RTOs. Competitive wholesale market structures continue to be the most effective and efficient model to attract the necessary investment for new resources and for the operation of existing resources to deliver power to all consumers reliably and as affordably as possible. While these market designs may require enhancements,

¹⁰ “And I want to be clear, this is not a call against the transition, but rather, a plea for attention to the pace of change in the challenges created for system operators...I know that operators and planners are working very, very hard to preserve reliability, but they’re continually asked to do so and manage your grid under more and more challenging conditions,” NERC CEO and President Jim Robb, *NERC Warns Energy Shortfalls Almost Inevitable This Summer*, Power Mag, May 31, 2021.

¹¹ NYISO Report, p. 15.

including those enumerated in the ISO/RTO Reports, the competitive market model remains the foundation for meeting the challenges we face and the policies we aim to achieve. NYISO summarizes,

While the capacity market is designed to meet resource adequacy, the energy and ancillary services markets provide the primary incentive for units to perform in real time and to respond to rapidly changing system conditions. Coordinated, well-functioning markets create opportunities for new and existing resources to compete to meet reliability needs.¹²

ISO New England highlights the importance of the signals provided by the competitive market to indicate the investment needed over the long-term as well as the operational responses needed in the short term:

The third category of current and future system needs is the markets' capabilities to signal, incent, and coordinate investment by private investors in resources' capabilities (over the long-term), and to ensure resources' performance is appropriately compensated and therefore adequately provided (over the short-term)...Thus, the capability of the ISO-administered wholesale markets to pro-actively identify, price, and compensate for evolving system needs is essential to both the efficiency and reliability of the power system.¹³

Notably, a core principle of the organized markets is use of Locational Market Pricing ("LMP"). Any market reforms under consideration, including price formation improvements, will rest upon that successful pricing approach. To support this fundamental principle in light of recent queries and skepticism, the NYISO has engaged Dr. Bill Hogan and Dr. Scott Harvey¹⁴ – among the eminent forebearers of electricity competition – to explain how and why the organized markets' reliance on LMP will

¹² NYISO Report, p. 17.

¹³ ISO New England Report, pp 36-37.

¹⁴ *Locational Marginal Prices and Electricity Markets*, Drs. Scott Harvey and William Hogan, (October 17, 2022), see NYISO Report, Attachment A, ("Harvey and Hogan Paper").

continue to lead to reliable market outcomes as the system changes due to the increasing penetration of low marginal cost variable resources. NYISO summarizes,

[T]he locational marginal pricing model, as the NYISO has demonstrated over the last 22 years, is the only model that can adequately support the physical operation of the grid, support many different regulatory and policy objectives including well-structured subsidies, and provide efficient ways to identify and mitigate attempts to exercise market power.¹⁵

Drs. Hogan and Harvey explain that recent concerns expressed over LMP pricing are complicated by, if not confused for, subsidy contracts supporting renewable resources.¹⁶ Rather, the core benefits of a single LMP price for all resources allow the markets to yield efficient prices, enable operational feasibility, provide transparent price signals for new technologies, support competitive entry, accommodate innovative dispatch designs which can address environmental drivers, and applies market power mitigation without artificially suppressing energy prices.¹⁷

But more important for this proceeding, Drs. Hogan and Harvey explain why LMP is a better pricing model to accommodate rising levels of intermittent output than other approaches. Regarding the challenges that the evolving resource mix poses to the system, the economists explain,

There are still huge operational and market challenges in accommodating higher levels of intermittent output while maintaining historical levels of reliability, but LMP pricing contributes to achieving this goal. Market designs based on command and control, constrained-on and-off payments and pay-as-bid balancing mechanisms will at best hinder achieving these goals, if not make it impossible without adverse impacts on reliability.¹⁸

¹⁵ NYISO Report, p. 16.

¹⁶ Harvey and Hogan Paper, p. 3

¹⁷ *Id.*, p. 5, pp. 7-17.

¹⁸ *Id.*, See list of seven critical operational benefits of LMP market designs in maintaining reliability with the evolving resource mix, p. 26.

Thus, as the ISOs and RTOs report to the Commission in this proceeding, the competitive market design must remain the foundation for any reforms or revisions to address evolving circumstances. From this starting point, EPSA offers the NYISO's guiding principles for assessing potential market reforms to underpin the reform efforts of all six jurisdictional ISOs/RTOs: "(1) all aspects of grid reliability must be maintained, and (2) competitive markets should continue to maximize economic efficiency and minimize the cost of maintaining reliability while supporting the achievement of [climate policies]." ¹⁹

As each ISO/RTO has explained, current and planned efforts to enhance their markets utilize the forces of competition to meet changing reliability demands posed by more extreme weather events, climate impacts, and the resource mix transition. EPSA supports the work of the regional markets regarding market design and rule reforms to address the challenges each faces to varying degrees. The Commission's obligation is to ensure that any reforms or enhancements to wholesale energy market designs continue to align incentives that achieve the optimal and lowest cost reliability outcomes. EPSA and each ISO and RTO believe this is best done through competition and accurate price signals – which are not distorted or increased by policies intended to achieve certain objectives without consideration or acknowledgement of the costs to do so.

B. Resources Which Support Reliability Will Remain Critical to Address Changing System Impacts

An array of current data – echoed by the ISOs/RTOs in their reports – indicates that resource needs will soon outpace resource availability as conventional generation

¹⁹ NYISO Report, p. 20.

retires but is not replaced by new resources in equal measure,²⁰ thus creating an energy adequacy gap.²¹ Additionally, these new resources have different characteristics and performance capabilities, thus creating an operational gap.²² Specifically, replacement of dispatchable resources with non-dispatchable resources is not a one-for-one transaction; in fact, it requires a multiple of each retiring MW thereby increasing the total nameplate capacity required.²³ This phenomenon is documented throughout

²⁰ See e.g., MISO Report, “Such gaps between forecasted capacity additions and actual capacity additions (a 14.3 GW shortfall over the three-year projection) at a time of significant fleet transition make planning difficult, and underscore the asymmetry between retiring facilities that are currently running and generally meet their retirement date with the perhaps overly optimistic expectations that an anticipated facility will come online as scheduled,” pp. 32-33.

Comments of the New York Independent System Operator, Inc., on New York State Climate Action Council Draft Scoping Plan, (Submitted to Climate Action Council July 1, 2022), “While the state’s bulk electric system meets current reliability requirements, risks to reliability and system resilience remain. One key factor driving this risk continues to be resource retirements outpacing additions....A sufficient fleet of new generation resources that satisfy the [], with the appropriate reliability attributes, must be available before the existing, traditional generators retire voluntarily or are forced out of service,” pp. 7-8.

²¹ *Statement of the North American Electric Reliability Corporation (“NERC”), 2022 Annual FERC Reliability Technical Conference, Docket AD22-10-000, (November 10, 2022), “The rapidly transforming generation resource mix elevates energy availability as a growing concern for BPS reliability. In the upcoming 2022 Long-Term Reliability Assessment, numerous regions in the United States are found to be at risk of energy shortfalls during normal peak conditions and during extreme conditions,” p. 3.*

“Hearing with NERC and ReliabilityFirst Corp.,” Transcript of Indiana State Hearing, *Fortnightly Magazine*, (March 2022), Remarks from Jim Robb: “This is a quick summary of what we see from what we call the LTRA or the Long-Term Reliability Assessment. We see two kinds of risks evolving as the system evolves. The first are concerns around resource adequacy and importantly, energy sufficiency. One of the important concepts is the electric industry has always focused on capacity and ability to serve peak load, the highest load day of the year. We always felt if we could serve the highest day of the year, we’d be able to serve every other day during the year. With the changing fuel mix on the grid, that assumption is no longer valid. While capacity becomes an important reliability consideration, it’s no longer sufficient. A lot of attention needs to be turned to the energy side, which is the ability to serve customers twenty-four hours a day, seven days a week, fifty-two weeks a year.”

²² PJM Report, “The shifting electricity system resource mix and the growing quantity of distributed energy resources are causing a rise in uncertainty and volatility in PJM markets and operations. This is compounded by the growing concern over the amount of thermal generation retirements that are anticipated, particularly given that Intermittent Resources that are replacing thermal resources are not comparable in terms of flexibility and dispatchability,” p. 2.

²³ MISO, *2022 Regional Reliability Assessment: A Reliability Imperative Report*, (November 2022), “Without additional resource investment, accredited capacity in the MISO region is expected to decline (red line). This is because the new wind and solar resources that MISO members plan to build going forward have lower accreditation values than the thermal resources that members are retiring...1 GW of coal has a much higher capacity contribution than 1 GW of solar. Therefore, even though the planned additions appear to outnumber the planned retirements on the stacked bar chart in Figure 10, additional investment beyond what is currently being planned by MISO members will be required to reliably achieve decarbonization targets and meet the planning reserve margins,” pp. 17-18.

this administrative proceeding and in the ISO/RTO Reports. Thus, every ISO/RTO is focused on the mechanisms needed to retain and incent the operational flexibility provided by dispatchable resources to balance the system as the resource mix evolves.²⁴

While there is regional variation as to the extent and pace of these impacts on particular systems, the high-level phenomenon is universal and thus addressed extensively in each ISO/RTO Report. Each regional market must ensure that it can retain resources that remain necessary to support imminent operational changes and address energy adequacy shortfalls. This is at base an economic question as how to direct the revenue needed to retain and encourage new resources. As NERC explains in its most recent Long-Term Reliability Assessment (“LTRA”), “Maintaining reliability will require the pace of change to be carefully managed by industry and regulators and steps to be taken to ensure that essential reliability services (“ERS”) continue to be provided as generators retire.”²⁵

²⁴ NERC, *Long-Term Reliability Assessment 2022* (“LTRA 2022”), “In order to maintain load-and-supply balance in real-time with higher penetrations of variable supply and less-predictable demand, some operators are seeing the need to have more system ramping capability. As more solar and wind generation is added, additional flexible resources are needed to offset these resources’ variability, such as supporting solar down ramps when the sun goes down and complementing wind pattern changes. This can be accomplished by adding more flexible resources within committed portfolios or by removing system constraints to flexibility.¹⁶ Maintaining ERSs is critically important, and resources must be made available in the long-range resource portfolio as part of the planning process; market and other mechanisms need to be in place to deliver resources with ERS-capabilities to the operators.” Pp. 17-18.

NYISO Report, “Absent ancillary services market changes or other wholesale energy market changes to improve incentives for flexible resource availability, market signals to retain and invest in flexible, controllable resources may not be sufficient. Without sufficient flexible, controllable resources, the NYISO will face serious challenges to maintaining grid reliability in the future.” P. 11

SPP Report, “With the balance between available flexibility and system variability expected to tighten in the future, efficient methods to assist in providing the needed flexibility with the available generation fleet will become increasingly important to economical and reliable operations.” P. 5.

²⁵ NERC LTRA 2022, “The addition of variable resources, primarily wind and solar, and the retirement of conventional generation are fundamentally changing how the BPS is planned and operated. Planning and operating the grid must increasingly account for different characteristics and performance in electricity resources.” p. 17.

Currently, the pace of the resource changeover is not being overseen or managed in a manner that will forestall both the energy and operational reliability gaps referenced above. Identified by NERC²⁶ and numerous ISOs/RTOs,²⁷ this wave of “disorderly retirements” creates extreme risks to reliable operations – particularly retirements driven by public policy rather than market economics or aging facilities.²⁸ The development and interconnection of new resources is a major hurdle for all new projects today. Partner that impediment with accelerated retirement of existing conventional resources and the result may be dire, both in the short term and the longer term. This is a concern already impacting several markets.²⁹

The failure to meet the increasing penetration of non-dispatchable, weather-dependent resources and increased electrification with sufficient resources that can

²⁶ NERC LTRA 2022, “Maintaining Essential Reliability Services: The changing composition of the North American resource mix calls for more robust planning approaches to ensure adequate essential reliability services. Retiring conventional generation is being replaced with large amounts of wind and solar; planning considerations must adapt with more attention to essential reliability services. As replacement resources are interconnected, these new resources should have the capability to support voltage, frequency, and dispatchability. Various technologies can contribute to essential reliability services, including variable energy resources; however, policies and market mechanisms need to reflect these requirements to ensure these services are provided and maintained,” p. 7.

²⁷ Comments of the NYISO on New York State Climate Action Council Draft Scoping Plan, (Submitted to Climate Action Council July 1, 2022), “While the state’s bulk electric system meets current reliability requirements, risks to reliability and system resilience remain. One key factor driving this risk continues to be resource retirements outpacing additions. ...A sufficient fleet of new generation resources with the appropriate reliability attributes, must be available before the existing, traditional generators retire voluntarily or are forced out of service,” pp. 7-8.

²⁸ NYISO Report, “Deactivating existing generation without having sufficient resources that are capable of providing comparable reliability services risks the NYISO’s ability to maintain a reliable electric system. The NYISO has not observed disorderly retirements caused by lack of Energy and Ancillary Services market revenues. However, retirements driven by public policy requirements are reducing reliability margins and decreasing fleet flexibility especially where these retirements are happening ahead of the entry of anticipated new resources,” pp. 28-29.

CAISO Report, “Regarding the risk of disorderly retirements, the CAISO’s experience is that state energy policies and capacity procurement decisions to implement those policies drive resource retirements on its system more so than market prices for energy and ancillary services,” p. 23.

²⁹ MISO Report, “Such gaps between forecasted capacity additions and actual capacity additions (a 14.3 GW shortfall over the three-year projection) at a time of significant fleet transition make planning difficult, and underscore the asymmetry between retiring facilities that are currently running and generally meet their retirement date with the perhaps overly optimistic expectations that an anticipated facility will come online as scheduled.” P. 34

protect the system during long duration extreme weather events and climate impacts is a recipe for certain failure. All credible analyses of the situation show that even more natural gas and other dispatchable generation will be required in the future³⁰ even though it may not run as often as in the past. In fact, the expected scenario is that these resources will run at a fraction of their current rate in the future, but during severe weather or large cut out events they will be the most significant resources relied on to prevent blackouts. Thus, it is critical that the ISOs/RTOs have mechanisms in place to ensure that these resources are available and can provide power when needed – considering their changing operational profile. Additionally, sufficient infrastructure, both natural gas supply and transmission, is needed to supply those resources when they are called to run which will often occur during critical periods of peak demand or reductions in intermittent output and will often be long-duration events. In addition to infrastructure, it will be necessary to ensure that those resources have an opportunity to earn sufficient revenues to support their long-term participation in the market. This may include reimbursement for the cost of fuel in a manner not provided for today and will likely require incremental changes to address the intersection of power and natural gas markets as discussed below.

³⁰ Energy and Environmental Economics (“E3”), *Least Cost Carbon Reduction Policies in PJM*, (October 28, 2020), “Across all scenarios, the study selects significant quantities of gas capacity to remain in place through 2050 to meet reliability needs while flexibly balancing renewable generation. While gas capacity additions vary by scenario, 50-90 GW of firm gas generation appears economic under most deep decarbonization policy pathways. Even in the most ambitious GHG reduction scenarios where nuclear and renewables serve 80% of energy, gas-fired generation is a cost-effective solution for meeting peak load and maintaining grid reliability by providing reserve capacity when needed. These resources are dispatched less and less over time as more zero-carbon generation sources are added to the system,” pp. 13-14.

C. Reliability Planning Must Underpin Market Enhancements to Address System Changes

The ISO/RTO Reports demonstrate that the system operators have efforts and stakeholder processes underway to address the impending and expanding reliability challenges facing the system. However, we may be reaching a tipping point which requires a more comprehensive approach to address reliability while maintaining competitive market structures. One path may be to assess the current grid reliability planning criteria to consider whether revised parameters should be implemented to address the changing weather scenarios and resource changes which both require and provide different operational characteristics.

Reassessing the reliability criteria is a holistic approach which can provide the overarching context for market enhancements to address the changing factors impacting the system, particularly extreme long-duration weather events or the impacts of climate change. CAISO notes, “[W]eather patterns affected by climate change have created extreme conditions beyond those anticipated by current planning standards.”³¹ As an example, in response to the concerns raised by Winter Storm Elliot in late December, NERC President and CEO Jim Robb stated,

This storm underscores the increasing frequency of significant extreme weather events (the fifth major winter event in the last 11 years) and underscores the need for the electric sector to change its planning scenarios and preparations for extreme events.³²

Adjusting grid reliability planning criteria could address concerns around extreme weather and climate change, the changing resource mix powering the grid, and the

³¹ CAISO Report, p. 4.

³² NERC News Release, “FERC, NERC to Open Joint Inquiry into Winter Storm Elliot,” (issued January 28, 2022), available [here](#).

infrastructure and resources needed to ensure reliability. Rather than attempt to address the particular failures or stresses of the most recent “extreme event,” adjusting the reliability planning criteria will signal the needs of the system broadly as it transforms to meet both weather impacts and policy goals demanded of it. Products and services that support reliable operation of the grid would be defined and procured under the revised planning paradigm to ensure that attributes needed to address reliability challenges, including dispatchability and flexibility, are properly valued. These products and services should be defined in a transparent and technology neutral manner. They should be products that can be co-optimized with the Day-Ahead/Real Time energy markets to create accurate incentives for investment in the capacity needed to meet evolving grid’s reliability needs and ensure that those resources are available when operational reliability issues arise.

D. Coordination of Natural Gas and Electricity Markets Requires Immediate Attention

Both the impact of long-duration extreme weather events as discussed above and the changes to the resource portfolio impacting the availability of dispatchable resources auger for heightened attention to the longstanding concerns raised by the interdependence of the natural gas and electricity systems. This debate has lasted for decades and is, in fact, currently underway in numerous venues.³³ There must,

³³ North American Energy Standards Board Gas-Electric Harmonization Forum; see *Announcement of the Initial NAESB Gas-Electric Harmonization Forum Meeting – August 30, 2022*, (Posted August 11, 2022), regarding request from FERC Chairman Rich Glick and NERC President and CEO Jim Robb for NAESB to “expeditiously take steps to convene the forum discussed in Key Recommendation 7 of the FERC, NERC, and Regional Entity Staff Report on the February 2021 Cold Weather Outages in Texas and the South Central United States (Report) issued in November of last year,” available at [NAESB Gas-Electric Harmonization Forum](#);

PJM Interconnection L.L.C., Electric-Gas Coordination Senior Task Force, general information available here: [PJM - Electric Gas Coordination Senior Task Force](#);

however, be a renewed effort to find solutions – which will require compromises from both industries – in order to ensure that natural gas supply and deliverability are not impediments to the availability of critical natural gas-fired generation the next time there is an extreme cold weather event that lasts for days – as we often see, over a three or four-day holiday weekend. Importantly, increased demands on natural gas-fired generation are not limited to weather events or climate impacts, as explained above in Section B regarding the need for dispatchability and flexibility needed to maintain system balance and reliability. Thus, increasingly there are changes needed in electricity markets to compensate generators for firm fuel supply to ensure availability when called, which need to be supported by changes in natural gas markets and pipeline operations.

The fact that natural gas-fired generation is the dispatchable resource that supports the growing integration of non-dispatchable resources and is capable of sustained performance during system emergencies is clear. EPRI,³⁴ NERC,³⁵ and the ISO/RTOs themselves in their responses in this proceeding have all emphasized that these dispatchable and non-weather dependent units must be operational in times of system stress. Winter Storms Uri and Elliott both demonstrated that the mismatches

NERC Electric Gas Working Group, general information available here: [Electric-Gas Working Group \(EGWG\) \(nerc.com\)](https://www.nerc.com/EGWG).

³⁴ EPRI, *Strategies and Actions for Achieving a 50% Reduction in U.S. Greenhouse Gas Emissions by 2030*, (November 2021), “Firm capacity is a key asset for system balancing. New natural-gas-fired capacity helps offset coal retirements, providing firm capacity to aid in balancing variable renewables, ensuring that supply can meet growing demand in every hour, minimizing electricity cost increases, and reducing system operational changes. Over time, these gas units operate less frequently, providing essential capacity, but less energy and emissions (and post-2030 they are converted for zero-emissions or their emissions are offset to reach net-zero),” p. 4.

EPRI, *Enhancing Energy System Reliability and Resiliency in a Net-Zero Economy*, (January 2022).

³⁵ NERC, *2022 Long-Term Reliability Assessment*, (December 2022).

between the two systems are impacting if not handicapping the ability of the Bulk Power System to avoid blackouts or near blackouts based to a meaningful extent on fuel supply and deliverability concerns.³⁶ But the strains between the two systems are not limited to weather events as dispatchable resources are needed to balance the system in response to an array of conditions. The broader discussion must evaluate the need for additional supply and transportation capacity to ensure units can run when called and not be restricted by a system that is not expanding with the increase in demand.

Regarding the impact of long-duration weather events, additional concrete data and analysis is needed to understand what happened during Winter Storm Elliott, for instance. It is notable that this cold weather event impacted the PJM region, an RTO that has not heretofore experienced the projected levels of outages seen during Elliott. While this information will be important to inform what needs to be addressed to improve coordination issues, both sides need to roll their sleeves up now to begin a serious discussion which will require good faith negotiations and compromise from both industries.

The issues raised by the challenges of gas-electric coordination are complex and implicate long-held practices in both industries, contributing to the reluctance to change or reform from either side. There are reforms that can be undertaken in electricity markets to address natural gas supply issues and availability. Notably, however, those power market reforms likely need to be matched in some manner by either reforms or adjustments on the natural gas side. This effort will not be easy but must be undertaken

³⁶ Craig Glazier, PJM Vice President – Federal Government Affairs, *Winter Storm Elliott Presentation to NAESB Gas/Electric Harmonization Forum Meeting*, (January 12, 2023), available here: <https://www.naesb.org/pdf4/geh011223a1.pdf>.

now to engage all parties needed to move the needle on these issues and implement solutions that can be in place to support the retention of natural gas-fired generation over the next several years and ensure their operability during the critical times they are needed amidst broad stress to both systems.

III. CONCLUSION

WHEREFORE, EPSA appreciates the opportunity to comment on the ISO/RTO Reports which address ongoing or expected system changes and the market enhancements that will assure and improve signals for investment in the resources that have the characteristics and attributes needed to ensure grid reliability. Importantly, these market enhancements rely on a single-clearing LMP competitive market design as the foundation to support the Bulk Power System. An issue that needs to be addressed in every region is the pace of resource retirements to ensure that new resources with needed capabilities, or the technology-neutral procurement of new products and services, are keeping up with the loss of the incumbent generation resources that support the system. Additionally, the industry should undertake a reassessment of reliability planning criteria to direct market enhancements as needed, and recommit to a concerted effort to address natural gas-electricity interdependence issues which hamper system reliability during system stress.

Respectfully submitted,

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